The Impact of Peer Mediated Instructional Strategies in an Inclusive Project Based Learning Environment

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THE IMPACT OF PEER MEDIATED INSTRUCTIONAL STRATEGIES IN AN INCLUSIVE PROJECT BASED LEARNING ENVIRONMENT

by

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DEDICATION

I would like to dedicate this to my father in law. While I have an incredibly supportive family that encouraged and loved me through this process, my father in law was my greatest cheerleader and prayer warrior.
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Thank you to my students who participated in this study. Your patience and flexibility during this time was appreciated. Thank you to all of my paraprofessionals that supported me in this endeavor without fail.
ABSTRACT

This paper describes a problem of practice that evolves from a shift in curriculum from a more traditional direct instruction format to that of a progressive, student centered project based learning model. This shift in instructional practices seeks to increase student engagement within the high school and reduce a number of negative factors that stem from low levels of student engagement. In order to adequately meet the needs of students with disabilities within this new model, a systematic review of the use of peer mediated instructional strategies led to the following research question: what impact can the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement? The research study employed a convergent mixed methods research design to collect both qualitative and quantitative data within a project based learning opportunity to examine the effectiveness of those peer support strategies on student engagement across the cognitive, emotional and behavioral domains. In the research process there were four behaviors that were identified through the SSIS Rating Scales to which the interventions of peer tutoring and peer initiation were applied while the students participated in four separate project-based learning opportunities within an inclusive Psychology classroom. Along with this data, the grades and emotional responses of the students were examined throughout the four projects. The data collected across all projects demonstrated a significant increase in social behaviors along with an increase in student grades for those with autism, while all students developed an understanding of the unique strengths found in all learners as the peer mediated
instructional strategies of peer tutoring and peer initiation were applied. The results were then used to inform an action plan designed to share the findings with the professional learning communities, administration, and board members as well as to develop training modules that would train others to implement peer mediated instructional strategies across other content areas within inclusive, project-based learning environments.
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LIST OF ABBREVIATIONS

ASD ............................................................... Autism Spectrum Disorder
IEP ................................................................. Individual Education Plan
PBL ................................................................. Project Based Learning
SSIS ............................................................... Social Skills Inventory Scale
CHAPTER 1
INTRODUCTION

As a teacher of special needs students in a high school setting, I have realized that my students with autism who have been served in the self-contained classroom setting lack the natural opportunities to build friendships and develop the social skills that they need to be successful (McCurdy & Cole, 2014). My students require direct, explicit instruction in social skills, but the application of these skills are limited within the self-contained setting in which all members of the class lack natural social skills. Within a self-contained setting, my students are understood and thrive; however, outside of my classroom within the shared areas of the school with typically developing peers, my students are inept. While I have taught these skills in isolation, they have not generalized these skills outside of my controlled environment.

At the same time, my school has embraced a project-based learning model, which focuses on collaboration and student led learning opportunities. This progressive educational approach seeks to provide opportunities for students to examine ‘real world’ problems and explore possible solutions creating authentic learning experiences for each student (Dewey, 1938). Being charged with utilizing this model within my classroom; I would like to use this as an opportunity to build stronger interpersonal skills (often referred to as soft skills) into my students’ days using Dewey’s (1938) ideas of natural environments. Therefore as a teacher researcher, I would like to determine the impact of peer mediated instructional strategies to teach social skills and increase student
engagement within the project based learning model with both general and special education students. Student engagement is defined as the participation of students in school across academic, cognitive and social domains. While it can be measured in the classroom through on task behavior and grades, it is also seen as the level of student involvement in the school community as a whole. It is a leading indicator of school satisfaction and factor in the drop-out rate among disaffected students (Fredericks, McColskey, Meli, Mordica, Montrosse, & Moony, 2011). Peer support programs or peer-based intervention models have been successful in increasing student motivation and overall engagement in the learning process for students with special needs and their typical peers (Harris, & Meltzer, 2015, p. ix). Through this learning and research opportunity, I want to provide my students with autism the opportunity to learn and apply the social skills necessary for success in a natural setting while enhancing the interpersonal skills that are so important to success in higher education and employment.

**Problem of Practice**

Minimal student engagement is a pervasive problem in many classrooms with students of all abilities and interests, but it is even more prevalent in the special needs classroom. Students with autism require meaningful educational experiences in one on one or group settings to be successfully engaged (Steinbrenner & Watson, 2015). While they may learn more successfully within small groups, students on the autism spectrum lack the social skills to interact with their typical peers successfully. While teaching these skills in isolation is an excellent starting point, true learning has not taken place until the student is able to apply those skills within naturally occurring environments.
Under our current school administration, the focus in our classrooms has shifted from a direct instructional model to a constructivist model that allows for inquiry and a student-centered approach to learning established through the project based learning model. As our students with disabilities, especially those with autism and communication disorders, are thrust into an unfamiliar learning environment, they are in danger of becoming even more marginalized within this environment. The lack of effective communication and social skills makes it difficult to participate in the collaborative learning opportunities presented in the project based learning models. Therefore, our students with special needs become frustrated and overwhelmed within an environment for which they are unprepared; this frustration leads to an increase in disruptive behaviors and lost instructional hours due to classroom distractions, discipline infractions and suspensions. With the mandate of No Child Left Behind and IDEA, the Individuals with Disabilities Act, we must provide instruction and accommodations for those students with disabilities to successfully access and thrive within the least restrictive environment possible. The implementation of the project-based learning model throughout our district requires the administration, teachers and school personnel to identify and address the additional instructional supports necessary that will allow our students with special needs equal access to the general curriculum (Cortelia, 2005). In order for a collaborative, constructive school environment to be accessible to all students, it is necessary to identify those supports necessary for the success for all students within that environment. Those students that require additional support cannot be excluded from the environment that has been established as normal within their school setting. The supports that are found to be helpful for those with special needs can also meet the
needs of those student groups that are marginalized due to other factors, such as poverty or race, as educators seek to equip every student with the social skills and soft skills necessary to become a successful member of our global society.

Throughout this process of action research, I wanted to create meaningful learning experiences for my students. The opportunities for children with disabilities in the school setting are limited as behavioral and social concerns ostracize them from their peers (Marx, Hart, Nelson, Love, Baxter, Gartin, & Whitby, 2014). The academic differences that are present within the classroom can be addressed through accommodation or modification; however, the social needs of the individual students are not so easily addressed (Bui & Simpson, 2016). Misunderstandings within the faculty and staff in regard to unique social and behavioral concerns of the student with autism and/or other disabilities have often led to a greater number of discipline referrals and resultant suspensions and expulsions. The Individuals with Disabilities Education Act has put procedures in place that allow students to receive additional behavioral supports that are meant to shape behavior and lessen the time that a student with a disability is denied access to a free and appropriate education. Even with this mandate, children with disabilities, particularly those that have a behavioral component, are more than fifteen to forty percent more likely to be suspended (Sullivan, Norman, & Klingbell, 2014).

Through my research, I would like to improve the relationships that my students share with each other and their peers who are served in the general educational setting. Additionally, I would like to increase the understanding that our faculty and staff have of the students with disabilities that they serve. Our students with higher support needs are the responsibility of all of our teachers and staff; therefore, as a special educator, I must
help them to see these students’ strengths and capabilities. I want to change the mindset of ableism that naturally develops as differences in learning and behavior emerge within the school environment as early as preschool. I would like to give all of the students in this research study, both the typical and non-typical, the tools to rise above the constraints of ableism to reach their full potential.

**Research Questions**

In an effort to address the problem of student engagement and fulfill my district’s mandate to utilize the project-based learning model within our school, I have identified the following convergent mixed methods questions to guide my action research.

1. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the development of social skills within an inclusive project based learning model for students with an autism spectrum disorder?

2. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as measured by academic achievement of all learners with autism spectrum disorder?

3. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the emotional domain of student engagement as measured qualitatively through journals and student interviews on student satisfaction within the project based learning model?

4. What perception does the teacher have on the peer mediated instructional strategies of peer initiation and peer tutoring on the learning environment as measured qualitatively by teacher interviews?
**Statement of Purpose**

The purpose of the present action research study was to examine the effects of the peer-mediated instructional strategies, peer initiation and peer tutoring, on student engagement of both typical and non-typical students in a high school setting that is utilizing a project based learning environment. A simultaneous goal was to create an understanding for the individual differences of all students in accordance with the identified Problem of Practice (PoP) for this Dissertation in Practice (DiP). Both typical students and their peers on the autism spectrum collaborated on project based learning opportunities in order to learn academically and build the social, soft skills such as self-reliance and teamwork that are so important in adult life. Peer mediated instructional strategies have been used to lessen the amount of teacher involvement necessary to allow for children with autism to actively engage with their typical peers (Shafer, Engel, & Neef, 1984). This significant fact supported the use of peer mediated instructional strategies within a project based learning model in which the teacher shifted into the role of facilitator as opposed to the traditional teacher delivering direct instruction to the class as a whole (Holm, 2012). As students interacted with one another and worked cooperatively to solve problems, a greater understanding and acceptance of individual differences developed, a secondary goal of this research (Bui & Simpson, 2016. The peer mediated instructional strategies of peer initiation and peer tutoring were utilized to allow for both the disabled and non-disabled student to actively engage in the learning process within the project based model.
The Significance of the Study

Ableism is the term that has been coined to describe the discrimination of people with disabilities (Castaneda, Hopkins, & Peters, 2013). Those with disabilities are seen as dependent on others for at least some of their needs. Marginalized groups are people who are “expelled from useful participation in social life and thus potentially subjected to severe material deprivation and even extermination” (Young, 2013, p.36). The current numbers of incident for those with autism is 1 in 68 people as reported by the Center for Disease Control. Other measures, as published by the National Health Interview Survey in 2014, place the prevalence of autism at 1 in 45. Those people with autism exhibit “persistent deficits in (1) social communication and social interaction across contexts,(2) restricted, repetitive patterns of behavior, interests, and activities with symptoms that must be present in childhood that limit and impair everyday functioning” (Hall, 2013). These characteristics that define the diagnosis of autism impact the quality of life for those that are on the spectrum. The ability to interact with peers and to build satisfying relationships with others is one of our most basic human needs (Weinberg, 2012). Those individuals that struggle with these interactions are set apart from their peers. The families of those with autism or any other disability are dominated by those that see themselves as normal. Many children with autism and their families, along with families affected by other disabilities, do not receive the support that they need to thrive.

Unemployment, poverty and limited medical care are common challenges faced by these families (Wendell, 2013). Wendell (2013) states, “I see disability as socially constructed in ways ranging from social conditions that straightforwardly create illnesses, injuries, and poor physical functioning, to subtle cultural factors that determine standards of
normality and exclude those who do not meet them from full participation in their societies” (p. 481).

In the school setting, the change in school culture from the traditional classroom to the project based learning model constructs a different standard of normal within our classrooms as students are expected to take ownership of their own learning, actively engage in collaborative group tasks and build strong problem solving skills to create meaningful learning opportunities in real-world contexts. This research was designed to find those interventions that allowed our students with special needs the access and ability to be successful in the new culture of our high school.

Literature Review

Within this literature review, the components of this action research proposal are examined. These components include an overview of the project based learning model, student engagement, the inclusive classroom, and the interventions of the peer mediated instructional strategies of peer tutoring and peer initiation.

Project-based learning. The project based learning model frames the student’s learning opportunities around a project that promotes problem solving, investigation and teamwork to solve a problem or apply learning to a real-world situation (Thomas, 2000). Project based learning opportunities imbed key components of an effective special needs classroom into instruction on a daily basis. Kristen Uliaz (2016) outlined the key traits of an effective project based learning approach that included differentiated instruction, interdisciplinary content, technology, collaboration, supports and accommodations, self-determination and authentic assessment. She further stated that these are all key components of the specialized instruction that all students with higher support needs
require to be successful. Larmer (2016) states that students are better prepared for college, careers, citizenship and life when they are immersed in learning opportunities that allow them to problem solve, collaborate, and apply subject specific knowledge to “real-world” applications. This assertion supports the ideas of Dewey (1938) as he states that the purpose of experiential education is to provide meaningful learning opportunities whose value can be appreciated and built upon again and again. In a review of all current research on project based learning, Thomas (2000) examined the effectiveness of the project based model in comparison with the traditional model of teaching. His findings support an improvement in student engagement, attendance, understanding of subject matter and student satisfaction.

**Student engagement.** Student engagement is “the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities” (Kuh, 2003,p.25). While student engagement is defined in many different ways, most researchers agree that there are three distinct areas of consideration when measuring student engagement. These include behavioral, emotional, and cognitive engagement. Behavioral engagement is seen as the level of participation the student exhibits in the areas of academic, social and extracurricular activities. Emotional engagement is a measure of both positive and negative interactions between students, teachers and the school community as a whole. Cognitive engagement is defined as the level of importance and effort a student places on his or her education, learning goals and future aspirations (Fredericks et. al., 2011). Researchers agree that student engagement goes beyond the classroom; it involves the learning activities, the school climate and the
relationships that are fostered both in and out of school (Burch, Heller, Burch, Freed, & Steed, 2015). Bradford, Mowder and Bohte (2016) examined the effectiveness of student centered learning, experiential learning, team based learning, and incentive based learning on student outcomes. The results proved that, above all, students needed to be emotionally engaged in their learning, and they must see the value in what they are learning. These facts have led to many studies to improve student engagement as it relates to overall school performance and drop-out rates (Fredericks et al., 2011).

**Inclusive classrooms.** For the purposes of this study, an inclusive classroom is defined as a setting that delivers instruction to both typical and non-typical students simultaneously within the same classroom. A typical learner is defined as a student that has not been identified with a need that requires an individual education plan to meet his or her unique learning needs. A non-typical learner is a student who has been identified with a specific learning disability, an intellectual disability, emotional disability, autism or other health impairment that requires a specifically designed instructional plan to meet his or her educational needs. The needs of the non-typical, exceptional learner must be met within the least restrictive environment possible where each student is a valued member of the class and an integral part of the process of learning (Sylvester & Poe, 2009).

Within an inclusion classroom, the needs of a non-typical student are accommodated for within that classroom environment in an effort to allow the student to experience the general education curriculum to the greatest extent possible. The level of support that a student with special needs receives is based on his or her individual needs.
The student may require a modification to the curriculum in order to be successful in his or her learning; however he or she is an equal member of the class.

**Peer mediated instruction.** As I considered the dynamics of the project based learning environment and sought to create learning opportunities for my students with autism, I considered the unique nature of their individual needs. While a hands-on approach to learning using opportunities entrenched in ‘real world’ applications found in project based learning is effective, it was difficult for my students to interact effectively within that environment. In order to accommodate for this and facilitate active, productive learning, I employed the peer mediated instructional strategies of peer initiation and peer tutoring to build those needed skills within my students. These strategies also served to enable typically developing peers to understand the diverse learners that make up the collaborative groups within the project. For children with autism, social skills must be explicitly taught. One of the most effective ways to naturally teach children with autism those important soft skills is to imbed that instruction in interactions with their typical peers, allowing for teaching and practice within the same moment (McCurdy & Cole, 2014.) Through peer mediated instructional strategies, typical peers were taught how to interact with their peers with autism and to teach the social skills to the students with autism in a natural environment. This, in turn, created meaningful learning opportunities for all students. These interactions were vital to collaborative learning opportunities with the project based learning environment. As all students participated in these strategies with each other, all students were actively engaged in the learning process (Sperry, Neitzel, & Englehardt-Wells, 2010).
The process of peer mediated instruction is systematic and must be implemented with integrity (Vaughn, Klingner & Bryant, 2001). Those students that serve as peer mediators were willing to participate, be trained and supported throughout the process. When this happened, the students with autism gained quality social interactions within natural contexts. Their typically developing peers gained an understanding and appreciation of their peers with autism. This partnership not only affected the learning of social skills, but academic skills as well. Through active engagement with peers, all students were able to problem solve and become more independent in their academic and social endeavors (McCurdy & Cole, 2014; Vaughn, Kingner, & Bryant, 2001).

**Research Design**

In this section, the research site, the participants and the setting are discussed. Additionally, an overview of the convergent mixed methods research utilized and the data that were collected to inform changes in the classroom setting are explained. Finally, the ethical considerations of this research are included for review.

**Research Site.** Low County High School (pseudonym) in the low country of SC is located along I95 in the state’s Corridor of Shame. The school serves a total of 1800 students daily, with approximately 280 of these students enrolled in the Project Academy (pseudonym), a New Tech Network school. As such, we have a ‘school within a school’ that focuses all instruction on a project based learning model (Holm, 2011). Over the last year, our school leadership team and district officials examined the progress that this ‘school within a school’ made in this learning model. As a result of their success, the district and school leadership mandated that all of our teachers embrace this model within our classrooms. During the 2017-2018 school year, our school introduced an additional
project based learning platform in our school centered on the Health and Science careers. Within the next two years, there will be a complete shift to the project based learning throughout the entire district, with an elementary school shifting to this format in 2017-2018, and the middle school slated to begin in 2018-2019.

The setting for the current research was an inclusive, project based learning environment within the high school to allow for the intervention of identified peer mediated instructional strategies of peer tutoring and peer initiation to be implemented easily in daily classroom routines.

**Sample.** At the time of research implementation, all of my students actively participated in the research. At this current time, I have three females and five males with autism served within my self-contained setting. All of these students have high behavioral support needs, and five have a comorbid condition of a speech-language disorder in addition to the diagnosis of autism. Due to their individual communication needs and social deficits, they may exhibit limited spontaneous speech, have preservative interests that manifest in repetitive actions, make poor eye contact and shy away from interactions with their peers. All of my students read above the 6th grade level, but their comprehension of text suffers due to their weaknesses with abstract thoughts and inference. Upon implementation of this study, the typical, general education peers was identified based on scheduling, desire to participate, and enrollment in the content area of the project based learning opportunity. The inclusive environment served general education students in the eleventh and twelfth grades. The students with special needs range from grades nine through twelve. The students participated in a project-based learning class for a Carnegie unit credit in a core subject or an elective. Those students
with special needs had the academic skills to participate fully in the class with supports and accommodations put in place as per their individual education plans.

**Methods.** Action research is used to inform teachers of the best practices for their current setting. Each action research project is designed to address a specific problem identified within the teacher/researcher’s environment. When completed, the results are utilized to address the problem and create meaningful changes that will improve student outcomes (Mertler, 2017). In an effort to collect meaningful data that can support the needed instructional changes for students with disabilities, a convergent mixed methods research plan was followed to collect both qualitative and quantitative data that measured the changes in student engagement across cognitive, social and emotional domains within the project based learning environment. Both qualitative and quantitative data was collected simultaneously throughout the research period to create a better understanding of the effectiveness of the peer mediated instructional strategies as well as the teacher/student perspectives on their use (Creswell & Clark, 2018).

As both typical and non-typical peers were identified to participate in the study, I conducted a needs assessment to identify the strengths and weaknesses in social skills with a Social Skills Inventory Scale, (SSIS), a standardized scale developed by Pearson. This instrument measured the strengths and weaknesses of each student participant with special needs in the areas of social skills and cooperation, such as “responds well when others start a conversation or activity, speaks in an appropriate conversation, makes eye contact, and takes criticism without getting upset”. As each student’s specific weaknesses in social skills and cooperative learning tasks were identified, they were operationally defined in order to collect data and establish a baseline pattern of behavior prior to the
implementation of the peer mediated instructional strategies. Additionally, data was gathered to measure the engagement of every student participant, both typical and non-typical as measured by on-task behaviors, participation within the group in the student’s defined roles, and task completion. Once the baseline was established, then a multiple baseline research design was implemented to establish a clear quantitative link between the intervention and any improvement in the social skills that have been identified as weakness for each individual student participant. The multiple baseline research design allowed for the staggered initiation of the intervention across student groups to measure the effects of the intervention through a clear comparison of baseline (pre-intervention) and the intervention phase when the peer mediated instructional strategies are actively used with each student group (Kazdin, 2011).

In addition to the quantitative data collected on the social skills behaviors, student artifacts and scores on both formative and summative assessments as well as project rubrics were analyzed throughout the intervention phase to determine the effect of the intervention on the students’ academic outcomes. During this process, if the academic rigor of the class required differentiation for the students with special needs, this was delivered through a scaffolding process within the project based model, which is an integral, natural component of the model (McCarthy, 2012).

A convergent mixed methods research design allowed for rating scales, journals, scoring rubrics, teacher observations and interviews, and behavioral data to be collected and analyzed in order to better understand the improvement in student engagement. Student artifacts scored by project rubrics along with quantitative data from both formative and summative assessments were collected as a natural part of the project.
design. Students also maintained a daily journal, either in digital or hard copy format, of questions that arose throughout the process and their individual interactions within the groups to further affirm the emotional engagement throughout the project. Mixed method research designs were beneficial as both qualitative and quantitative research together allowed for a better understanding of the data collected (Caruth, 2013). The use of both formative, summative, qualitative and quantitative data was a natural part of the project based learning environment; therefore, the convergent mixed method design was best suited for this research opportunity as both types of data are simultaneously collected (Hernandez, 2016; Creswell & Clark, 2018).

**Interventions.** The peer mediated instructional strategies of peer tutoring and peer initiation were selected as the interventions that were implemented to address the needs of the students within disabilities in the inclusive, project based learning model. These strategies were proven successful across both grade levels and content areas for students with autism and other special needs. (Utley Mortweed, & Greenwood, 1997; Morrison, Kamps, & Garcia, 2001). In the inclusive classroom, typical peers were taught to provide support for their classmates that had higher support needs within the classroom. The target of this intervention within the inclusive classroom was to train members of the class to help those students with higher support needs to learn to collaborate within the group settings, interact socially with members of the class, and gain a greater understanding of the content through tutoring and peer initiation strategies (Bell & Carter, 2013). The utilization of peer mediated instructional strategies is explained further in chapter three.
Ethical Considerations

The purpose of action research is to address the identified problems within the classroom in which the researcher serves (Mertler, 2017). A special needs classroom serves students with higher support needs who require specialized instruction in order to be successful and to meet their full potential. The students that are served within a special needs classroom are protected by the same rights of confidentiality as any student, but they are further protected in that the nature of their disabilities and medical concerns are protected by HIPPA legislation (SC Department of Education, 2016). With those protections in place, the student identities must be protected. Additionally, both general education and special education students participated in the project; therefore, ensuring that none of the participants within the study were adversely affected by participating in the research was extremely important. The students with autism are especially vulnerable to misunderstandings and emotional distress as they have to interact both socially and academically with their peers. There were procedures in place for each student that allowed for a break from the social demands of the classroom if they became overwhelming for the student. These breaks were also be documented throughout the data collection process as to inform the researcher to challenges that must be considered within this inclusive setting in the future. Those typical peers who participated in this project also had to be comfortable with their non-typical peers and be willing to protect the privacy of all of the students participating in the research. The parents gave informed consent to participate in this study, while the students assented to participate. All participants were given the option to remove themselves from situations that made them uncomfortable.
While the proposed research was targeted at improving the social skills of students with autism, it also had an academic component that affects all participants. In order to ensure that the academic needs of every student were met, the teacher-researcher considered how this project impacted the academic standards that must be maintained through a close examination of the academic progress for each student (Dana, & Yendel-Hoppey, 2014). Additionally, the teacher-researcher put the individual needs of the student participants above needs of him or herself. The research respected each participant and ensured that each student participated freely in the research opportunity. Each student and his or her parents were informed of the research being performed, and an informed consent were gathered from all stakeholders (Smith, 2008).

As a special educator, students can be served by the same teacher for many years. With this, special bonds and relationships are formed both with the students and their parents. It is imperative, given these relationships, that the teacher-researcher be very careful not to take advantage of these relationships in any way. The parents and students were informed of progress throughout the process and the means utilized to conduct the project and gather data were completely transparent.

The value of this research was two-fold; the students with autism gained valuable experience in social skills as they participated in the project-based learning environment. Their peers gained valuable insights and an appreciation for individual differences as they took part in the peer mediated instruction and the academic tasks. It was the goal of this researcher that each student participant would come away from the project with a sound academic learning experience as well as an appreciation for each other that will continue to grow long after the research has been completed (Bui & Simpson, 2016)
.Positionality

I am a special educator at Lowcountry County High, and I serve students with autism within a self-contained setting. I have taught for twenty two years in the field of special education with more than ten of those years spent serving students with autism or severe behavioral needs. My secondary certification area is Psychology; therefore, this action research was completed utilizing Psychology content. Additionally, I am currently pursuing a Behavior Analyst Certification Board credential and have completed all coursework for this national credential; therefore, the behavioral data collection within this study adhered to the board standards. As a teacher-researcher, I wanted to embrace our new school initiative within my classroom through peer mediated instructional strategies and differentiated instruction to successfully complete a project based learning activity and enhance the social skills that are necessary within a collaborative learning environment. All of the teachers within Project Academy have worked in the project based model since 2013; therefore, there will be strong support for this research. As a part of our district initiative to expand the project based learning model, I underwent training in this model, and implemented it within my self-contained setting on a limited basis during the 2016-2017 school year. While the initial proposal for this research presented a co-teaching model within the Project Academy, personnel shortages in our school made this impossible. During the 2018-2019 school year, I taught a Psychology class in the academy that served as the setting for the current research while allowing for consultation with a veteran PBL teacher as needed throughout the research. Within this research design, as a teacher-researcher, I was a “full participant both as an instructor and in some instances an observer within a co-taught, project-based classroom (Mertler,
In addition to teaching content, I collected behavioral data and observed the student interactions. My specifically trained paraprofessionals also aided in the data collection process while I delivered any necessary instruction. The data was analyzed throughout the research process as instructional decisions were made as a result of the needs analysis, student grades, behavioral data sheets and journals. The analysis of the these data sources throughout the research phase constituted a constant comparative method of research or a convergent mixed method research model (Merter, 2017; Creswell, 2010).

**Limitations**

As a teacher-researcher, my experience with the project based model framework is limited as I have only introduced it in my classroom this year. The consultation with other veteran PBL facilitators throughout this research will help to mitigate this limitation. Additionally, the content area of Psychology naturally lends itself to the nature of this research; therefore, the results should be examined and expanded to other content areas in the future. The number of students engaged in this study was small; therefore, additional studies will be required to ensure that any recorded results are supported with a larger group of participants. Additionally, the high support needs and unique challenges of my students may have affected the observable results of the research and the reliability of measures of student engagement. While the Child Specific Assistants and paraprofessionals that are familiar with my students were capable of collecting data, the other students in the inclusive classroom had an adjustment period to the number of adults present in the classroom just as those students with special needs were required to adjust to the number of students in the classroom. There were several
confounding factors, such as scheduling, medical needs and absences that were identified and accounted for throughout this process.

Summary

The mission of the SC Department of Education is “All students graduate prepared for success in college, careers, and citizenship. By 2018, at least one school in every district will have implemented personalized learning that supports students' meeting the Profile of the South Carolina Graduate” (SC Department of Education, 2016). Every classroom across the state has been charged to ready our graduates for college or a career; however, in my special needs classroom my students are not ready. The soft skills that researchers Ooi and Ting (2015) found to be so important in over one hundred job advertisements, such as communication, teamwork, leadership, problem solving, and self-reliance are not being taught within the traditional classrooms of our schools. Those skills within the affective domain are expected to develop naturally in our learning, but that is not the case for many of our students today. Typical students face challenges in relating with their peers and become disengaged within our traditional classrooms. Students with higher support needs, such as those with autism, must be explicitly taught how to communicate and relate to others; however, they are not provided the natural, non-contrived settings in which to practice and generalize these skills.

In answer to the lack of student engagement and achievement gaps that are present in our school today, our district leaders have embraced the progressive educational practice of project based learning to enhance both the academic and soft skills for our students. Our school has watched the success of project based learning as we have become a member of the New Tech Network (Holm, 2016). As a special educator, it was my goal to utilize peer mediated instructional strategies to build
opportunities for both the typical learner and those with autism to work together to complete projects. This collaborative effort was designed to accomplish more than the project; it created opportunities to build those social skills and soft skills that are so important for a career ready student.

The following chapters are contained within this dissertation. Chapter two is the literature review for this action research. Chapter three describes the methodology of the current research, and chapter four contains the results and findings of the research. The recommendations for practice and action plan are iterated in chapter five. Following the references, any forms used within this research are attached for review.
CHAPTER 2
LITERATURE REVIEW

As educators, it is our goal to equip our students with the skills to be successful adults. The curriculum and methods utilized by districts and teachers to accomplish this goal are varied; the traditional classroom teacher creates learning opportunities based on the learning objectives dictated by the state standards and learning objectives (Schiro, 2013). The state chooses the important information and skill sets that all students should know, while the teacher creates the delivery system within the classroom. The authority within the classroom, defined by the district directives, is held by the teacher in many traditional classrooms (Eisner, 2004). Within this system, through direct instruction and specific learning tasks designed to develop the skills and knowledge within the student, many struggle to remain motivated and successfully complete the desired learning outcomes (Fredericks, McColskey, Meli, Mordica, Montrosse, & Mooney, 2011). The dropout rate among high school students is 5.9 %, with a significant increase in the percentages across the South with a rate of 9.6 %. (NCES, 2017). Minority and students with special needs experience even higher dropout rates (Dray & Wisneski, 2011; NCES, 2017). Student engagement, the manner in which one experiences his learning, is a pervasive problem across the country. Many students are not being reached by the traditional, standards-based educational setting (Shernoff, Ruzek, & Sinha, 2016). In answer to this dilemma, there has been a paradigm shift from the traditional setting to one that begins with a more student centered approach to learning. Educators have begun to
think and plan for the individual, personal responses to learning that occur within our classrooms each day (Bradford, Mowder, & Bohte, 2016). Experiences that students have within the school setting develop the skills and knowledge that they carry with them into adulthood and into society (Eisner, 2004). Brubaker (2004) speaks of the impact of those experiences on the person of the learner, creating a positive or negative reaction to the task or content of the learning.

With these shifts in the view of the learner, there has been a revival of the progressive ideas found in the project-based learning models. There has been an expansion of the New Tech Network of schools, as 91% of all students enrolled in these academies graduate high school; 70% of those that graduate enroll in college and 83% of those students enrolled in college remain until completion of their desired degree. The New Tech Network of schools utilize a project-based learning model with technology embedded in the process, with a one to one ratio of student to computers (Hanover, 2013). The New Tech Network reports a 61% growth rate in higher order thinking skills from freshman to senior years over those students enrolled in the traditional settings. Additionally, it is reported that the graduation rate among New Tech Network schools is 9 points higher than the national average (New Tech Network, 2016). Significant inclusion of minority, English language learners (ELL) and those receiving special education services are also reported by the New Tech Network; with one academy boasting 55% of its students were ELL and percentages of special needs students included within the models ranging from 1% to 33% in individual academies (New Tech Network, 2016).
In the 2013-2014 school year, the target school district became a New Tech Network site; the progress and success of this academy, a school within our traditional school, was watched very carefully by district leaders. As a result of the success of this model, our district began expansion plans for this model within our high school and across our district. As a special education teacher, this shift raised many questions for my practice and the success of my students within that environment. Additionally, many of our students, both typical and non-typical, expressed concern of their perceptions of the group work and the non-traditional means employed within the project-based model of learning. As a result, the following research questions were formulated to address these concerns:

(1) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the development of social skills within an inclusive project based learning model for students with an autism spectrum disorder?

(2) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as measured by academic achievement of all learners with autism spectrum disorders?

(3) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the emotional domain of student satisfaction within the project based learning model?

(4) What perception does the teacher have on the peer mediated instructional strategies of peer initiation and peer tutoring on the learning environment?
Students with higher support needs require explicit instruction in the social skills necessary to successfully participate in the project based learning model (Styla & Michalopoulou, 2016). However, through peer mediated instructional strategies, it is possible to shift this instruction from the teacher to a peer and therefore maintain the role of facilitator in the classroom. This shift in responsibilities offers another level of engagement to typical peers within the project based instructional model (English & Kitsantas, 2013). Therefore, the purpose of the present action research study is to examine the effects of the peer-mediated instructional strategies, peer initiation and peer tutoring, on student engagement of both typical and non-typical students in a high school setting that is utilizing a project based learning environment. Additionally, the teacher satisfaction with the intervention and its impact on the learning environment were considered.

Within this review, student engagement is examined as a whole, as well as its individual components, the cognitive, emotional and behavioral engagement of the student. Additionally, the barriers to successful student engagement and their effects on student outcomes are explored and defined. Lastly, the components of the project based learning model and the interventions of peer initiation and peer tutoring as viable options to meet the needs of the diverse learner within that model are reviewed. The historical foundations and theoretical framework of the curriculum that are represented within the project based model as well as the laws that govern the inclusion of diverse learners in the least restrictive environments are explored throughout this literature review.
Purpose of the Literature Review

The purpose of this literature review is to examine the foundations of student engagement and the effects that the learning environment has on student engagement for all students, both the typical and diverse learners. Both ERIC and Education Source were utilized to find the latest research on the areas of student engagement, the project based learning model, and the interventions of peer mediated instructional strategies. Within this review, student engagement is broken into its separate domains in order to understand the role each play in the overall engagement of the student in an effort to identify ways to improve student engagement within the targeted school. The project based learning model is examined to aid the researcher in developing an inclusive environment for diverse learners, such as those students with autism, as well as those typical students who are at risk for failure within that environment. Additionally, the researcher explored the use of peer mediated instructional strategies as a means of creating a more inclusive setting for diverse learners.

As school leaders seek to address the need for improved student engagement in our high school, our leaders have redefined the role of the teacher in the classroom through the use of technology within, relevant, authentic learning activities. The standards that guide classroom instruction focus on the application of knowledge, not simply its acquisition. With the enhanced technology of the 21st century, the acquisition of knowledge is a Google search away; however, students must understand how to apply that knowledge and understand its relevance to their world (Schiro, 2013; Green & Johnson, 2010). Bouncristiani & Bouncritiani (2012, p.5) state that “one learns best when he is actively engaged in the process of his learning. This mindset has moved from a
teacher centered classroom to a student centered learning environment. The role of the teacher has shifted from instructor to facilitator, creating a new environment to foster those relevant learning opportunities that fill the student centered classroom.

The paradigm shift from direct, explicit instruction delivered by the teacher to a learning environment that is created to address the interests, prior knowledge, and new learning outcomes for the individual student demand a major change in the critical pedagogy of the classroom (Ertmer, 2013; Harais, 2012) Critical pedagogy is defined as the way one thinks about the relationship of the student to the teacher, learning and school environment as a whole (Freire, 2004). As educators who are charged with equipping our students with those skills of application and self-discovery, it is important that we remember the students’ interests in our plans. In order to effectively facilitate the learning of our students, educators must have knowledge across content areas, be able to model and teach problem solving techniques, and build trust with our students (Freire, 2013). These skills must transcend socioeconomic status, range of abilities, and other factors that hinder the interactions between a teacher/facilitator and the students (Robinson, 2012; Katz & Sokal, 2016). Through this systematic literature review, the researcher seeks to understand student engagement across all domains and formulate a possible solution to the involvement of students with higher support needs within the project based learning environment (Shernoff, Ruzek, & Sinha, 2016; Garderen & Whittaker, 2006).

**Theoretical Framework**

The constructivist learning theory postulates that learning is a result of the experiences one has within his environment while connecting those experiences with
prior knowledge (Ertmer, 2013; Haraism, 2012). A learner’s behavior is affected by the environment in which the learning is situated; the context in which learning takes place allows for meaning to be attached and further constructed based on the learner’s prior knowledge and unique experiences. The learning can then be applied and generalized.

The authentic learning opportunity that allows students to independently construct their own meaning while embedding the learning in real life contest are the tenets of the constructivist theory that guide the development of pedagogies that permeate classrooms today. These authentic learning experiences also create opportunities to build meaningful social interactions with others through the learning opportunities through collaboration in cooperative learning tasks (Krahenbuhl, 2016). Throughout the last twenty years, our educational system has been reformed with high stakes testing and teacher accountability. The constructivist theory permeates the evaluation process as administrators look for active learners who are self-directed and fully participating in the process of learning within the classroom. There are several instructional models that have developed out of the elements found within the constructivist theory including the problem based learning, project based learning, the discovery learning and case-based learning (Catteneo, 2017). Each of these pedagogies have subtle differences, yet they are student centered and have been utilized across the country to improve student engagement and achievement in our schools.

One of the fastest growing pedagogies is the project based learning instructional model (PBL). Created to allow for students to take control of their own learning, students are presented with a driving question, allowed to inquire, investigate and build knowledge to create a final product. This final product must demonstrate that the
students have a clear understanding of the knowledge and standards they were expected to learn. The process of learning is collaborative; students work in small groups to develop the end product. Each member of the group must fulfill his or her role within the group in order to create the final project. Within this pedagogy, students focus on authentic, real-life issues that are present in their own communities that form the driving questions for their projects. Students are allowed to be creative, communicate and collaborate with each other, and revise and critique each other’s work while developing the critical thinking and problem solving skills important to all students. The students enjoy input in the process of learning; therefore, they are motivated to remain engaged (Buck Institute, 2003).

In the project based model, as well as most models that are based in the constructivist learning theory, the teacher must fulfill the role of facilitator while accommodating for those students that may lack the prerequisite skills and knowledge necessary to complete the project by differentiation and scaffolding where necessary (Ertmer & Newby, 2013). One of the greatest benefits of the project based learning model is the motivation to learn as the students take control of their learning through relevant, meaningful inquiries and project development (Styla,& Michalopoulou, 2016).

**The Learning Process and Student Engagement**

Student engagement “refers to the degree of attention, curiosity, interest optimism and passion that students show when they are learning or being taught, which extends to the level of motivation that have to learn and progress in their education” (Student Engagement, 2016). The philosophy supporting the importance of student engagement can be found in the Learner Centered model proposed by John Dewey as he developed
his creation of the Ideal School (Schiro, 2013). Dewey (1938) believed that students should be allowed to explore their interests within real life setting and applications; thus, students were actively engaged as a natural response to their interest in the topic. Dewey (1938) also determined that the ideal school was not only based on student interest, it also was rich in physical, verbal, social, and emotional activities to foster growth and learning (Schiro, 2013). These progressive ideas are still prevalent today as student engagement measures how connected a student feels to his school, class and specific learning activity (Mazer, 2017). While we work under the guidance of the standards, true to life learning opportunities are important methods to improve student engagement and student outcomes (English & Kitsantas, 2013).

There are three basic domains in which student engagement is measured- the cognitive engagement, the emotional engagement, and the behavioral engagement.

**Cognitive engagement.** Cognitive engagement is denoted by the importance that the student places on grades, the learning materials and the general outcomes of learning (Sagayeadeven, & Jeyaraj, 2012). Engagement across the cognitive domain is seen through the participation of each student in his or her own learning. As students are presented with authentic learning tasks that are relevant to them in some way, students are motivated to initiate learning tasks and remain engaged throughout the learning process. Teachers can measure cognitive engagement through both formative and summative assessments as well as scoring rubrics.

**Emotional engagement.** Emotional engagement relates to the experiences of the learner with his environment and the persons within that environment (Mazer, 2017; Brubaker, 1994). While we spend hours on constructing lessons that teach the content of
our subject area within the cognitive domain, learning is a social phenomenon; there must be an emotional response that takes place during the learning process (Schiro, 2013). Grades are quantifiable and easily measured; the behaviors that support engagement can be operationally defined and observed; however the emotional domain is more difficult to measure. In reviewing the emotional domain of student engagement, one must again look to the research on the brain. An emotional response to an experience at school can have a direct impact on the outcome for that student; if students are afraid of failure or embarrassment, they will quit. If they are praised for a completed task, then they are more likely to persist and work through the next (Dugas, 2017). This emotional response to our learning environment, learning expectations, and the relevance of the topic for the learner are what drive the cognition and behaviors of engagement (Goleman, 2005).

Social- emotional learning is the process by which children learn to manage emotions, create positive relationships with peers and teachers, and make positive decisions within the learning process (Dugas, 2017).

**Behavioral engagement.** Behavioral engagement is measured by those observable behaviors that support both cognitive and emotional engagement, such as organization, studying, active group participation, and other habits that are expected to create success (Steffanson et al., 2016).

It is important to understand that what we as teachers see as important may actually hold little to no value to our students. We must, then, construct those opportunities to build meaning within our lessons, and teach those skills and build those habits that increase student engagement with the learning process. Jensen (2005) states that true engagement releases endorphins into the blood stream, the chemical responsible
for creating enjoyment. Enjoyment has been directly related to forming memories; therefore, an enjoyable, meaningful learning experience leads to more engagement and stronger learning outcomes. Physical activity mingled within the learning opportunities will create those chemical endorphins that enhance memory and stimulate learning (Jensen, 2005).

Factors that Influence Engagement

As teachers, we greatly influence the experiences of our students as we create the environment in which they learn. Our classroom environments, the relationships that we foster with our students and the learning opportunities that we provide for them are important factors that will either aid or hinder student engagement. There have been many factors discovered that impact student engagement within our classrooms. These factors have been identified through multiple research projects, with many yielding new ways to identify, measure and quantify student engagement (Fredericks, McColskey, Meli, Mordica, Montrosse, & Mooney, 2011). The relationships with learners, learning environment, and ableism as a barrier to student engagement are the focus of this next section.

Teacher-student relationships. One of the strongest factors that will determine the degree of student engagement and success within our classrooms is that of the teacher-student relationship. Students want to identify with their teachers and feel valued and accepted. Teachers must show a genuine interest in the student, and the student must feel accepted by their peers (Shernoff, Ruzek, & Sinha, 2016). The emotional connection that the student feels with the teacher fosters a greater degree of participation in class activities and an increased interest in the presented tasks (Fredericks et. al., 2004;
A critical factor that can be improve or hinder a teacher – student relationship is that of a cultural consciousness. As a teacher, one must be aware of the bias that he or she carries into the classroom - the unconscious expectations that are placed on a student due to race, poverty or abilities (Howard, 2010). One must be willing to accept the cultural differences within the classroom, and treat each student with respect regardless of that student’s background or cultural differences (Warren, 1999; Vulchi, P. & Guo, W. 2017). With those considerations in mind, educators must decide how best to create that unique learning environment that is supportive for all students. The opportunities for students of color, poverty or disabilities must be rich, relevant and meaningful for the student, and yet support the varying needs present in these student populations (Howard, 2010).

**Environment.** When one considers the impact that student engagement has on student outcomes, educators cannot ignore the influence of the learning environment itself. The aesthetic properties within the classroom are important; these include the physical properties - seating, temperature, lighting, noise, and sensory accommodations (Jensen, 2005). However, the most important environmental factors for which we, as educators, have control over are those of autonomy, interest development, and competency within a supportive setting for the students. The culture that we as teachers build in our classrooms greatly impacts the cognitive, emotional and behavioral domains of student engagement. The learning environment must be inviting for all students from all socioeconomic backgrounds, race and abilities (Bradford, Mowder, & Bohte, 2016). This positive learning climate is imperative to building and maintaining a positive

Within our learning environments, we have multiple ability levels, differing socio-economic status, and different home environments that create a diverse and complicated dynamic within the classroom (Garderen & Whittaker, 2006). Research on student engagement suggests that schools should create environments that meet the developmental needs of all of their students so that all can fully participate and maintain engagement throughout the learning process (Steffansson, Gestsdottir, Geldhof, Skilason, & Lerner, 2015). In this study, researchers found that when trying to improve student engagement, educators must consider all three components of engagement, the cognitive, behavioral and emotional, in order to effect the greatest improvement (Steffanson, Gestsdottir, Geldhof, Skilason, & Lerner, 2015). This finding is significant to my current research study in that the implementation of peer tutoring and peer initiation will directly impact all domains of student engagement. As the students are trained to initiate interactions with their peers with higher support needs, they will develop a sense of accomplishment and build relationships with their peers (Simpson & Bui, 2016). These relationships, in addition to the peer tutoring, allow students of all abilities to be an active part of the learning process, which has a positive effect on the cognitive and emotional domains of engagement. As students learn to work together, the positive behaviors that mark the behavioral domain of engagement will increase (McCoy & Cole, 2013). Additionally, as student participate as peer tutors within their learning environments, the level of their own learning increases as they have to explain it to others thus increasing their own cognitive engagement (Mortweet, 1999).
Traditional vs. progressive settings. Within our traditional classrooms, the role of the teacher and student are clearly defined; the teacher is in control and the content is typically delivered in a direct-instruction, lecture style. While this approach has been in place for years, the effects of teacher control versus student control of learning has proven to be less effective in increasing student engagement (White, Kuntz, Whitham, Houston, & Nugent, 2015). As a result, teachers have been trained to use guided inquiry, cooperative learning activities and hands-on activities to enhance learning and improve student engagement (Machtinger, 2014).

Learning activities that go beyond the traditional direct instruction model to enhance engagement are formed through the use of technology, group dynamics and interest filled learning tasks over which the student is given some control. (New Tech Network, 2016). Shernoff et al. (2016) further find that within the learning environments, it is important to support communication and collaboration between the teacher and students as well as peer to peer. Mazer (2017) states that “students who experience emotional interest are pulled toward a subject because they are energized, excited, and emotionally connected with the content. Students who experience cognitive interest are connected to a subject because they possess a clear understanding of the content” (p.352). However, Mazer (2017) further found that the emotional support within the classroom would enhance the effort of the student (Goleman, 2006). Therefore, within the learning environment, the individual needs of the student must be considered in order to make positive changes in student engagement.

These ideas of emotional support, choice, and learner autonomy are most fully supported by the learning centered philosophies (Schiro, 2013). The ideas of Pestalozzi,
Rousseau, and Froebel shaped the learner centered approach to education as they all stressed the importance of the student’s development and individual interests (Schiro, 2013). Dewey furthered these ideas as he felt that children learn by doing, examine problems and solve them through exploration (Dewey, 1938). The ideas of these men laid the foundation for the Progressive movement in education which fosters a child-centered approach to education emphasizing critical thinking skills and problem solving through experiential learning opportunities (Garte, 2017). The progressive movement shifted the focus of education from the institution to the child, allowing that the child should explore his or her interests as he or she learned. The movement was further supported by the findings of Maslow and Piaget who focused on the development of the child and the needs of each person that must be met to be happy and meet his or her full potential (Schiro, 2013). As the individual needs of the students become the focus of the classroom, student engagement increases across the cognitive, behavioral and emotional domains (Shernoff, et. al., 2016).

**Ableism.** The cognitive, emotional and behavioral domains of student engagement are all affected when a student is identified with a disability. When considering the needs of a student with higher support needs, one must consider the most appropriate placement and delivery of services; however, these considerations very often remove the student from his or typical peers and limit the opportunities to actively control their own learning. Students with disabilities are marginalized in our schools because they are set apart from their typical peers during instructional times due to their individual needs. Often, those students with disabilities are placed in a self-contained classroom with few opportunities to build the social skills, behavioral management skills,
and emotional bonds with typical peers within natural school settings. When those students are thrust into the mainstream classes, they lack the experiences to transition smoothly; therefore, discipline problems arise that even further limit the students’ access to typical educational opportunities. Unfortunately, those students with disabilities are also more likely to be suspended, expelled or drop out of school due to discipline or lack of motivation to attend classes with an 18% drop out rate among students with a disability. (NCES, 2016). Within the ideas of the learning centered environment, the individual needs of the student are important. The ideas of Gardner supports developing learning activities that support the student’s multiple intelligences (Schiro, 2013) As there is an increased pressure to include diverse learners with special needs within the general classroom, there are challenges that arise for both the teacher and the learners (Garderen & Whitaker, 2006). One of the most challenging responsibilities for the classroom teacher is the differentiation of instruction based on the needs of the student (Garderen, & Whitaker, 2006). The standards that drive instructional practices today identify the key concepts that are to be covered in our classrooms; however, there are students that are not able to access the curriculum at the same level of their peers (Dugas, 2017). The process of accommodating those learners can sometimes seem overwhelming, and the inclination to push these diverse learners to the side is strong (Pazey & Cole, 2013). These factors can result in poor student engagement and low approval ratings from the parents of students with special needs. Across all disabilities, 13.8% of all students with an identified disability are served in a self-contained setting within our schools, spending less than 40 percent of their day with their typical peers. This figure is somewhat misleading as the data also indicates that 33% of our students with autism are served in a
self-contained setting, while 49.4% of our students with intellectual disabilities are removed from the general education classrooms more than 60% of the day (NCES, 2016). The figures are staggering as one examines the types of disabilities that show a pattern of exclusion from the social, emotional, and academic environments of our schools. These figures show a substantial increase in the exclusion of students with higher behavioral support needs within the general educational setting (Marx, Hart, Nelson, Love, Baxter, Gartin, et. al, 2014). The exclusion of students based on behaviors and individual differences has set up the perpetuation of ableism within our classrooms (Ellman, 2012). Ellman defines ableism as “the discrimination and exclusion of disabled children by their nondisabled peers” (p.15). Wendell (2013) writes that disability is constructed by the “failure to give people the amount and kind of help they need to participate fully in all major aspects of life in society, including making a significant contribution in the form of work” (p.483). We have become a society of instant gratification; when an individual takes longer to complete a task than another, then a mindset of ableism develops (Wendell, 2013). Those students and citizens with disabilities may need accommodations to access the world, but they cannot be excluded from it (Department of Education, 2017). Adults with disabilities rely on funding from social assistance to survive, and yet, they do not make enough to remain above the poverty line within the United States due to the programs that are designed to push adults on public assistance to actively seek employment (NIDILLR, 2016). For those adults with disabilities who are unable to work or make a wage that allows them to fully experience autonomy, a framework of ableism is built. This type of framework is present in our schools as well with 13.8 % of students with disabilities served in self-contained
settings across the nation (NCES, 2016). In the state of South Carolina, there is no state recognized diploma for students that have remained within the self-contained instructional model during their high school years; therefore, these students lack the basic credential required to become gainfully employed. The unemployment rate among those without a high school diploma in 2016 was 7.4% for those of 24 years old and over (US Department of Labor, 2017).

The challenges that face districts in serving our students with special needs are immense; however, it is imperative that the students receive a free and appropriate education that meets their individual needs. The student centered, hands on approach that incorporates rigor with adequate supports is required to overcome the effects of marginalization that our students with special needs face in our schools. Once the effects of marginalization are mitigated, then those students can fully participate and control their learning environment and increase their overall engagement in the school setting.

Autism and Intellectual Disabilities

Two such populations of students that are highly affected by this mindset of ableism are the students that fall on the autism spectrum as well as those with intellectual disabilities. Over 49.6% of students with intellectual disabilities and 33% of students on the autism spectrum are served in the self-contained setting, placing these students well above the national average (NCES, 2016). Autism is characterized by “deficits in communication and social reciprocity along with the presence of repetitive behaviors than impact one’s ability to fully participate in social, occupational or other areas of functioning” (Mayo Clinic, 2014). Due to these deficits, many students with autism are seen as unable to participate in the general education curriculum. The self-contained
setting offers far less opportunities for interaction with typical peers who are being served in the general education setting. These types of social interactions are an integral, necessary component of relevant learning experiences for students with autism. As educators seek to create educational opportunities for students with disabilities, those students with autism have been found to benefit from interactions with typical, non-disabled peers in natural settings. These settings are found in play areas, cafeterias, and assemblies, but also within the content driven classrooms (Simpson & Bui, 2016). In their study of 25 students with autism over multiple classroom settings, Steinbrenner and Watson (2015) found a positive correlation in joint engagement with peers when the learning activities were student directed. Therefore, the students with autism, through practice and support, could benefit greatly from student centered, supportive environment that allows for constant interaction with typical peers.

As students with higher support needs such as autism and intellectual disabilities are allowed to fully participate in the student centered environment with typical peers, both the typical and atypical students build relationships with one another, strengthening that emotional engagement that is so important to motivation and learning (Hall, ). Additionally, those students that participate in authentic learning experiences that foster collaboration, teamwork, personal responsibility, and higher order thinking skills learn through their new experiences and attach relevance to their learning. This relevance leads to greater motivation and impacts the behavioral and cognitive domains of student engagement (Steinbrenner & Watson, 2015; Ezafe & Bond, 2014).

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Project Based Learning Model

The project based learning environment has been selected to be the setting for the current Action Research project. A review of the current research available follows. Additionally, the interventions of peer tutoring and peer initiation will be reviewed as the target interventions for the current research study.

Project-based learning environments. The project-based learning model, a progressive, student-centered approach to learning, has had significant successes within the last twenty years as programs such as the New Tech Network have been expanded across the country (New Tech Network, 2016). The Buck Institute for Education, (2003), defines project-based learning as a systematic teaching model that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic (real-life) questions and carefully designed products and tasks” (p. 4). The project based learning model has been proven successful with a wide range of students, including those students with higher support needs. This model is found to naturally lend itself to differentiated instruction as the culture of the class is established during the project roll out (Dobyns, 2017). The typical project based learning opportunity has several key components which include Project/Problem Launch, Guided Inquiry and Product Creation, and Project Conclusion. During these phases, students must develop and utilize the learning skills of forethought, performance and reflection (English, & Kitsantas, 2013).

As students grow in a learner centered environment, the environment itself, the structure of the learning components, and the roles of both the teacher and the students are important to the success of the model (Schiro, 2013). In a project-based learning
model, there is choice built into the learning opportunities; however, each learning opportunity is carefully planned to provide meaningful, authentic learning opportunities for the students. Within this model, the expectations of the learning environment as well as the culture of the classroom must be established during the initial phase of the class. Among both typical and non-typical learners, differences in abilities to interact within the organization of a project-based classroom will emerge (English, & Kitsantas, 2013). Within an inquiry-based group dynamic, student must adapt to the cooperative learning tasks effectively. This adaptation in both social and cognitive skills may require differentiated instruction in order for the culture of the class as a whole to emerge successfully (Dugas, 2017). The process of differentiation, meeting the child where he is and guiding him to where he needs to be, is an individualized, student centered process (Dugas, 2017; Ellman, 2012). Additionally, as this differentiation occurs and the students are working on establishing the culture of their classroom, the social-emotional learning serves to connect the students to each other and the learning process (Mazer, 2017). As these students become more and more connected, there is decrease in the negative behaviors that impact student engagement (Dugas, 2017).

Within the project based model, there is role that every student can fill; the multiple intelligences of the students are embraced and learning is tailored to the strengths of each student within the group. Through activities that cross all domains of intelligence- verbal/linguistic, logical/mathematical, visual-spatial, kinesthetic, musical/rhythmic, and interpersonal, every student can find a way to actively participate in the learning (Gomaa, 2014). Each student embraces and learns to utilize their emotional intelligence-self- awareness, self-regulation, motivation, and empathy-
become an integral part of the culture of the classroom (Chapman, & King, 2012). Within the classroom environment, teachers shift from the role of teacher to that of a facilitator, guiding students in their learning and giving support for the many learning levels within the classroom (English & Kitsantas, 2013). Students are encouraged and motivated to complete the tasks at hand because their natural curiosity has been awakened (Brubaker, 2004). Students receive feedback from the teacher throughout the process of learning, therefore creating a positive dynamic between feedback and assessment (English, & Kitsantas, 2013).

Comparing the project based model of learning to the traditional, direct instructional model in teaching energy conservation and the nature of renewable resources at the secondary grade level, Karpudewan, Ponniah, and Zain (2016) found that higher test scores were attained from the group of students engaged in the project based learning model over those scores of the traditional group. Additionally, in student surveys among the two groups (traditional and PBL), those students who participated in the project-based model indicated that there were significant changes in their attitudes, beliefs and behaviors about energy conservation upon completion of the project.

Another study carried out by Styla and Michalopoulou (2016) sought to determine the effects of project based learning in literature on secondary students, grades 6-12, in the development of social skills. The researchers examined the effects of PBL on the skills of cooperation, assertion, and self-control and empathy using a triangulated methods research design that collected qualitative data using pre- and post- tests, interviews, and observations (Mertler, 2017; Styla & Michalopoulou, 2016). Styla and Michalopoulou (2016) found that the project based model increased the social skills of
students across all domains. This finding was significant; however, the researchers stressed that the integrity with which the project-based model was implemented had significant effects on the results in the growth of social skills among the students (Styla, & Michalopoulou, 2016).

While Styla and Michalopoulou found that the integrity with which the PBL model was implemented could directly impact the efficacy of such models, Meyer and Wurdinger (2016) found that the manner in which this model is implemented is varied among teachers, therefore the effectiveness of the model as a whole is difficult to define. However, in their review of previous research, project-based learning has been particularly successful in improving communication, cooperative learning tasks, and problem solving among participants. Motivation and self-esteem have been positively impacted by the PBL model as well (Meyer & Wurdinger, 2016). Within their study, Meyer and Wurdinger examined the students’ perceptions of life skills development while participating in the project-based learning models. The results of their research indicated that the life skills of the students did improve, and the students held that their life skills were stronger as a result of the project based model (Meyer & Wurdinger, 2016). In their study they used Likert scales, interviews, and focus groups to gather both qualitative and quantitative data to triangulate their data (Meyer & Wurdinger, 2016).

These research studies support the Eric Jensen’s research which found that cooperative learning tasks and social interactions increase motivation and engagement among students (Jensen, 2005). He goes further to suggest that our “social environment in school actually shapes our physical brains, affecting the visual systems, frontal lobes, sensory cortex, and emotional pathways of the brain” (p. 101). As one examines the
impact that the project based learning model has on the affective domain through the
development of social skills and student motivation, one can see the model’s efficacy in
improving student engagement.

Another key element that must be considered within this model is the
development of the 21st century skills that will be required for these students to be
successful after they leave high school. The New Tech Network adds a layer of
technology within the project based model that has yielded success with students and
faculty (New Tech Network, 2016). The integration of technology adds another
component of ‘real life learning opportunities’ to the curriculum of the project based
learning classroom, as students are expected to be able to access the technology of today
to complete project tasks, much like they would experience within the work place. In a
research study performed by Hanover Research (2013), the New Tech Network examined
the impact that the integration of technology had on student achievement. In their report,
they review learning outcomes, student achievement and engagement, as well as
stakeholder satisfaction with the integration of technology in a project based model.
Every student in a New Tech school has his own computer, with a 1:1 ratio of computer
to student required within the framework of the New Tech model. Hanover (2016) found
that students’ graduation rates were higher than that of the district in which the New Tech
schools were housed; attendance rates were higher, and satisfaction among stakeholders-
the parents and community- was more positive. The key components to their success
were listed as the computer to student ratio, the partnerships with businesses and
community members, and the learning environment which included specific design
components and class size caps with additional support readily available within the classes (Hanover, 2016).

In a third action research project reviewed, Holmes and Hwang examined the effects of project based learning on secondary mathematics. Through a mixed methods approach, researchers sought to determine the effects of PBL on the math achievement and motivation of the students in the longitudinal study across algebra and geometry classes with a PBL school and a traditional school acting as a control group (Holmes & Hwang, 2016). Cognitive skills, internal motivation and external regulation within the students’ environments were measured. Data was collected on how well the students remained on task and actively engaged as well as the critical thinking skills and strategies utilized to complete the task. Students were expected to manage their own behaviors and interact successfully within the collaborative, classroom environment. The effects on the achievement gap for students in poverty and those that were labeled at risk that did not have a rich background in math were also measured as a byproduct of the initial research. It was found that there was a decrease in the achievement gap between the PBL students, even within the subgroup of those in poverty, over those in the control group that did not participate in the PBL environment. When comparing students on the basis of race, this factor was not seen as significant within the PBL environment (0.9 point difference), yet it was still a significant factor in the control group (4.13 point difference) (Holmes & Hwang, 2016).

Each of these studies are significant for the current study because they show that the students, even those with lower academic skills initially, were able to participate and thrive in the project based learning model. Lydia Dobbyn’s, in an address to stakeholders
at the New Tech Summit expressed the movement in the project based model to move to meet the individual needs of the students within the classroom. The focus has not changed from the collaborative, group environment; yet, there is a movement to address the varied needs of the individual learner (Dobbyn’s, 2017). This validates the use of the project based model across all ability levels to allow for the hands-on, relevant learning tasks that will prepare each of our students for a life after high school. This is important for all of our students; however, it is even more important to foster that independence and work ethic in our students with disabilities who are so often found in the unemployment rolls after high school.

**Accommodations to the project-based learning environment.** As teachers address the issues of ableism and the needs of all diverse learners, it is necessary to develop accommodations that allow those students with higher support needs the access to the least restrictive environment (IDEA, 2016). In my role as a teacher who serves students with autism, I identify the accommodations that I feel are most beneficial to my students. For those students with autism, the use of peer mediated instructional strategies has been found successful to allow inclusion in the general education classroom (Ezafe & Bond, 2014; McCurdy & Cole, 2014). Within the project based learning environment, the role of the teacher shifts to that of a facilitator. Therefore, when introducing students with higher support needs into that environment within an inclusive setting, the students that will serve as role models must be taught how to effectively interact with those students that have higher support needs. The use of peer mediated instructional strategies have been found successful in creating that student to student relationship which allows the teacher to maintain the role of facilitator and guide (Simpson & Bui, 2016).
Peer mediated instructional strategies. As the target school shifted to the project based model, it was necessary to find interventions that may better connect my students with autism, intellectual disabilities and higher behavioral support needs to the curriculum and mode of learning. As a product of this search, two peer-mediated instructional strategies, peer tutoring and peer initiation, were identified as strategies that could support my students’ successful inclusion into this model of instruction and curriculum shift. Peer mediated instructional strategies are designed to teach typical students how to successfully interact with students who are atypical (Simpson, & Bui, 2016). It is understood within this process that the benefits within this intervention go beyond the changes that occur in the educational and social behaviors of the students with higher support needs; this intervention also changes the typical peer who learns to find the commonality with his or her peer. This approach supports the elimination of ableism in the classroom as each student is valued for his presence in and contributions to the learning process (Simpson, & Bui, 2016). Neitzel (2008) found in a meta-analysis of peer mediated instructional strategies that are found effective across all age groups in the areas of academic, interpersonal, and personal social development. Within a cooperative learning setting such as the project-based learning model, peer mediated instructional strategies have been found successful in promoting cooperative learning tasks with both typical and not-typical peers as both are engaged in the peer mediated activities (Utley et. al, 2008).

Peer tutoring. Peer tutoring is a method in which students within a class setting are trained to teach students with higher support needs. Peer tutors are used to provide one on one instruction, practice, repetition, and clarification of concepts for their peers
that require additional help to access the curriculum (Utley, Mortweet, & Greenwood, 1997).

In a study performed by McCurdy and Cole (2014), the use of peer support interventions, such as peer tutoring, to control off task behaviors within a general education classroom was found to decrease problematic behaviors significantly. In fact these off task behaviors were reduced to a level of their typical peers. This study provides support for the idea that when students are sufficiently trained to address the behaviors of students with autism, and appropriately model the appropriate behaviors, then the student with autism can be successful within a cooperative learning task. The academic engagement of the participants in the study was seen to have a positive trend within the data as the target off task behaviors were addressed through the peer interactions. The student with autism requires strong role models within the classroom setting to learn how to socially connect with their peers, as this is one of the deficits defined by the autism spectrum disorder (Hall, 2013). However, this study shows that peer intervention of peer tutoring is an effective means to improve student engagement across both typical and non-typical peers (McCurdy, & Cole, 2014).

**Peer Initiation.** Peer initiation is another peer mediated instructional strategy designed to improve the social interaction of students with disabilities within their environments (Kamps, Greenwood, Arreaga-Meyer, Veercamp, Tapia, & Bannister, 2008). Typical peers again serve as the change agents within this model; they are trained to bring the students with disabilities into the conversation or task by prompting those students with higher support needs to respond and become active in the learning process. This intervention requires that the typically developing peer be trained in the expectations
for the group dynamic or task at hand (Kamp’s et. al, 2008). Peer initiation is a strategy that allows a peer to gain the attention of the student with autism and maintain that attention in moments of joint attention to a task. In their study on student engagement, Steinbrenner and Watson (2015) found that student directed initiations were responded to more fully and for longer periods of time than teacher initiated interactions in the classroom setting.

In utilizing the specific interventions of peer tutoring and peer initiation within the project-based model, the skills that are necessary for cooperative learning tasks can be modeled, cued, and directed by the students. The student directed interventions are important to allow the teacher to maintain the role of facilitator within the project based model.

Summary

Positive student outcomes depend on active cognitive, emotional and behavioral engagement (Shernoff et. al, 2016). As educators, we must activate our student’s curiosity and stimulate engagement at all levels (Brubaker, 2004). This can be achieved through student centered lessons that allow each student to follow his interests and exercise control over his own learning through active, multi-faceted lessons that reflect multiple intelligences and cross the affective domain (Goleman, 2006; Coleman & King, 2013).

It has been proven that the project-based learning model is successful in improving student engagement (Karpudewan et.al); therefore, some districts have begun the shift from the traditional classroom setting of teacher directed instruction to the project-based learning model (BIE, 2013). However, some of our students do not possess
the skills necessary to fulfill the necessary roles in these progressive classroom settings (Dugan, 2017).

Among those that need to develop the skills necessary to interact successfully in the project-based learning model are the students with special needs who find themselves in an unfamiliar setting. The peer mediated strategies of peer tutoring and peer initiation have been successful in increasing the interactions of students with autism with their typically developing peers across multiple settings (McCurdy, & Cole, 2013). In an effort to increase student engagement within the project-based learning model, this researcher has proposed this present Action Research project to determine the impact of the peer tutoring and peer initiation on student engagement for both typical and non-typical students.
CHAPTER 3

METHODOLOGY

In an effort to improve student outcomes within our district our district leaders are systematically moving to a project based learning model as an alternative to the traditional, direct instructional model that has been utilized almost exclusively within our district. The current shift in instructional practices comes as a result of a pilot program that our district has been involved in since 2013. The success of our New Tech Network School has been well documented; the progressive ideas of project based learning have proven more successful than our traditional classroom settings (Crosby, 2017).

Student engagement is a constant struggle within most traditional, teacher-centered learning environments (Fredericks et. al., 2011). Many students are able to disengage from the learning process while still being physically present in our classrooms. The alternative is to create learning opportunities that are connected to situations with which they can relate and motivate them to get involved in the process (Holm, 2011). The lack of student engagement is school wide across all student populations. The changes that are being made at our core level of instruction are designed to address those students who are merely present but not excited about the learning process. The project based learning model provides authentic, student centered learning experiences that enhance the critical thinking skills that are necessary as a college and career ready SC graduate (Holm, 2011).

As such, I have been faced with the challenge of creating learning opportunities for my students with autism within the new project based learning model that allow for their unique differences from their typical peers. I fully support the ‘real world’ component of
the project based learning model; however, the challenges that my students face in group settings and relating to their peers present various obstacles that must be addressed in order to provide authentic opportunities for success within the project based model. Therefore as a practitioner who desires to best meet the needs of my students, I have embarked on an action research plan that will address my students’ unique needs within the project based learning model to find those peer mediated instructional strategies that will engage both the typical and non-typical learner in my classroom.

Throughout this research, I gathered both qualitative and quantitative data to support my findings within this project. The project-based model employs a varied format of assessment throughout the project; therefore, the research was conducted using a convergent, mixed method research design (Mertler, 2007; Creswell, 2010). An initial needs assessment, student artifacts such as culminating projects formative and summative assessments, as well as journals, interviews, behavioral observations, and rating scales were collected to determine the effectiveness of peer mediated instructional strategies within the project-based learning model across all domains of student engagement as measured by the development of social skills, on-task behaviors, and emotional investment in the learning process and classroom environment.

**Purpose**

The purpose of the present action research study is to examine the effects of the peer-mediated instructional strategies of peer initiation and peer tutoring on student engagement of both typical and non-typical students in a high school setting while participating in a project based learning environment. Student engagement is defined as cognitive challenge, emotional investment and individual voice in learning opportunities.
Within this definition, there are cognitive/academic, emotional and behavior components of student engagement that can be measured and observed, and therefore, improved upon (Fredricks et al., 2011). My high school is systematically moving from a traditional, direct instruction model to a student centered, project based model in an effort to address some of the problems of student engagement within our district (Foster, 2016). This shift from teacher centered to student centered learning necessitates that I find strategies that explicitly teach my students with autism how to fully participate in a group learning model. I have identified two strategies, peer initiation and peer tutoring, that I feel are most beneficial within the project-based model; therefore, my action research focused on the effects that those strategies had on the overall level of student engagement of both typical and non-typical learners within the study.

**Research Questions.**

I identified my research questions to be examined through a convergent mixed methods research design as follows:

1) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the development of social skills within an inclusive project based learning model for students with an autism spectrum disorder?

2) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as measured by academic achievement of all learners with autism spectrum disorders?
3) What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the emotional domain of student engagement as measured qualitatively through journals and student interviews on student satisfaction within the project based learning model?

4) What perception does the teacher have on the peer mediated instructional strategies of peer initiation and peer tutoring on the learning environment?

**Research Design**

Action research is a means by which a teacher can identify areas in his or her own environment or teaching style that need improvement or study in order to be a more efficient practitioner and provide better outcomes for all stakeholders. Further, educators must reflect on current practices and identify those areas on which we can improve (Mertler, 2017). Using a convergent, mixed methods research method, data was collected using four different data sets across both qualitative and quantitative domains simultaneously. The students with special needs participated in an initial needs assessment to determine student weaknesses in social skills in the areas of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control (Gresham & Elliott, 2008). Once the areas of deficit were defined using this quantitative measure, these areas were operationally defined and observed to yield both pre-intervention baseline data in the project based learning environment as well as the intervention data when the peer mediated instructional strategies were introduced and utilized. The impact of peer mediated instructional strategies of peer initiation and peer tutoring was measured through the changes in student artifacts and grades from the baseline phase to the intervention phase to further determine the effectiveness of the
intervention for the students with special needs as well as the intervention’s effect on the students who delivered the intervention.

Inherent within the design, there were areas of self-reflection for the individual learners, adding an additional layer of meaning for the student participants. Qualitative data was collected during the entire process through journals, either written or digital, from all participants that addressed the overall satisfaction with the process and the learning within the project. Lastly, interviews were conducted with the paraprofessionals and used to assess the perceived effectiveness of the intervention within the classroom setting.

As a secondary goal of this research, I wished to develop a greater understanding of and acceptance for the individual differences of all learners, both the typical and non-typical student alike. The use of self-reflection allowed the learners and the teachers and paraprofessionals to reflect on their roles in this project and the individual meaning it held for them (Simpson & Bui, 2016).

**Research Site**

The site of the research is a high school in SC located along the I95’s Corridor of Shame. This site has over 1600 students currently enrolled with over 10% of the student population served as students with special needs. The school serves students in grades 9 through 12 and those with special needs ages 14-21. There are four classes that are self-contained, with other students served in a resource model, inclusion setting or a consultative model. Within the school, two schools within a school have been established that deliver instruction exclusively within the project based learning model.
The high school has an 86.5% graduation rate, improving significantly from the 73.1% in 2014. The first class for the PBL school in 2017 achieved a 100% graduation rate with higher scores on college entrance exams, the ACT and SAT, and end of course tests for each grade level. There are plans for this model to expand throughout the school with one more wing adopting the project based model in the 2018-2019 school year. All teachers have undergone extensive training for the project based model, and all are preparing for the transition to the project based learning model.

Sample

The sample for this research consisted of student groups, comprised of three typical students to two students identified as students on the autism spectrum or with a behavioral or communication disorder, within a project based learning classroom. The classroom setting was an inclusive psychology class taught by the researcher, a secondary special education teacher that is also certified in the area of psychology. The typical peers, ranging from 10th to 12th graders, who expressed an interest in being peer mentors to their counselors, were pulled from an area of the school in which the project based learning model has been fully integrated successfully across all content areas. Those students with special needs ranged from 9th to 12th grades, ages 14 to 21. All students that were enrolled in the psychology class received a Carnegie unit of credit for completing the course with a passing grade.

Those students with special needs involved in the study were cognitively capable of participating in the class with strong supports to accommodate for both the communication and behavioral issues that arise from their diagnoses. Instructional and behavioral supports as determined by their individual educational plans were strictly
adhered to throughout the research period in addition to the intervention being tested in this research.

Those students selected as peer tutors were selected from the members of the class based on interest and ability to interact with those students with special needs comfortably.

**Intervention.**

The peer mediated instructional strategies of peer tutoring and peer initiation were chosen for implementation in this research due to the natural context in which they can be implemented in the setting. The selected peers were trained within the baseline period of the research to aid their partners in initiating a conversation, taking part in a group, and collaborative work within the classroom. The researcher used direct instruction to teach the peer mediators how to interact with the students with higher support needs through modeling, role play, and video modeling. This instruction took place in small groups during the week after the baseline data has been taken. During this instruction, the students were randomly paired and spent two class periods practicing with each other as they become comfortable with the process. Additionally, the typical students were also trained in tutoring techniques to aid those students with special needs to fully understand and participate in class. During the training in peer tutoring, the students were placed in groups in a 2 to 1 ratio of typical to non-typical students and work together to answer content related questions on motivation. Support was given to each pair throughout these activities to ensure that the interventions were being effectively implemented.
Data Collection Instruments

The following instruments were utilized to collect both the qualitative and quantitative data points.

- Social Skills Inventory Scale, as a needs assessment for the students with special needs (Gresham & Elliot, 2008). These scales were completed by the parents, students and teacher of the students with special needs to identify weaknesses in communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. The SSIS is designed to be a used as a class wide or school wide screening instrument for social, motivational, and academic skills for all students (Elliott & Gresham, 2007). This assessment is designed for students of all levels and can be administered across age groups to inform teachers and other stakeholders of the needs of all students. The scales administered during this research were standardized from September 2006 to October 2007 through a nationwide sample with 4700 participants, aged 3 to 18, across 36 states. Both reliability and validity data was collected during the studies to ensure that the scales measured what was intended across a wide variety of individuals with or without higher support needs (Elliott & Gresham, 2007).

- Teacher created behavioral data collection sheets to measure frequency and opportunity for the targeted behaviors identified through the needs assessment to measure baseline and intervention phases. In order to preserve the integrity of the collection sheets, these were reviewed by a subject matter expert to ensure that they met both the district and research standards. These data collection sheets were utilized during the observations.
• Student performance on project rubrics assessing both academic content and collaboration, both in baseline and intervention phases. During each project, there were opportunities for both formative and summative assessment scores as learning opportunities were scaffolded to meet the individual needs of all of the students. Teacher created formative assessments were given throughout the project to ensure that all students have a clear understanding of the content area. The grades were closely monitored by all teachers and correlated with each phase of the research. See Appendix F for the rubric that was used to score engagement within the project based learning environment. There were four projects during the research phase that will be included in the findings of this research. Each student was asked to demonstrate mastery of the content through formative assessments throughout the project such as exit tickets, short answer quizzes, or the personal creation of an individual student artifact such as an essay or poster. The class was put into groups and each group then chose a topic within the project parameters to create a power point presentation, multi-media presentation, or artifact of their choice for a final summative assessment of the content knowledge necessary for each project.

• Journals – Students created journal entries at least six times during the research project, with at least one occurring during the baseline phase.

• Semi-structured teacher interviews were conducted at the end of the research period to record the reactions to the intervention from all teachers and paraprofessionals involved within the process. The interview questions are included in the Appendix B. These questions were piloted during the baseline
phase of data collection to validate the shared understanding of the questionnaire among all of the teaching assistants that are involved in the research setting. The results of the pilot interviews proved that all teaching assistants fully understood the parameters of the research and were able to actively participate as needed within the data collection process. These interviews provided qualitative data that served to support the quantitative data provided by the student grades and artifacts.

- Student surveys were conducted at the end of each project to measure the student satisfaction with the project, the peer interactions, and the group dynamics. This qualitative data was used to support the quantitative data collected during the observations and provided a measure of the effects of the interventions on the emotional domain of student engagement for each project. A copy of the survey is attached in the Appendix H.

There were three components of student engagement measured throughout this research opportunity. Student engagement is made up of the cognitive/academic domain, the emotional domain described as the importance or relevance the student places on the work and his or her satisfaction with the environment and learning opportunity, and the behavioral domain as measured by on task behaviors, study habits, and social skills (Fredricks et. al., 2011). In order to measure each of these areas effectively, both qualitative and quantitative analysis of data were utilized, creating a convergent mixed method research design as the data is collected across both domains simultaneously. This allowed a clearer understanding of the impact of the study on each participant (Mertler, 2007). As students worked together within a project based learning opportunity, data
collection sheets were utilized to document behavioral observations that assessed the skills targeted on the social skills inventory scale and identified components of student engagement (Fredricks et. al., 2011). An observational instrument specifically designed to record behaviors in social skills development, off task behaviors, and academic progress in the content area, were utilized to ensure that all observations are objective and complete and that an accurate percentage rate of defined behaviors can be recorded across the sessions. A sample data collection sheet is shown in Appendix C. These behavior data were quantified to measure the impact of the peer mediated instructional strategies during the intervention phase of the research. Simultaneously throughout the project as a natural part of the work, there were both formative and summative assessment scores that quantified student progress with the identified standards within the project and support the mastery of content and changes in engagement across the cognitive domain. Scoring rubrics were also utilized to evaluate the mastery of content on student artifacts throughout the project. To assess the emotional domain, the students maintained a journal to reflect on what they learned as well as how they felt as they employed the peer mediated instructional strategies with their peers. The students were asked guiding questions to aid in the journaling activities.

Table 3.1 below outlines the data collection processes of the current research. Each research question, collection instrument and data type is outlined in the table for clarity.
Table 3.1

**Data Collection Methods**

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Instrument</th>
<th>Type of Data</th>
<th>What is measured?</th>
<th>Method of collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1: Impact of PI and PT on social skill development</td>
<td>Social Skills Inventory Scale</td>
<td>Norm Referenced Quantitative Data</td>
<td>Social Skills Development</td>
<td>Completed surveys from teacher, parent and student.</td>
</tr>
<tr>
<td>RQ 1: Impact of PI and PT on social skill development</td>
<td>Behavioral Data Collection Sheet*</td>
<td>Percentage of Opportunities</td>
<td>Targeted Behaviors as Identified by Inventory Scale</td>
<td>1. Momentary Time Sampling 2. Per Opportunity</td>
</tr>
<tr>
<td>RQ 2: Impact of PI and PT on student engagement in the cognitive domain</td>
<td>Grades on project rubric, formative and summative assessments</td>
<td>Quantitative Data</td>
<td>Scores on rubric, formative and summative assessments given during scaffolding</td>
<td>Gradebook Power Schools</td>
</tr>
<tr>
<td>RQ 3: Impact of PI and PT on student engagement within the emotional domain (student satisfaction)</td>
<td>Journals</td>
<td>Qualitative Data: Journals</td>
<td>Student perceptions</td>
<td>A minimum of six journal entries.</td>
</tr>
<tr>
<td>RQ 3: Impact of PI and PT on student engagement within the emotional domain (student satisfaction)</td>
<td>Student Survey</td>
<td>Quantitative Data: Surveys</td>
<td>Likert Scale date on student satisfaction with group dynamics and project content.</td>
<td></td>
</tr>
<tr>
<td>RQ 4: Perception of the learning environment from teacher/teacher assistants.</td>
<td>Interview</td>
<td>Qualitative Data</td>
<td>Teacher perceptions of the learning process.</td>
<td>An interview of the teacher(s) and paraprofessionals involved in this research.</td>
</tr>
</tbody>
</table>

*PI is Peer Initiation; PT is Peer Tutoring*

**Data Analysis**

The data collection process in this research allowed for a triangulation between the qualitative and quantitative data to obtain a clear understanding of the effects of the peer
mediated strategies on student engagement (Mertler, 2007). The quantitative data were analyzed using descriptive statistics while the qualitative data were sorted and organized to measure the affective components of the research. The data obtained from the data collection sheets were graphically represented using a multiple baseline procedure that allows for the intervention phase to begin at different points for each student pair. This procedure shows that the effects of the intervention more clearly for each pair of students and adhere to the single case design methods used for small, special populations. The rubric and grading data are represented graphically to compare the pre- and post-intervention grades for each student independently. The data demonstrated the changes across all domains of student engagement as identified by three areas: social skill development, on-task behaviors and participation and satisfaction within the setting. The changes within each student population was represented in the data to assess the differences in the effects among both typical and non-typical students with special needs. As these two types of data were combined to create an overall picture of the results, this data were utilized to drive decisions for the future use of these strategies or others and the need for additional research among different student groups within the special needs population at the high school (Mertler, 2007).

The qualitative data collected through the journals and interview process served to strengthen the findings of the quantitative data points. The overall support of the inclusive, project based classroom that celebrates the differences of our diverse learners is one of the aims for the current research study. Therefore, the qualitative data along with the anecdotal records collected during the behavioral observations were triangulated with the quantitative data to drive instructional decisions for the inclusion of diverse
learners with supports within the project based learning environment. (See Appendix B for a diagram of the Convergent Mixed Methods Model.)

**Rigor and Trustworthiness**

The data were collected by the teacher researcher and specifically trained paraprofessionals. An inter-rater reliability score was collected to ensure that the intervention and the data collection process were implemented with fidelity. The data must be reliable and representative of the diverse populations that are incorporated in this study; therefore, the unique needs and characteristics of the participants must be fully considered in the analysis of the collected data. Additionally, within the inclusive classroom, the experiences of both the special education student and the general education student were analyzed to measure the effectiveness of the intervention as well as the effect of inclusion on the project based learning model. As both populations were considered, the generalization of the results across other future student groups was planned for future study.

In an effort to combat bias in the behavioral observations, the observations were recorded with parental permission in order to provide the descriptive validity of the information collected during the semi-structured observations (Mertler, 2017).

**Summary**

The idea of providing meaningful, authentic learning opportunities for our students is not new, nor does it only apply to those typical students that fill our general education roles. In order for real learning to take place for the student with special needs, it must be imbedded in application and ‘real world’ contexts (Steinbrenner & Watson, 2015). In order to increase student achievement, improve graduation rates, and increase student
engagement in our high school, our district has chosen to shift our instructional practices from the traditional, teacher-centered direct instruction to that of the student-centered project based learning model. This progressive ideology is a major shift in our focus, and the district is providing training to implement this new initiative with fidelity across many schools (Dewey, 1938). Our faculty is currently undergoing professional development to implement this new learning opportunity within our classroom at the present time. As a teacher of students with autism who are all served in self-contained educational setting, I began utilizing this model of project based learning in my classroom within the 2017-2018 school year. My students lack the social skills to comfortably work with groups, and without peer support, they found it difficult to successfully navigate the project based learning constructs that are an integral part of the model. Peer-mediated instructional strategies have been effective interventions for the integration of students with autism with their typical peers in other studies (Loftin, Odom, & Lantz, 2007). In order to rise to the challenge put forth by my district and meet the unique needs of my students, I sought to answer the following research question: What impact can peer-mediated instructional strategies have on student engagement within a project based learning model? In order to answer this question and address my problem of practice concerning the increase in student engagement for my student with autism, I employed a convergent mixed methods research design to measure the effect of peer tutoring and peer initiation across the cognitive/academic, emotional and behavioral domains of student engagement. As the results of this study were gathered and analyzed, the information was then used to drive the instructional processes within my classroom and my school community.
CHAPTER 4

FINDINGS

The purpose of chapter four is to report the findings of the study focused on the use of the interventions—peer tutoring and peer initiation within a project based learning environment. The findings, both quantitative and qualitative in nature, are derived from the mixed methods research approach. The students’ behavioral data sheets and grade reports as well the Likert scale student surveys are presented in graphs for review. The data, collected across multiple learning opportunities provided in the project based learning environment, is separated into the preliminary needs assessment used to identify those behaviors that were the focus of the research, the baseline phase conducted during the first project, and the intervention phase conducted across the balance of the projects within the research period. Additionally, the qualitative data from journals and short response questions are examined to support the quantitative findings presented within the behavior data, grades and survey questions gathered across each project and phase of research. These findings are presented in answer to the following research questions:

1. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the development of social skills within an inclusive project based learning model for students with an autism spectrum disorder?

2. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as
measured by academic achievement of all learners with autism spectrum disorders?

3. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the emotional domain of student engagement as measured qualitatively through journals and student interviews on student satisfaction within the project based learning model?

4. What perception does the teacher have on the peer mediated instructional strategies of peer initiation and peer tutoring on the learning environment for students with an autism spectrum disorder as measured qualitatively by teacher interviews?

The problem of practice addressed in this research study focused on the lack of student engagement in our high school among both general education and special education students. As our school makes the shift from the traditional classroom to a project based learning environment, those students with disabilities are becoming even more disenfranchised from the typical learning environment. The project based learning environment emphasizes the use of collaborative learning, communication, inquiry and problem solving to answer a driving question. These skills, so much a part of our portrait of a SC Graduate, and the soft skills required by employers are challenging for our students with an autism spectrum disorder. With these difficulties our students with higher support needs such as autism or intellectual disabilities and at risk students are being left out of our newest learning environments. In order to address this trend, the teacher/researcher chose to train typical students in peer initiation and peer tutoring in order to allow students with autism or intellectual disabilities to participate in the project
based learning environment with support from their peers within the inclusive, project based learning environment. Peer tutoring allows those typical peers who have an understanding of the material to aid those that are struggling with the content to gain a greater understanding and more fully participate in the learning activities. The peer mediated instructional strategy of peer initiation assists the student with an autism spectrum disorder to ask for help or begin an interaction with a peer. Within this study, students were prompted to enter the conversation with his peers during collaborative, group settings. The peer mediators were instructed to ask questions of their peers to draw all students into the group dynamic within the project based learning environment.

This study seeks to address the issue of ableism within our school as our students with disabilities are faced with limited access to those educational opportunities that are offered within the growing project based learning community within our high school. Our students with disabilities who suffer from communication, intellectual and social deficits are often served in smaller, special education classrooms that focus on academics through direct instruction and repetition. Although these environments seek to meet the academic needs of the student with higher support needs, they are restrictive as students seek to develop socially without typical role models. The setting of the inclusive classroom with both typical and non-typical peers working together within the project based learning model addresses this shortcoming while teaching the invaluable soft skills of collaboration, problem solving and teamwork that are necessary for success after high school (SCASA, 2016).

Additionally, as each student was immersed in this inclusive learning environment, those students from the general education setting were presented with
opportunities to understand those who were different than they were while gaining a respect for the abilities of all students. Those students with an autism spectrum disorder were able to access the general curriculum and engage in meaningful academic and social interactions with their typical peers. In this action research project, there were both individual and group, project-based learning opportunities that allowed the teacher/researcher to assess the individual knowledge of each student. The students were asked to identify areas of interest and the subject of all group projects were chosen given the content area domain of psychology. The data for this action research was collected in three phases: the initial needs assessment which yielded quantitative data that informed the focus of the research, the baseline data which established a pre-intervention level of target behaviors, and the intervention phase which demonstrated the effectiveness of the interventions of peer tutoring and peer initiation. Throughout both the baseline and intervention phases of the research, qualitative data was gathered through the journals and student satisfaction surveys to examine the effects of the interventions on the social/emotional domain of student engagement. Lastly, the comments and impressions of the paraprofessionals and other stakeholders are discussed as the integration of the inclusive setting within the project based learning environment is examined through this study.

As an integral part of the project based learning environment, the students were allowed to choose the projects that were of most interest; therefore, there were four projects completed during this action research. The projects were DARE: A Look at Tobacco, Alcohol, and Drug Use; A Social Story and Fund Raiser for Hurricane Victims;
The current research study was broken into three distinct phases: 1) the preliminary phase in which the SSIS Rating Scale was administered before the students began working together on the projects; 2) the baseline phase, encompassing Project One, in which data was collected on the operational definitions created from the initial SSIS assessment; and 3) the intervention phase in which the peer mediated instructional strategies of peer tutoring and peer initiation were implemented among the general education and special needs students across the two remaining projects. There were times between each project in which students were responsible for individual assignments and content-specific materials. This instruction was designed to support those skills and knowledge that would be applied during the projects.

In an effort to answer the question concerning the development of social skills in students with students with autism and higher support needs, a norm referenced instrument was administered to the participants in the research in order to identify those social skills to focus on during the research plan, creating the Preliminary Data phase of the project. Once the responses were tabulated, the results were used to create the necessary operational definitions of the behaviors identified as deficits in the preliminary assessments. With the operational definitions in place, the data collection of baseline data began. During the baseline conditions, the behavioral data for each student with special needs was recorded for a period of time to determine the consistency of the behaviors under the normal classroom conditions with the project based learning environment. The final phase of the research was the intervention phase in which the general education
students acted as peer mediators, applying the strategies of peer tutoring and peer initiation to aid those students with special needs in accessing the curriculum and interacting successfully in the social environment of the project based learning environment. The behavioral data was collected in the same way under the intervention phase as it was during baseline, therefore an examination of the changes in the data could be used to gauge the effectiveness of the intervention.

**Preliminary Data**

Of the students involved in this study, six of the seven students with higher support needs have an autism spectrum disorder, while three of the seven students also have comorbid condition of a mild intellectual disability. One of the students within this study is served under the diagnosis of ‘other health impairment”. Each student has varying levels of behavioral and communication concerns, and each student had an Individual Education Plan.

The initial data discussed in this chapter, collected using a Social Skills Inventory Scale developed by Pearson, was used as a needs assessment to identify the most significant areas of weakness for the target group of students (Gresham & Elliott, 2008). The Social Skills Inventory Scale was developed as a means to quantify those behaviors essential to strong social skills and typical development. Three protocols were administered on behalf of each student, which included a student survey, a parent survey, and a teacher survey. Those protocols were scored and compared to the norm referenced standards of the population to establish those behaviors that were identified as the greatest areas of need for the students with autism and intellectual disabilities participating in the study. Each student enrolled in the course was given the Student
Survey in class. Each student was instructed to deliver the parent survey to their parent for completion, and then each student chose the teacher that they wanted to complete the teacher survey. The protocols were designed to identify the strengths and weaknesses of individuals across key areas of behavior. These key areas communication, cooperation, assertion, responsibility, empathy, engagement, and self-control (Graham & Elliott, 2008).

**Student protocol.** Through a method of self-assessment, the students were asked to rate certain social behaviors and the personal importance of each of the behaviors. The scores in Table 1, representing the students with an autism spectrum disorder, are the student’s own reflection of the behaviors that are correlated to the areas of communication, cooperation, assertion, responsibility, empathy, engagement and self-control. Each student rated his own ability to do such things as “asking for help when I need it; I look at people when I talk to them; I stay calm when people point out my mistakes” within the Student Protocol of the SSIS Rating Scale using a Likert–type scale to measure how true each statement is for the student. The range of responses were (N) not true, (L) little true, (A) al lot true, or (V) very true. The students were then asked to rate the importance of each statement, N- not important, I- important, C-Critical for their success. Then, each of the student’s scores were compiled to yield a raw and standard score in the areas of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. Those raw and standard scores were then compared with the national average of scores, yielding both a percentile rank for each student as well as a qualitative score of below average, average or above average for each student participant.
### Table 4.1

**SSIS Student Forms for Students with ASD**

<table>
<thead>
<tr>
<th>Student</th>
<th>Scale Score</th>
<th>Comp. To Norm</th>
<th>Communication</th>
<th>Cooperation</th>
<th>Assertion</th>
<th>Responsibility</th>
<th>Empathy</th>
<th>Engagement</th>
<th>Self-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln</td>
<td>81</td>
<td>Below Average</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Zoe</td>
<td>57</td>
<td>Well Below Average</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>11</td>
<td>9</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Jackie</td>
<td>76</td>
<td>Below Average</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>12</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Pauline</td>
<td>109</td>
<td>Average</td>
<td>12</td>
<td>21</td>
<td>21</td>
<td>19</td>
<td>16</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Nancy</td>
<td>113</td>
<td>Average</td>
<td>15</td>
<td>14</td>
<td>18</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>Kevin</td>
<td>79</td>
<td>Below Average</td>
<td>10</td>
<td>14</td>
<td>9</td>
<td>13</td>
<td>11</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Jackson</td>
<td>86</td>
<td>Average</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>10</td>
<td>15</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

*Average Ranges by skill: Communication 11-17; Cooperation 13-20; Assertion 10-18; Responsibility 12-19; Empathy 10-17; Engagement 12-19; Self Control 16-18 A= Average; BA= Below Average; WBA=Well Below Average*
**Peer mediators.** Those students who completed this inventory scale from the general population all scored within the average and above average range in social skills development. The students involved in this study from this population were in the top 10% of their class; each typical student was a member of the New Tech Network School housed on the school campus. The individual scores of the students from the general population are not represented in the table since there were no significant weaknesses noted that could impact the study.

**Parent forms.** In addition to the student protocols, data was requested from the parents of the student participants. Of the seven students with an autism spectrum disorder participating in the study, only three parents returned the protocol. The parent form, laid out like the student form, asked the parent to rate his or her child on his ability to do such things as “express feelings when wrong, take turns in conversations, and make compromises during a conflict”. The parent responses correspond to the behaviors that define the same areas of social skills and problem behaviors that are identified in the student protocol. The results for the parent protocols that were returned are displayed in Table 4.2 pictured below. Some parents did not return the protocol; therefore, this information is noted in the table.

The data collected from those parents who returned the survey was scored using the standard instructions provided in the SSIS Scoring Manual. In this process, the strengths and weaknesses were identified for each student as reported by the parents. Each parent communicated weaknesses in communication, assertion, and self-control. Empathy, while within the average range, was also a weakness as the scores fell in the
lowest average markers. While all of the parents did not return the survey, each parent has expressed concerns over the development of social skills and the ability of his or her child to make friends at school in meetings or conversations with the teacher.

In the Table 4.3, the data collected on the parent surveys is presented. Those parents that did not participate in the survey have been noted.

**Teacher protocols.** The teacher protocols were distributed to the teachers of the students with an autism spectrum disorder. If the student in question had a child specific assistant, then the teacher and the CSA collaborated to answer the questions about the student. The teacher form of the SSIS Rating Scale, like both the student and parent protocols, rated the student’s ability to “ask help from adult, make friends, or invite others to join activities” in the school setting. These results also yielded a norm referenced standard score as well as a qualitative score of below average, average, or above average for those social skills measured within the protocol. As in the other protocols, the teacher was asked to rate the importance of the individual skills within the school setting.

Once all of the protocols were completed and scored for the students, parents and teachers in accordance with the instrument protocols, those scores were compared across all reporting entities (Elliott & Gresham, 2011). These scores indicate that the students with an autism spectrum disorder in this research sample struggle with assertion, engagement, self-control and responsibility the most; however, six out of seven of the students participating in the study fall within the below average range for all of the areas of social skills measured in the SSIS Rating Scale.
<table>
<thead>
<tr>
<th>Student</th>
<th>Parent Form</th>
<th>Comparison with Norm</th>
<th>Communication</th>
<th>Cooperation</th>
<th>Assertion</th>
<th>Responsibility</th>
<th>Empathy</th>
<th>Engagement</th>
<th>Self-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln</td>
<td>n/a</td>
<td>Not returned</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Zoe</td>
<td>44</td>
<td>Well Below Average</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Jackson</td>
<td>n/a</td>
<td>Not returned</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pauline</td>
<td>75</td>
<td>Average</td>
<td>13</td>
<td>11</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Nancy</td>
<td>n/a</td>
<td>Not returned</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Kevin</td>
<td>77</td>
<td>Below Average</td>
<td>10</td>
<td>14</td>
<td>9</td>
<td>13</td>
<td>11</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Jackson</td>
<td>n/a</td>
<td>Not returned</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Average Ranges: Parent Form- Communication 11-19; Cooperation 10-16; Assertion 9-17; Responsibility 9-17; Empathy 9-16; Engagement 11-19; Self-control 10-18;
Table 4.3

**SSIS Teacher Forms for Students with ASD**

<table>
<thead>
<tr>
<th>Student</th>
<th>Teacher Form</th>
<th>Comparison with Norm</th>
<th>Communication</th>
<th>Cooperation</th>
<th>Assertion</th>
<th>Responsibility</th>
<th>Empathy</th>
<th>Engagement</th>
<th>Self-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln</td>
<td>77</td>
<td>Below Average</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>11</td>
<td>10</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Zoe</td>
<td>56</td>
<td>Below Average</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Jackie</td>
<td>64</td>
<td>Below Average</td>
<td>8</td>
<td>3</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Pauline</td>
<td>75</td>
<td>Below Average</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>12</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Nancy</td>
<td>63</td>
<td>Below Average</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Kevin</td>
<td>73</td>
<td>Below Average</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Jackson</td>
<td>74</td>
<td>Below Average</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>12</td>
<td>6</td>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>

Average Ranges: Teacher Form- Communication 11-19; Cooperation 10-16; Assertion 9-17; Responsibility 9-17; Empathy 9-16; Engagement 11-19; Self-control 10-18;
Use of Preliminary Data

These results, which include the results of the student, parent and teacher surveys of the SSIS, were used to determine the areas of weakness that were focused on during the intervention phase of the research project. As the student, parent and teacher scales were compared and the individual social skill deficits identified for each student, the teacher/researcher then used the importance that each student placed upon the individual skills and the scores to identify the areas of weakness that were addressed in research question 1 which deals with an improvement in the development of social skills for the students with an autism spectrum disorder within the project based learning environment. As a part of the scoring process of the SSIS Rating Scale, the sub skills that make up the areas of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control are rated based on how often the student uses the skill and how important these skills are perceived by the student, parent or teacher. The areas of weakness that emerged across all students in their individual student report, the responding parents, as well as the concerns of the teacher were (1) I ask for help when I need it, (2) I ask to join others when they are doing what I like, (3) I pay attention when others present their ideas. In comparing the scores across the students, these three statements align with both engagement and communication needs that are necessary when collaborating within a project based learning model. These weaknesses were analyzed and operationally defined for the purposes of quantitative data collection in the project based learning environment during both baseline and intervention phases of the research. The identified
areas of weakness were further used to group students according to strengths and weaknesses.

**Student Profiles**

Within this study, there were seven students who were served in a self-contained setting for student with an autism spectrum disorder and ten students that were served in the general education setting that were blended together in the inclusive Psychology class. The students are described in the profiles below. Pseudonyms have been used to protect the identity of the students within the study. A profile of the students who participated in the study follows.

**Lincoln.** A seventeen-year-old senior, Lincoln is an ESL student with autism. While he can speak English well, his communication skills are far below those of his same aged, typical peers. He struggles in the areas of communication, assertion, and responsibility. He does not initiate conversations or ask for help when needed; however, he is anxious to please and loves attention.

**Zoe.** A sixteen-year-old junior, Zoe is a student with autism and a communication disorder. While she is able to communicate her basic needs, reciprocal conversation is difficult for her. She is strongly affected by sensory issues and changes in her routine. While she craves attention, she is unsure of how to gain it appropriately, so disruptive behaviors can be exhibited. Zoe requires support in communication, responsibility, and asserting herself effectively.

**Jackson.** Jackson, an eighteen-year-old student with an autism spectrum disorder, is in the tenth grade. While his intellectual ability is within normal range, he struggles with task completion and interfering behaviors. He will withdraw when presented with
non-preferred activities and engage in disruptive and aggressive behaviors to avoid an unwanted task. His greatest weakness is seen in cooperation, responsibility and self-control.

**Pauline.** Pauline is a fifteen-year-old student with autism that is served in the general education environment through the New Tech Network School that is housed on our campus. She is intelligent, yet she does not read social cues well. She has sensory issues and will engage in self injurious behaviors such as pulling out her own hair or scratching her skin until it bleeds when under times of high stress. Pauline is extremely talented using computer technology; however, she will hide behind a computer screen when she is uncomfortable. She moved from the full self-contained setting to the general education setting over the last two school years. Her social deficits are seen in cooperation, engagement and self-control. While she will ask for help, she does not recognize her need for help consistently. She enjoys working alone and will seek out tasks that involve the computer in every group assignment.

**Nancy.** Nancy is a seventeen-year-old student with a mild intellectual disability. Although she is able to speak and communicates with her friends, she does not talk to adults or peers with whom she is unfamiliar. Nancy does not complete her assignments on a regular basis, and is easily distracted by people and events within her environment. Her greatest deficits are in communication, cooperation, and responsibility.

**Kevin.** A sixteen-year-old sophomore, Kevin is a young man with autism who enjoys social interactions with his peers, yet he can become overwhelmed by the attention. He withdraws when he is overstimulated, uses noise canceling headphones, and uses music to self-regulate and calm himself when upset. Kevin hides under a hood
when he is upset or does not want to be approached. He engages in self talk often to hide his discomfort. His identified weaknesses were in the areas of self-control, cooperation, and engagement.

**Jackie.** Jackie, a seventeen-year-old senior, is a student with autism and a speech/language disorder. She is comfortable being alone; she does not engage in reciprocal conversation, although she can answer questions when asked. Jackie will ask perseverative questions such as ‘What is your birthday’ or ‘Where were you born’ of anyone, but then she will remember this information indefinitely. Jackie struggles with task completion, assertion, empathy, and communication.

In addition to the students with an autism spectrum disorder detailed above, there were also nine additional students who acted as peer mediators in the study. A profile of each of these students follow.

**Kimmie.** A quiet, reserved junior, Kimmie, is a natural ‘helper’. Although she is shy, she enjoys helping others and was excited to be a part of the class and the research project. She wants to be a nurse after high school and college. Kimmie, a seventeen-year-old, is driven to be successful by her goals for her future.

**Courtney.** An eighteen-year-old natural leader, Courtney is a member of the Student Council and Young Agents of Change. Courtney displayed strengths in working with all students, and she was an excellent tutor for all of the students with an autism spectrum disorder. Upon graduation, Courtney plans to attend Carolina and major in Sports Medicine.

**Sheila.** As the Student Body President, Sheila, eighteen-years old, speaks for the senior class on several committees throughout the school. A confident, outspoken young
lady, Sheila is a role model for others. She excelled at engaging other students in the process of project based learning. She plans to attend Carolina and major in political science.

**Randy.** Randy, a seventeen-year-old senior, had a unique perspective in the classroom. As a person with a physical disability, he worked hard to show those students with an autism spectrum disorder that they could be successful. His greatest strength was empathy; however, he held each student accountable for his or her work and behavior within the groups.

**Mattie.** A sixteen-year-old junior, Mattie was a natural teacher. She was the daughter of a teacher, so acting as a mediator came naturally. Her greatest strengths were engagement and collaboration, so she was an integral part of the inclusive setting within the project based learning model.

**Jeff.** On his way to a baseball scholarship, Jeff, an eighteen-year-old senior was an excellent role model for the male students with autism. He was an accepting individual who was eager to help all of the students. Jeff was able to relate to the students and worked well with others.

**Cindy.** A cheerleader, Cindy, a sixteen-year-old junior, was always in a good mood and worked well with others. She was a strong encourager and pushed the members in her groups to work hard and do their best.

**Ashley.** A quiet and determined young lady, Ashley, an eighteen-year-old senior, was the quiet leader who led by example. Always willing to help others, she was an effective tutor and gently initiated contacts with all of the students with special needs.
Brenda. An eighteen-year-old senior, Brenda was an intelligent young lady who immediately put everyone at ease. Her greatest strengths were empathy and encouragement; she modeled appropriate behaviors and was willing to help any student with anything within his or her groups.

Those students who completed this inventory scale from the general population all scored within the average and above average range in social skills development. The students involved in this study from this population were in the top 10% of their class; each typical student was a member of the New Tech Network School housed on the school campus. The individual scores of the students from the general population are not represented in the table since there were no significant weaknesses noted that could impact the study.

Classroom Environment. This action research study was performed within an inclusive, project based learning environment. The project based learning model presents a driving question that leads the students to solve the read-world problem or create an artifact that will answer the question. The work involved both individual and cooperative learning tasks designed to allow for student inquiry under the supervision of a facilitator across multiple content areas. This approach allows students to contribute to the learning process through assigned roles within the learning process. The students are assessed on student engagement within the collaborative learning tasks as well as the individual learning tasks that support the learning goals. The students, through surveys and interest inventories chose the following projects to be completed within the semester after the first project.
Project 1, a predetermined project selected by the teacher/researcher was DARE: Alcohol, Tobacco and Opioid Use was the initial project. The students were allowed to choose the topic and the medium they preferred to create a public service announcement for the middle school during Red Ribbon Week. The student artifacts produced included a video presentation and three Power Point presentations.

Project 2 was a direct consequence of the multiple hurricanes that impacted our coast during the month of September. The students were instructed to create a social story with illustrations to help children in the impacted areas come home after being away under the evacuation. Additionally, some students were asked to create a fundraising event to get money and supplies to the affected areas. The student artifacts for this project included the book, the plans for a fund raiser and the coordination of the collection of the materials that were collected from the community.

Project 3 addressed suicide, social media and cyberbullying within teens and adults. The students were charged with discovering the prevalence of the problem within the different age groups, then to come up with possible roles that each of them could play to make a difference. The student artifacts for this project included posters and power points to address the issues that were discovered. The students were also asked to consider what each could do individually to address the social problems of suicide, cyberbullying and social media and to write an essay about their proposed actions to confront the problem.

The final project dealt with the diversity in our high school. The student groups created a survey to be completed throughout the school with chosen classes and teachers that spoke to the level of diversity present in our school. Power points were created to
display the results of the surveys. This project was used as a culminating project to
discover what the students learned through the experience of working with those students
with differences. Within this project, student learned and reacted to the problems of
ableism, racism and sexuality that are present in our high school.

**Operational definitions.** In an effort to quantify the skills that were identified on
the SSIS Rating Scale protocol, these skills were operationally defined so that any
observer would easily be able to identify the target behaviors. For those behaviors
necessary to increase the level of participation within the group settings, the operational
definitions of expected group behaviors were developed using both the functional and
topographical features of each target behavior. The topical features of the behavior
clearly define what the behavior looks like to an observer, while the functional definition
speaks to the behavior’s effect on its environment. For example, the first operational
definition was “oriented toward the group”; therefore, one must decide what this looks
like and how it effects the environment. The student, if oriented toward the group, is
prepared to participate by facing his group members and being in close proximity to the
rest of his group. The student is facing his group members with his head up and ready to
listen and take part in the group activities. These behaviors correspond with those areas
of weakness that were identified in the initial needs assessment, the Social Skills
Inventory Scale, given in the first week of the research. The operational definition was
created to ensure that the behaviors in question could be observed easily and recorded by
multiple stakeholders. In Table 4.4, the operational definitions for the target behaviors
for this action research are displayed along with non-examples for clarity. Throughout
the sessions of research, data was collected on each of the target behavior for each student with an autism spectrum disorder.

Table 4.4

**Operational Definitions**

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<td>1.</td>
<td><strong>Oriented toward the group</strong>&lt;br&gt;Defined as “turning the desk to face the group while turning the one’s face and upper body toward the other members of the group during times of collaborative assignments.”&lt;br&gt;Non-example: Student’s desk is turned toward group but the body of the student is facing an opposite direction of the group.</td>
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<tr>
<td>2.</td>
<td><strong>Actively listening or responding to other group members</strong>&lt;br&gt;Defined as “hearing the comments of others without interrupting with unrelated or unnecessary comments and stating a related answer in verbal or written form.”&lt;br&gt;Non-examples: responding to the comments of others with statements such as “When is your birthday? Or a scripted conversation from a TV program.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Asking for help from a peer</strong>&lt;br&gt;Defined as “verbally asking for the help of another in the group and accepting the verbal or gestural prompt of members of the peer group.”&lt;br&gt;Non-example: Student does not ask for help when needed and disengages from the activity</td>
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<td>3.</td>
<td><strong>Students fulfilled assigned roles in the group.</strong>&lt;br&gt;Defined as “completing the tasks assigned in the group.”&lt;br&gt;Non example- “failing to complete tasks or participate in group activities.”</td>
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In an effort to show the progression of the research, the analysis will be presented in context of each project.

**Project One/Baseline phase.** The baseline data was collected during the first project. During the baseline phase, data was gathered on all four operationally defined target behaviors under normal classroom conditions. These behaviors included ‘orienting toward the group’, active listening and responding, asking for help, and completing the role or tasks assigned. The project based learning environment was utilized throughout the research, so the student’s baseline data demonstrated the manner in which each student with special needs was able to access the content within the PBL environment without support. For those students from the general education environment, this time was used to complete informal observations to ensure that the students were comfortable with the inclusive environment within the classroom. The expectations for classroom interactions and the basis for the relationships between class members were reviewed through a review of the classroom rules and procedures during this baseline phase of the research.

Under the baseline conditions, assignments were given without the support of the peer mediated instructional strategies of peer tutoring and peer initiation. The students were separated into two separate groups for data collection purposes to establish the effectiveness of the intervention for each student. There were seven students with an autism spectrum disorder who participated in the study through its entirety. As in single case research design, a method used often in research within special education, the staggered introduction of an intervention can be used to support the effectiveness of the intervention; therefore, due to the individual nature of the results and the number of
students directly receiving the intervention, a multiple baseline research design was utilized to answer the first research question (Kratcochwill & Levin, 2014). Each group is displayed separately in order to identify the effectiveness of the intervention, the peer mediated instructional strategies of peer tutoring and peer initiation, during the intervention phase of the research. Using the multiple baseline condition allows the researcher to assess the effectiveness of the intervention on more than one group of students by comparing the frequency of the behaviors being measured across two different baseline conditions and the effect of the intervention across two different intervention conditions (Kazdin, 2011). This process allows conclusions to be drawn about the effectiveness with more confidence as the effects can be seen across different times and participants.

Project One, a public service announcement to be developed for DARE week at the middle school, consisted of a project roll out, a Know/Needs to Know session, and group assignments. Once the group assignments were made, then the groups decided on the individual roles in the project. For this project, the groups were expected to research the use of either alcohol, tobacco or opioids in our country. The project was to culminate in a power point, video or poster display of the effects of these drugs on individuals, families, and economically within our society. The groups were expected to create the final project and then present those projects to the class. Individual assignments included journal activities, research methods check, formative assessments on causes of addiction, and end of project surveys. In the first project, there were four groups that were formed with two high support need students in the group with at least three peers from the general education peers. As the project began, it became obvious that some of the
regular education students were more comfortable giving assistance than others. At the same time, the students with an autism spectrum disorder reacted differently to the group dynamic and their typical peers as well. Due to these differences, Pauline, Kevin, and Zoe, referred to as Study Group 1, were moved into the intervention phase after five sessions under the baseline condition. The remaining students, Lincoln, Nancy, Jackie, and Jackson, referred to as Study Group 2, was held under the baseline conditions until their behaviors were stable within the group dynamic. Study Group 2 maintained a baseline condition for ten sessions before moving into the intervention phase. Within the collaborative group setting, students were assessed on the following behaviors that were determined to be deficits on the SSIS Rating Scale. The data collection sheets yielded both quantitative and qualitative measures through interval observations and anecdotal comments written throughout the observation.

**Behavior 1: Orienting toward the group.** The first behavior for which data was collected was ‘orienting toward the group’. This behavior, operationally defined as “turning the desk to face the group while turning the one’s face and upper body toward the other members of the group during times of collaborative assignments”, was observed using a momentary time sample in fifteen minute intervals over the ninety minute block.

Over the six intervals that were observed across the 90 minute block, the number of intervals in which the students were actively oriented toward the group with no prompting or interventions from the group members ranged from 0 to 3 intervals out of 6 total intervals observed daily across the sessions, creating a range of 0% to 50%. It was difficult for the students with autism to make eye contact and maintain group attention within the group activities. All students within Group 1 displayed a stable trend in
baseline from session to session, ranging from 2 to 3 intervals (33% to 50%) of each session spent oriented toward the group with no more than the initial prompt to break out into the group activities. Within Group 2, the students were disinterested in the group activities and exhibited noncompliant behaviors to avoid the group dynamic during three recorded observations. Those students that were in Group 2, Lincoln, Nancy, Jackie and Jackson, required a longer amount of time to become acclimated to the collaborative learning groups and to create a stable baseline condition. Two of the four students in Study Group 2 exhibited interfering behaviors when asked to join the group. The overall number of intervals in which the target behavior was observed for this group during baseline ranged from 0% to 33% per session with a greater variability observed within the group as a whole. With this in mind, these students maintained the baseline conditions across 10 sessions to ensure that the variability in their behaviors subsided and a stable baseline was maintained prior to introducing the intervention phase of the research. In order to ensure that any changes in behavior could be attributed to the intervention, it was important for the behaviors to be stable before introducing the intervention (Kazdin, 2011).

In Study Group 1, Pauline, Kevin and Zoe were able to maintain an overall average of 46% of all intervals oriented toward the group without prompting from the teacher or a peer. In Group 2, the behavior was far less consistent or maintained over time without prompting. The average number of intervals in which the target behavior was maintained was 16% within the entire group, with only two students acquiring a 50% average in any individual session throughout the baseline conditions.
The data for each interval across Study Groups 1 and 2 are graphically displayed for easy comparison within both groups and then later throughout the intervention phases. The graphs, shown below in Figures 4.1 and 4.2, display the baseline data for each of the students with an autism spectrum disorder for the target behavior identified as ‘orienting toward the group’. These graphs have been stacked upon each other so that the behaviors in baseline can be compared for each individual student within the multiple baseline research design.

Figure 4.1. Orienting Toward Group for Group 1
**Figure 4.2.** Orienting Toward Group for Group 2

*Behavior 2: Active Listening/ Responding.* When collecting the data on the second behavior, the student interactions were observed during their group activities. The intervals in which students were observed actively listening and responding to their peers at the observed moment in time were recorded with a (+) for the designated interval. If the students were not engaged in conversations that were on topic for the project or task at hand, the interval was marked with a (-). They could receive a (-) mark if they were not engaged within the group or if they were making unrelated comments to each other. Under baseline conditions, the students received no structured interventions that did not happen naturally within the group. Data was collected for each student across six intervals spanning the 90 minute block for each target behavior for each student with special needs. The students in Group 1 were observed actively listening and
responding to their peers in 1 to 3 intervals out of 6 of the possible intervals. This was converted to a percentage of the opportunities observed for each student in an effort to ensure the student wasn’t penalized for intervals in which he or she was not able to engage in the target behavior. The students in Group 1 were consistently able to maintain active listening for 33% to 50% of the intervals under the baseline conditions, creating a mean score of 39% of intervals in baseline with a range of one to three intervals out of the six observed in each session. Those students in Group 2 again exhibited greater variances in their behaviors across the baseline sessions with a range of zero to three intervals across each session creating a mean of 22% of intervals with active listening in baseline. Once again the Figures 4.3 and 4.4, displaying the behavioral data for active listening or responding are displayed stacked upon each other in order to compare across individual students within the multiple baseline design.

![Study Group 1 Baseline Active Listening/Responding](image)

**Figure 4.3** Active Listening/Responding in Baseline for Group 1
Figure 4.4 Active Listening/Responding in Baseline for Group 2

**Behavior 3: Asking for Help.** Asking for help from a peer is especially important when working in a collaborative setting; however, students with an autism spectrum disorder often do not ask for help appropriately. Those students that are not in the general population can become prompt dependent, or those that are immersed in the general population can become embarrassed by the need to ask for help. The students were observed during the sessions, and the number of times that the individual students needed help as well as the number of times that he or she actually asked a peer for help were recorded. The parameter of this data collection was to ask a peer within the group; therefore, if the student asked an adult for help instead of a peer, it was coded as a missed opportunity for the student. The percentage of opportunities that the students in Group 1 utilized to ask for help when needed from a peer ranged 17% (1 out of 6) to 33% (2 out of
6) of the opportunities the students took to ask for help when it was needed. These percentages for Group 1 equated to one in six opportunities or 2 in 6 opportunities across five sessions of data collection. Of the three students comprising Group 1, one individual historically does not ask for help even when it is needed because she is confident in what she does; therefore, her percentages of asking for help is consistent but low. The other students in Group 1 asked for help in 2 out 6 opportunities per session in 9 out of 10 sessions.

Group 2 varied in the number of opportunities that each had to ask for help that reflected the individual collaborative groups that each was assigned to as well as the nature of the permanent product those groups chose to create to prove mastery of the content. The need for each student to ask for help ranged from four to six opportunities per session. The student, Lincoln began asking for help in one out of six opportunities and progressed even in baseline to two out of four times at the end of the tenth session. Two out of three students in the group varied between zero and one opportunity per session, while one student maintained one in six opportunities (17%) across five sessions and one in four opportunities (25%) for five sessions. There was one session in which this student reached two out of four opportunities (50%) for the session. The quantitative data is displayed in the graph, Fig. 4.5 showing both the graphic display and the data table.

During the baseline phase, the students from the general education setting worked in the groups with the students with higher support needs; however, they did not receive any direct instruction in how to interact with the students with special needs. The students who acted as peer mediators in the next phase of the research acted as leaders in the
group setting, assigning roles and tasks to the members of the group to accomplish the end goal of creating the public service announcement as assigned in the project. In these roles, there were instances in which the students naturally provided help when the students were frustrated even without the student asking for the assistance.

Figures 4.5 and 4.6 display the data for the third target behavior identified as ‘asking for help’ from a peer. These graphs show the baseline data for each group and are stacked to allow for comparison between students and individual progress across the multiple baseline design.

Figure 4.5 Asking a Peer for Help in Baseline for Group 1
Behavior 4: Completing Assigned Roles/Tasks. Under the baseline conditions across both groups, there was a significant deficit in the number of target behaviors recorded for Behaviors 1 - 3. The noticeable exception was observed in Behavior 4, which examined the fulfillment of the assigned role/tasks in the group. This behavior increased for several students even in baseline. It is important to note that the roles in the groups were assigned by choice and preferred roles if the students were able to voice a preference. Also, even in the baseline conditions, students were allowed to choose what topic within the project parameters they wanted to work on within each group; therefore, finishing the task may have been a preferred activity under any condition. This phenomenon is displayed most strongly in the data for Lincoln during the last five sessions within the baseline data phase while he was involved in making the video for his
group’s first presentation. The other two students who made up Group 1 maintained a range of 65% to 80% completion rates for tasks assigned within the group across the five baseline sessions.

When looking at the number of opportunities that the students identified as Group 2 were completing the tasks as assigned and fulfilling their roles within the group, one can see that the students in Group 2 struggled with those skills and assignments. While one student, Lincoln, made progress in this behavior in baseline as he also asked for help more often as shown in Figure 4.7, the students were on task within their groups an average of 33% or one out of three opportunities. This measure is not a measure of the accuracy of the work; it is a measure of the frequency of task completion and role fulfillment within the group. For example, in the individual groups, there were specific roles such as researcher, audiovisual coordinator, artist, or author(s) as the groups determined the means to prove mastery of the content and complete of the student artifacts. Therefore, if a student was supposed to research the prevalence of opioid use in young people, ages 12 to 17, then the group would expect that the information would be loaded into the Google drive for the group to review and use as needed within the presentation.

In Figures 4.7 and 4.8, the percentage of opportunities in which each student completed his or her assigned tasks or fulfilled his or her assigned role within the group is displayed.
**Figure 4.7** Completing Task/ Roles in Baseline for Group 1

**Figure 4.8** Completing Task/ Roles in Baseline for Group 2
Impact on Emotional Domain in Baseline

In addition to the behavioral data collected throughout this action research, those students who acted as peer mediators along with those students with an autism spectrum disorder were asked to complete a survey that gauged the student reactions to the project and the group dynamics. This information was used to answer the research question, “What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the emotional domain as measured by academic achievement of all learners?” When asked how the students felt about the project, DARE, using a scale from one to five, 45% of the students stated that they loved the project and an additional 45% stated that they liked the project. Another 8% of the students surveyed stated that they hated the project.

The students were also asked if the information learned in the project was meaningful for them. Two students found no meaning in the project content, while the remaining fourteen participants answered affirmatively to this question.

**Qualitative measures during baseline.** During the first project in which the baseline data was collected, the students also participated in qualitative measures throughout the project. Each day, the students were asked to account for the work that was accomplished within the groups for the day through a simple exit slip each day. These slips were read and any concerns that were shared were addressed with the student as soon as possible. Journal activities were assigned throughout the project, then, a student satisfaction survey was also assigned at the culmination of the project. On these instruments, the students, both the peer mediators and those with an autism spectrum
disorder, expressed a level of frustration with the setting. While the peers were happy to be in the class and were willing to work with the students with an autism spectrum disorder, they were frustrated that they did not know how to help those students with higher support needs. Courtney stated, “I wish I knew a better way to help my group members”. Mattie spoke of “wanting a tool that would make it easier for the students”. Jeff stated, “I don’t know how to help them”. The students with special needs displayed increased behavioral incidents that were related to a greater number of students in their classroom and unfamiliar expectations in the group dynamic. One student, Zoe, stated that the room was noisy and it made her “nervous”. The anecdotal records that accompanied the quantitative data of the four target behaviors related incidents of students’ frustration, “overwhelmed” emotional responses, as well as students who withdrew and shutdown under the group dynamic. In a review of the anecdotal records, it was noted that two students were “frustrated and did not know what to do”.

In order to address these concerns and to allow peer mediators and the students with an autism spectrum disorder to get to know each other and become more comfortable within the class, the teacher/researcher allowed two game days to be inserted into the project time frames. Students were given choices of Monopoly, UNO, Clue and Connect Four to play within their groups. These exercises allowed each student to become more familiar with his or her peers without academic demands that may have been adding to the frustration level for the students with an autism spectrum disorder. At the end of each survey, the students were asked to respond to the following question: What were your overall impression of your group? What changes would you make if you could?
There were three of the typical peers that stated the need for tools to help those in the group who needed more help. Kimmie, Jeff and Courtney, all very strong mediators, began the process with a lack of confidence in how to handle the students with an autism spectrum disorder. When reviewing their journals and survey answers, Kimmie related that “I didn’t know what to do when the kids got upset. I didn’t want to say anything to upset them more”. Jeff stated that “I didn’t know what to do when Jackson started talking about crazy things. It made me nervous”. Courtney stated, “I am not sure how to get Lincoln to talk to me. He smiles, but I don’t think he understands.” In the first project, no peer mediated instructional strategies were used during the baseline data collection process. Group 1, Pauline, Kevin, and Zoe, stayed under the baseline condition for five sessions, while Group 2, Lincoln, Nancy, Jackie and Jackson maintained the baseline conditions for 10 sessions. Within the next 10 to 15 sessions, the students were actively applying the peer mediated strategies of peer tutoring and peer initiation to aid in the interactions within the group settings within the project based learning environment.

**Intervention Phase**

Before the intervention phase began with their peers, the peer mediators were trained in how to assist those students with higher support needs access the materials introduced within the groups. Using a script to teach how one should respond and redirect unrelated comments, modeling, and role-play with the teacher/researcher and the paraprofessionals in the classroom, the students from the general education prepared themselves to respond to their peers within the intervention phase of the research.

Under the intervention phase conditions, those students from the general education environment began to prompt the students with an autism spectrum disorder to
remain oriented and connected to the group, ask for help, respond to the conversation of others and fulfill their roles within the group using the peer mediated strategies of peer initiation and peer tutoring. In the following section, the target behaviors are examined once more with the interventions being applied during the data sessions. The data sessions spanned Projects Two – Four, designed to follow the tenets of the project-based learning model.

**Role of the peer mediators.** The students who applied the peer mediated strategies of peer tutoring and peer initiation prompted the students with an autism spectrum disorder to engage with the group by assigning roles within the group, prompting them through verbal prompts, such as “Pull your desk over here and work with me” or simple statements such as, “Do you need help?” and “How does this look?” asked during cooperative learning tasks. During the intervention phase, the mediators were not only allowed to prompt for the targeted behaviors, they were also able to answer questions about the content and aid in academic tasks. The groups for each project were chosen by the teacher/researcher; grouping was completed based on the initial interactions among the students. The students rotated at the end of each project to ensure that all students were able to work with each other over the three projects within the intervention phase. There was 3:2 ratio of mediators to students with ASD within each group, meaning that there were three students acting as mediators with two higher support needs students in each group. In order to ensure that the target behaviors were prompted by those students acting as mediators, the peer mediators were asked to tally the number of times that they prompted the target behaviors for the students with an autism spectrum disorder in their assigned groups. The interventions, peer tutoring and
peer initiation were applied simultaneously within the classroom, so the results of both yielded a single result for each student across each target behavior. Each target behavior is displayed below separately to allow for the analysis of the intervention across each behavior for each student with an autism spectrum disorder. The graphs display the data collected over the three projects for each behavior. Please note that the sessions have been marked to correspond with the ongoing project during this data collection sessions.

As the teacher/researcher and paraprofessionals began to take intervention data throughout the second, third and fourth projects, the prompts delivered by the peer mediators were tracked to ensure that the strategies were being utilized effectively during the intervention phase. In the following sections, the data for both Study Groups 1 and 2 have been graphically displayed with tables incorporated to show the data collected for each of the target behaviors across the different projects. Please note, that the data has been compressed to show both study groups on one graph for ease in comparison across the projects. During the triangulation of the overall results which compare the baseline data to the intervention data for the implementation of peer mediated strategies, this data will be broken out once again to look at individual differences across students in a multiple baseline design.

**Behavior One: Orienting toward the group.** When comparing the number of momentary time samplings observed for the first target behavior of ‘orienting toward the group” across the project based learning opportunities provided in this action research, one finds a positive trend in the data as well as a significant change in the level of the intervals observed when the students were engaged in peer tutoring and peer initiation. During the baseline conditions, the students with an autism spectrum disorder in Groups
1 and 2 turned toward their group members an average of 37% of the time; however, during the intervention phase in which the students were prompted by their peers turn themselves toward the group, the students improved their body positioning to an average of 68% of the time. Individually, the addition of the peer initiation and tutoring to the group dynamic created an immediate difference in the number of intervals that each student was observed performing the targeted behavior, with student SS4 increasing more than 30% over baseline. The pattern was maintained for each of the other two students in the group with a range of intervals from 50% to 83%. For those students in Group 2, the change was more gradual; however, the change was significant in level. When comparing the number of momentary time samplings observed for the first target behavior of ‘orienting toward the group’, one finds a positive trend in the data as well as a significant change in the level of the intervals observed. The graph, Figures 4.9, pictured below on page 109 displays the data for both Group 1 and 2 displayed in a multiple baseline format to support the effectiveness of the interventions of peer tutoring and peer initiation. The interventions, peer tutoring and peer initiation were applied simultaneously within the classroom, so the results of both yielded a single result for each student across each target behavior. Each target behavior is displayed below separately to allow for the analysis of the intervention across each behavior for each student with an autism spectrum disorder. The graphs display the data collected over the three projects for each behavior. Please note that the sessions have been marked to correspond with the ongoing project during this data collection sessions.

*Project Two.* The second project was humanitarian in nature, and most students were actively involved in the process in response to two different hurricanes that affected
our coastal county. In the Hurricane Project, the students were charged with the task to create a social story that helped displaced children on their way back home after the evacuation was over. The tasks involved in this project included writing the story centered around a lost character finding his way home, illustrating the story and preparing it for print. In addition to these creative tasks, another group of students were asked to plan a fund raiser and coordinate a drop off site for water and non-perishable food supplies as well as toys for the children collected for those displaced by the two hurricanes that hit the SC coast in September, 2018. The students were allowed to choose the facet of the project in which they wanted to be involved. As one looks at the data for Hurricane Project, designated as Project Two, the data shows that the students were engaged and oriented toward their groups a range of 33% - 100% of the time. While the project in baseline was more research based, Project 2 allowed for individuality and creativity. There were significant individual differences found in the students with an autism spectrum disorder, although there were incidents of creative differences that emerged in the qualitative data taken by the teacher/researcher and paraprofessionals in the anecdotal records.

Project Three. The assignment designated as Cyberbullying and Social Media was a research-based project that again asked students to create a public service announcement on suicide and cyber bullying. The students were allowed choose the topic they preferred to work with, then those students were grouped accordingly. At this time, it was noted in the data collection process that bonds were being made between groups of students, so many students wanted to work with the same peer groups. In examination of the data during the intervention phase, it is seen that the scores ranged
from 17% - 100% across the sessions and individual students for ‘orienting toward the group.’ The behavior is indicative of the tendency for some students to withdraw; however, the peer mediated instructional strategies were The overall trend in the data from session seven to session eleven is positive, although there were outliers in the data that were indicative of behavioral issues for one of the students.

**Project Four.** When comparing the results of ‘orienting toward the group’ across the Diversity Surveys, the students continued to improve in their ability to remain focused on the group activities and physically remain engaged with the group. In this project, the students were required to reflect on their own ideas of diversity, the value of that diversity and how it effects the school environment. The students were broken into groups based on preference and the area of diversity that each group wished to address in the surveys. The groups created surveys with questions regarding the presence of diversity and the attitudes toward people with differences within the high school. Some of the groups wanted to address diversity within the student body, while other students chose to create a survey that examined the views and practices of the teachers on our campus. Within this project based learning activity, the students examined their own feelings toward ableism, race and gender diversity.

During this learning opportunity, the students increased their level of physical engagement to the group as evidenced by the range of 50% to 100% of the intervals showing the students oriented toward the group. The graph below shows the gradual improvement for students with an autism spectrum disorder over all the projects with the interventions and supports of peer tutoring and peer mediation in place.
Figure 4.9 Intervention Data Across Projects for Orienting Toward the Group

In reviewing the individual differences displayed in the graph above among those students with an autism spectrum disorder, the variability of the data speaks the nature of those students with special needs. Pauline, in session nine, displayed interfering behaviors related to another class which impeded her progress for the session. The students, Pauline, Kevin and Zoe, were more consistent in their behaviors and progress; however, the individual differences in the students can be seen in this data.

Behavior 2: Active listening/Responding. The second behavior, actively listening and responding to peers within the group, was measured under baseline conditions that applied no interventions. This measure was determined by the observation of the number of intervals that show students actively engaged in the group dynamic through listening and discussing the information that was being presented by a peer or answering questions.
of their peers within their group. These were collected as the percentage that allowed for a differing number of opportunities per session. If the student was engaged in an independent task during the interval observed, the student was not penalized. The data representing the percentage of intervals that displayed active listening and responding under intervention conditions as measured by the momentary time samplings are shown in Figure 4.10 pictured below.

**Role of peer mediators:** In order to track the progress in Behavior 2, the students who acted as peer mediators again actively prompted the active listening and responding of those students with an autism spectrum disorder through asking questions, assigning tasks to each group member and modeling the appropriate group behaviors for each of the members of the group. The students worked together within the group to ensure that each member of the group understood his or her role, and assistance was provided to answer the questions posed within the project. The students worked together to ensure that all students were given the opportunity to actively participate in the project successfully.

**Project Two** The students in Group 1, Pauline, Kevin and Zoe, the intervals in which the students participated in active listening ranged from 50% - 87% in sessions seven through eleven during Project 2. Those students in Group 2 were moved into the intervention conditions on session 6 after a stable baseline had been established for each student. During the intervention phase for Project 2, those students that were in Group 2 ranged in active listening from 50% - 83%.

**Project Three** Within sessions 8 – 12, the percentage of intervals that displayed active listening and responding by the students with an autism spectrum disorder ranged
from 50% to 100% of the intervals observed. The students with an autism spectrum disorder were actively listening and responding within their groups more than 83% of the time across most students. Nancy, the student with intellectual disabilities within this study, is actively listening in 50% of the observed intervals; therefore, she is the exception to the average distribution of data points. This difference may be indicative of her ability to access the curriculum or the content as compared with her peers with autism.

**Project Four** In an evaluation of the data collected across the Diversity Surveys, six out of seven students maintained a level of active listening from 50% to 100% with no students falling below 50% of the observed intervals. Across the twenty seven sessions observed during this project, there were thirteen sessions that were at 83% or higher across all of the students. Within this project, there were content areas that captured the interest of our students with special needs. While the assignments were challenging, they were invested and active in the development and dissemination of the surveys.

In reviewing the data as a whole across the intervention phase, Pauline became consistent in her listening and responses with an improvement over time from 50% to 83% of the time. Kevin improved during the intervention phase as well across the projects; however, his rate of listening and response were impacted by the content and roles within the group. Jackson, Jackie and Lincoln made significant improvements over the life of the research with the aid of the peer tutoring and peer initiation with many sessions measuring 100% across multiple sessions.
Figure 4.10 Intervention Data Across Projects for Active Listening/Responding.

Behavior 3: Requesting help. The behavior of ‘asking for help’ is one of the most challenging behaviors for students with an autism spectrum disorder to implement effectively and appropriately. There is a danger for students with an autism spectrum disorder to exhibit a sense of learned helplessness; therefore, they tend to either ask for help everytime without even attempting the task or disengage completely from the task. With this in mind, the data was collected based on the need for help and the number of requests made for help when prompted or when it was really needed. If a student immediately asked for help from a peer or an adult with no independent effort to accomplish the task, then they were not given credit for requesting help in an appropriate
manner. Therefore, the data below shows the percentage of opportunities that the student asked for help in an appropriate manner.

**Role of peer mediators.** In order to track the number of opportunities provided for the student with an autism spectrum disorder to ask for help, the peer mediators were asked to tally the number of times that the request for help had to be prompted. In order to prompt the student to ask for help, the peer mediator asked the students with an autism spectrum disorder such things as, “Do you need help?” If the student responded yes, then the peer would prompt the student to ask for help. When the student asked for help, it was delivered by the peer tutors. The number of times that each peer mediator had to prompt the target students to ask for help was recorded in addition to the number of times that each student requested help spontaneously during the observation.

**Project Two** In the Hurricane Project, the students in Group 1, Pauline, Kevin, and Zoe, have seven data points for the behavior ‘asking for help’, while those students denoted as Group 2, Lincoln, Nancy, Jackie and Jackson, have two data points collected within the Hurricane Project. In an examination of this data, the range of the data is from 0% to 100% for the behavior in question across both Groups and all sessions. Only those responses and behaviors that met the operational definition of the behavior are noted in the data. The data shown in the Figure 4.11 below denotes that this skill is individualized across all students and their level of comfort with this skill is far less than the other behaviors observed during this action research. In Project Two, the students were allowed to choose their tasks within the project; these tasks were preferred for some of the students. Therefore, the need for help, even when present, may have not been recognized by the individual students.
Project Three In the project, Cyberbullying and Social Media, the students requested help a range of 0% to 100% of the opportunities observed. The level of asking was again consistent across the individual student; however, the percentage of appropriate requests were variable across both groups. In an examination of individual scores, one can see that instruction in this skill and opportunities to practice this skill should be provided for Nancy so that her needs can be met in the school environment and community.

Project Four Across Project 4, one can still see variability across the student groups; however, the skill is demonstrated consistently for each student. The range of data is from 0% to 100% for this skill; however, three out of seven students ask for help appropriately at a rate of greater than or equal to 50% in Project 4. Once more, the ability to recognize the need for help is an integral component of this target behavior. Additionally, if the student, such as Nancy, does not typically speak at all when she is uncomfortable, the possibility that the data may be negatively skewed is present for this behavior.

Overall the individual differences among the students is obvious across the data points. There is a great variability among all students with Lincoln showing proficiency in this skill throughout the Cyberbullying and Diversity projects. The nature of both the Cyberbullying and Diversity projects may have affected the results for some students who communicated past experiences with bullying.
Behavior 4: Task/Role completion. The final behavior that was targeted in this action research was task completion or fulfillment of the role assigned within the group. As one reviews the data over the three different project based learning opportunities utilized during this research, one finds that many students in the target group have a strong work ethic and complete most tasks. The tasks assigned during the projects ranged from internet research, drawing and poster creation, the creation of power point presentations and the development of survey questions and google forms for the desimination of these instruments to the teachers and student body. Please note that if the student exhibited difficulties in completing the task due to deficits in learning even with
the support of the peer tutoring and peer initiation, students were allowed to switch roles with the consent of the other member of his or her group.

**Role of peer mediators.** In assisting the students with an autism spectrum disorder to complete the assignments in the group, the peer mediators were expected to clearly define the roles of each member of the group and to monitor each other’s progress toward task completion. If students were struggling with a portion of the project, the peer mediators would assist the students through tutoring to ensure that the students had the necessary skills to fulfill the roles in the class.

**Project Two.** The students designated as Group 1, Pauline, Kevin, and Zoe, completed at least 75% of all assignments or roles within the group. The range of data for these three students was from 75% to 100%. Those students denoted as Group 2, Lincoln, Nancy, Jackie and Jackson had a range of completion rates from 0% to 100%. While some of the students within each group completed all assignments, others did not complete the tasks that were assigned to them within the group. Jackson, a student with an autism spectrum disorder, had a behavioral program that addressed task completion across multiple settings and content areas.

**Project Three.** During the Project Three, the students remained consistent in their completion of tasks and role fulfillment throughout the project. It is important to note that task completion is not indicative of the grades that the students received on the assignments as not every task that was assigned during the group sessions resulted in a grade. Therefore, it is possible for the grades to be higher or lower than the percentage of task completion. The students exhibited a range of task completion percentages from 25% to 100%. While each student was at different levels of task completion, each
maintained their levels of performance across Project Three or increased their level of task completion.

**Project Four.** Much like Project Three, the trend of improvement in task completion continued for most students. With the exception of one student, all students completed a minimum 75% of the tasks assigned in the last project based learning opportunity within this action research. Jackson, improved in the final project as well, with one session reflecting a 75% completion rate while the other sessions within the project were at 50%.

In Figure 4.

![INTERVENTION DATA FOR BOTH GROUPS ACROSS PROJECTS 2-4: TASK/ROLE COMPLETION](image)

**Figure 4.12** Intervention Data Across Projects for Task/Role Completion
Impact on Emotional Domain

Just as in the first project, the students were asked to complete a satisfaction survey for the Hurricane Project, the Cyberbullying Project and the Diversity Project. The students were asked to rate their level of satisfaction with the projects based on a Likert Scale rating from 1, hated it to 5, loved it. For the Hurricane Project, 40% of the students stated they loved the project, with six out of fifteen students rating the project with a five. There were four students who rated the project with a four, therefore 27% of the students liked the projection. There was one student who did not answer the survey; however, 25% of the students stated that they did not like the project. Of the fifteen respondants, twelve stated that the project had meaning for them while three stated that the project did not hold meaning for them.

As the students rated the Cyberbullying Project, five out of fifteen students, 33% of the students responding loved the project, while seven out of fifteen students, 47% liked it. Two students did not like the project 20% of the students did not like the project and two of the respondants, 13%, reported being neutral about the project, while one student reported a dislike for the project. When asked if the project held meaning for them, fourteen out of fifteen respondants were yes, while one was no.

In the last project of this action research, the Diversity Project, the students were unable to complete a student survey due to days missed due to exams and inclement weather. As a result, the information from the final project was taken from responses that were included in the final exam. This instrument allowed the students to share their thoughts in much the same way as the open ended questions on the surveys.
Triangulation of Results for Target Behaviors

In this section, a comparison between the baseline and intervention phases for the four target behaviors is provided and a determination of the effectiveness of the interventions of peer tutoring and peer initiation on those behaviors. As depicted in the graphs, the use of peer tutoring and peer initiation increased the number of social interactions with the peers during the intervention phase for all students with minimal outliers across all of the target behaviors that were identified in Phase One of the research.

**Behavior One: Orienting toward the group.** The behavior, orienting toward the group, was difficult for the students with autism and intellectual disabilities in the classroom. The group situation in baseline was overwhelming for many students due to the unclear social expectations within the group setting. These unclear expectations lead to increased incidents of off task behaviors during the baseline phase of the research; however, as the peer mediated instructional strategies of peer tutoring and peer initiation were introduced, all of the students became comfortable in the setting and began to build positive relationships with each other while attending to the group tasks. During the baseline setting, the students with an autism spectrum disorder were observed orienting toward the group an average of 33% of the observed intervals. As the peer mediated instructional strategies were introduced, the trend of this behavior began to grow positively across all students with an autism spectrum disorder. The behavior of orienting toward the group increased in level significantly across six out of seven students observed, improving to an average percentage of 68% intervals during the intervention phase of the research.
Figure 4.13 Triangulation: Orienting Toward the Group for Group 1

Figure 4.13 displays the data collected for Group 1, consisting of Pauline, Kevin and Zoe, across both the baseline and intervention phases to allow for a review of the effectiveness of the interventions of peer tutoring and peer initiation on the target behavior. Below, in Figure 4.14, the data collected for Group 2, Lincoln, Nancy, Jackie and Jackson are displayed. Across the multiple baseline method of data collection depicted in the two graphs, the effects of the interventions can be seen across individual students and between groups.
Behavior 2: Active listening/Responding. The second behavior, actively listening and responding to peers within the group, was measured under baseline conditions that applied no interventions. Interventions were added after five days for Group 1, and then after ten days for Group 2. The data representing the percentage of intervals that displayed active listening and responding under intervention conditions as measured by the momentary time samplings are shown in Figure 4.15 pictured below. In this figure, the baseline condition is displayed across five days for Group 1 in the first graph, while the data for the Group 2 is shown beneath the first in Figure 4.16. In Group 1, the intervals in which the students participated in active listening ranged from 50% in session
6 to 80% to 100% for some students in sessions nineteen and twenty. Within Group 2, the initial intervention session showed active listening in 50% of the intervals for individual students up to 100% of the intervals by the Session 20.

Under baseline conditions, the intervals in which active listening/responding was observed was an average of 27% of all intervals observed across all students with an autism spectrum disorder. After the intervention was initiated this percentage increased an average of 70% across all students with special needs. The individual results for each student displayed positive changes in both level and trend across the intervention phase. The results were variable for some students as the different projects created challenges for some students due to the nature of the project itself.

Figure 4.15 Triangulation: Active Listening/Response for Group 1
The individual progress of each student is displayed in Figures 4.15 and 4.16 depicting both group one and two respectively.

**Behavior 3: Requesting help.** Behavior 3, identified as requesting help, is difficult for students with high support needs. Many students with an autism spectrum disorder develop a learned helplessness and become prompt dependent for many of the academic needs within the classroom. Others will not ask for help, simply waiting for the answers to be given by someone else. Data was taken on the number of opportunities that each student utilized to request help from the peer when it was needed. The data in this category was variable; some students did not consistently ask for help, while others enjoyed working with peers and would readily ask for help. In this area, there were differences in the data across the individual projects that were not present in the other behaviors.
Across both groups of students with an autism spectrum disorder, the percentage of opportunities that the students asked for help within the observed intervals ranged from 0 out of 4 opportunities to 4 out of 4 opportunities (100%) for the students in both Group 1 and Group 2. The behaviors are graphically depicted in Figure 4.17 which displays the data during both baseline and intervention conditions. The data shows that the individual differences among the students with an autism spectrum disorder were more evident in this behavior than the other three behaviors that were observed. Overall, the interventions were successful; however, there was a greater variability between students and over the different project topics. In comparing the level and trend of the data depicted in Figure 4.17, there was not clear evidence that the intervention was successful for all of the members of the target group. While five out of seven students showed a positive trend in the ability to ask for help, the results were not consistent across students or projects.

**Figure 4.17** Triangulation: Asking a Peer for Help for Group 1
Behavior 4: Task/Role completion. Behavior 4, completing daily tasks or fulfilling the assigned roles in the group, measured the on-task intervals for each student with an autism spectrum disorder. This data was taken as a momentary time sampling of a fixed interval across the class period. The percentage of on-task intervals were recorded on the graph displayed in Figure 4.19 and Figure 4.20. The overall average percentage of intervals that showed students were fulfilling the roles assigned within their groups was 57.5% for all seven target students; however, there was a significant difference in the level of engagement between the students in Group 1 (81%) and Group 2 (34%). After the intervention phase utilizing peer mediated instructional strategies was initiated, the overall percentage of intervals in which students were fulfilling their assigned roles or
completing their tasks was 80% with Group 1 showing a positive trend and a level increase with an overall percentage of 91%. Group 2, Lincoln, Nancy, Jackie and Jackson, made significant changes from a baseline of 34% to 69% during the intervention phase across three different projects.

In evaluating the data for task/role completion, it was found that most students cared about fulfilling their assigned roles within the group. In a comparison between the students designated as Group 1 and Group 2, there was a great variability between the members of the group. One out of seven students shown in Figure 4.20, Jackson, was impacted by absences and interfering behaviors during the baseline conditions; however, he made significant progress in fulfilling his roles within his group during the intervention phase when he had peers encouraging him to do his best and complete his work.

Figure 4.19 Triangulation: Task/Role Completion for Group 1
Impact on Cognitive Domain

In order to answer the research question, “What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as measured by academic achievement of all learners”, the researcher compared the grades of the students over the phases of the action research on both individual and group learning tasks. The students’ grades as well as a synopsis of the requirements for each assignment is included below.

**Grade reports.** The second research question examines the effects of peer tutoring and peer initiation on student engagement within the cognitive domain by examining the student’s academic progress under both the baseline and intervention conditions. The grades for each student were compared across both conditions to measure the effect of the interventions of peer tutoring and peer initiation on the individual
student’s grades. The grades for all students are displayed in Table 4 reflect the individual grades for each student during the baseline phase and the intervention phases in an effort to provide a comparison that supports the effect of the interventions on the student grades. The grades include both individual assignments both during baseline and intervention phases as well as the rubric scores of the groups over each project that were translated to percentage scores for the purposes of the grade book. The scoring rubrics used in this research are found in Appendix E that reflects the content specific scoring guidelines as well as the collaboration and presentation rubrics shown in Appendices F and G. Within the collaboration rubric, students were assessed on their work ethic, listening skills, contributions to the group, and fulfillment of group roles. The presentation rubric, Appendix G, assesses the students’ command of the content within the project, the mode of presentation, and the overall organization within the presentation (New Tech Network, 2017). In accordance with the uniform grading policy of the state, the students were graded on a 10-point grading scale, with 90 to 100 as an A, 80-89 as a B, and so forth.

The general education students who participated in the psychology class were chosen due to their interest in becoming peer mentors, and some students had taken a psychology class before, therefore, some students had a greater understanding of the content areas than other students up at the beginning of the class. These differences in access to prior knowledge of the content area are seen in the data. Additionally, those general education students that participated in this study were veteran project based learners; therefore, they had a strong understanding of the collaborative work dynamic in the groups as well as how to perform under the scoring of a rubric. While the students
with special needs were assessed using a rubric in the past, they were far less familiar with its application within a group setting.

Table 4.5

Comparison Chart of Grades

<table>
<thead>
<tr>
<th>Student</th>
<th>INDIVIDUAL</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Kimmie</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Courtney</td>
<td>99</td>
<td>98</td>
</tr>
<tr>
<td>Sheila</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Randy</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Mattie</td>
<td>99</td>
<td>100</td>
</tr>
<tr>
<td>Jeff</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Cindy</td>
<td>99</td>
<td>98</td>
</tr>
<tr>
<td>Ashley</td>
<td>99</td>
<td>98</td>
</tr>
<tr>
<td>Brenda</td>
<td>99</td>
<td>95</td>
</tr>
<tr>
<td>Pauline</td>
<td>81</td>
<td>98</td>
</tr>
<tr>
<td>Lincoln</td>
<td>63</td>
<td>80</td>
</tr>
<tr>
<td>Jackson</td>
<td>63</td>
<td>75</td>
</tr>
<tr>
<td>Nancy</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Jackie</td>
<td>65</td>
<td>73</td>
</tr>
<tr>
<td>Zoe</td>
<td>48</td>
<td>77</td>
</tr>
<tr>
<td>Kevin</td>
<td>66</td>
<td>85</td>
</tr>
</tbody>
</table>

_Students, Kimmie – Brenda, are general education students. Those noted from Pauline - Kevin are special needs students.

The projects that were used during this research were high interest projects for all of the students. The grades for the general education students reflected the high interest and the level of commitment that each student displayed for projects as well as their part as peer mediators for the students with an autism spectrum disorder. Those students with ASD had a grade differential of greater than ten points between independent tasks when compared to those activities complete within the group. While two out of the seven
students were missing individual assignments, six out of seven of the students completed all of the assignments associated with the group presentations. The grades for those students with an autism spectrum disorder ranged from 48% to 81%. It is important to note that the information presented in the class was on grade level for a high school student; therefore, the content was challenging for those students with an autism spectrum disorder; however, they were successful in accessing the curriculum and participating in the project based learning environment.

**Project One.** During the baseline phase of the research, students were assigned both individual and group tasks related to the project, DARE: Alcohol, Tobacco and Opioids. Each student had to be able to identify the cycle of addiction, as well as compare the cycles across Maslow’s Hierarchy of Needs. Within the group, the students were assigned tasks that were created to complete research on the prevalence of the use of each drug among different age groups, the costs of the particular substance on the person, community, state and nation, as well as the programs that are in place to combat the addiction to these substances. Each group chose one of the drugs on which to do their research. As the roles were assigned, each student was responsible for giving an update showing what was accomplished on that day.

The presentations were graded on the accuracy of the information reported, the number of facts reported and the quality of the presentation as outlined in the scoring rubric found in Appendix G. In addition to the content of the project, the presentation was also graded on a rubric yielding a score that was then transformed to a percentage from 0 to 100.
Projects Two-Four. The grades collected during Projects Two - Four reflect the use of the interventions peer tutoring and peer initiation within the group tasks. As the students were assigned individual and group assignments, the students with higher support needs were allowed to receive help with from a peer to ensure that they understood the content and requirements of the tasks. The peer mediation strategy of peer initiation was utilized throughout the collaborative learning opportunities to ensure that the students remained engaged throughout the learning opportunities. In the Hurricane Project, the students were graded on the development of the social story and its illustration. Each child was assigned a story map to complete independently. The group then chose the best story map and developed the story. Those students who planned the events were required to submit their plans, community letters and flyers for grades.

In the Suicide/Cyberbullying project, the students were expected to find the incidence of suicide per age demographics as well as regional demographics. The students were encouraged to identify any related causes for suicide among the identified demographics as well as explore the connections between social media, cyberbullying and suicide among children and teens. The groups were assessed once again using a project rubric and presentation rubric that was converted to a percentage from 0 to 100. The students were also assessed using portions of the collaboration rubric, also attached in Appendix F.

In the last project represented in this research, the students developed a series of surveys to determine the level of diversity present in our staff and student body. Along with the survey development, the students explored their own ideas of diversity, touching on ableism, racism and gender discrimination in the independent assignment and whole
class discussions throughout the project. When the surveys were completed, they were
distributed to the faculty and students. Once the responses were received, the groups then
analyzed the results and created a presentation for the class. The students received both
individual and group task grades throughout the process. The final presentations were
assessed using both the project, collaboration and presentation rubrics.

**Impact on Emotional Domain**

The research question, “What impact does the peer mediated instructional
strategies of peer initiation and peer tutoring have on the emotional domain of student
engagement as measured qualitatively through journals and student interviews on student
satisfaction within the project based learning model?” was answered through the
collection of both qualitative and quantitative data in the forms of student journals,
surveys and exit tickets. The data collected from the surveys was shared along with the
behavioral data during each phase of the research. In Figure 4.18, the results of the
Likert Scale Survey are displayed.

*Figure 4.21 Student Satisfaction Survey*
In an examination of the student responses on the Likert-Scale Survey over time, the students were consistent in their responses across all survey questions rating the content of the project. While the students were getting to know each other during the DARE project, which constituted the baseline conditions, the subject matter was one that most students liked or could relate to in some way. The Hurricane Project, noted as Project Two, demonstrated that there was more variability in the student satisfaction with the subject matter. Due to the nature of this project, many students had to work through creative differences among themselves, while some were not comfortable with the lack of technology allowed on this project. The Cyberbullying Project, noted as Project 3, while a difficult topic for most of the students, was satisfying for many as they were able to post numbers for Suicide Hotlines across the school and address the problem of Cyberbullying in Social Media within the school population. During the presentations of this project, many students shared personal experiences that made this project more engaging and authentic than other topics.

The triangulation of the qualitative data discussed below serves to evaluate all of the information that was received across all forms of data collection to further gauge the student satisfaction during the action research. While the quantitative data provides a visual for the student reactions to the content, the qualitative findings further support the overall findings of the research.

In order to assess the student satisfaction in the inclusive, project-based learning environment, students participated in the student surveys and journal activities throughout all phases of the research project. These comments and scales were used to
determine the emotional satisfaction with the class and the interventions in place for those with an autism spectrum disorder. Through evaluation coding, the student responses in their journals and short response answers were analyzed in order to find connections with the changes in attitude and student satisfaction across the research phases. In evaluation coding, data is analyzed to determine the changes in data outcomes over time (Saldana, 2009). The qualitative data was also used to support the findings of the quantitative data and further explain any patterns that emerged across the projects. The evaluation coding also allows the researcher to examine the effectiveness of a program or intervention across time (Pittman & Maxwell, 1992).

During the baseline phase, the students who participated from the general education classes stated the need to understand and get to know the students in the class that had an autism spectrum disorder. There were moments of frustration at times for both the peer mediators and the students with an autism spectrum disorder as evidenced by the anecdotal notes included on the data sheets as well as the journals of the students. Three students in one of the groups relayed through their writings that they ‘wished they had the tools to work with these students’ and others stated that ‘they were unsure how to help the others in the group understand.’ Comments from the students with an autism spectrum disorder, such as “scary”, “too many people” showed that the students were nervous in their new environment. The teacher and paraprofessionals noted both negative and positive responses in the anecdotal records, such as a tantrum designed to escape the environment from Zoe, while Pauline said curse words under her breath in an attempt to make a group member stop asking questions and leave her alone. Notes were taken that stated, ‘she wants to be a part, but she is unsure how as comments about
birthdays were made during the most inappropriate times’, as Jackie asked repeatedly, ‘what’s your birthday?’

As the students moved through the projects and entered the intervention phase of the research, the journals and exit slips as well as the open ended questions on the student surveys began to shift from frustration and being overwhelmed to an appreciation for the strengths of the students who worked together in the collaborative groups. In coding these responses, a pattern emerged and strengthened across the intervention phase. Throughout all reflective pieces, the students expressed the surprise of what those student with an autism spectrum disorder could accomplish. The misconception that a special needs student could not participate in a rigorous learning activity was debunked as those students with an autism spectrum disorder proved that they were able to contribute to the group in meaningful ways. Kimmie stated, “I had no idea that they were so smart. I wish I had a memory like Jackie”. Jeff remarked, “Lincoln is really cool. I am glad that I got to know him.” The data showed a growing understanding of the individual differences within each student. Projects Two - Four were designed to allow each student to showcase his or her talents within the groups. The peer mediators were willing to work with each student to pull them into the groups and help them to remain engaged throughout each project. The exit slips and journal activities continued to express satisfaction over the successful attempts to help the students with special needs, while also asking how to engage those students that were not as invested in the project as they should have been. Some of the recurring themes seen in the writings were surprise over the abilities of all of the students, an new understanding of the nature of autism, and the enjoyment of the friendships that they were building with eachother.
The students with an autism spectrum disorder expressed a growing enjoyment and attachment for those students that acted as peer mediators in the class. The students would even seek the students out in the cafeteria to speak to them or sit at their tables. The theme of friendship and acceptance were present in the writings and reflections of those with an autism spectrum disorder. Zoe stated, “I like my new friends”, while Kevin said “Courtney and Mattie were great.”. Jackie stated that “Brenda, Ashley and Kimmie were fun”.

As a culminating project for this semester, the students had to research the area of diversity in our school. Each group was required to develop a survey for both students and faculty that addressed the areas of diversity in our school. As this semester exposed some of our typical students to an environment in which they were unfamiliar, they learned first about the diversity in ability that is present in our classrooms. However, all of the students were shocked by the level of diversity present in our school as well as the insights of some of our students across the different learning platforms utilized in our school. As a final journal entry in this project, the students were required to reflect on their experiences in our classroom as members of an inclusive, project based learning environment. The statements that were shared by the typical, general education students were profound. In nine out ten student responses, each expressed surprise over the work that each of the students with an autism spectrum disorder were able to complete. Comments such as “It was great. I should have talked with my group members more” and “I am very impressed about how everyone worked together to get all the parts to flow.”, along with “We all collaborated well together, however, I would change the way we presented our project and done something more hands on” were indicative of the
comments that nine out of ten of the members of the psychology class shared about their experiences. Only one comment was negative as the student shared frustration over a group member’s multiple absences that impacted her group’s ability work more quickly.

As the semester came to a close, the students were asked to share their favorite parts of the class. In 11 out of 17 responses, the new friendships that were made as a result of the class were noted as the one of the favorite parts of the class. In 3 out of 17 responses, the students identified the project that they enjoyed the most and spoke of the positive experiences within the groups. Others expressed surprise over the survey responses that were received during the last project; they did not align with the student’s new found understanding of diversity and inclusion. In coding these responses, a pattern emerged and strengthened across the intervention phase. The students throughout all reflective pieces expressed the surprise of what those student with an autism spectrum disorder could accomplish. The misconception that a special needs student could not participate in a rigorous learning activity was debunked as those students with an autism spectrum disorder proved that they were able to contribute to the group in meaningful ways. Kimmie stated, “I had no idea that they were so smart. I wish I had a memory like Jackie”. Jeff remarked, “Lincoln is really cool. I am glad that I got to know him.” The data showed a growing understanding of the individual differences within each student. Projects Two - Four were designed to allow each student to showcase his or her talents within the groups. The peer mediators were willing to work with each student to pull them into the groups and help them to remain engaged throughout each project. The exit slips and journal activities continued to express satisfaction over the successful attempts to help the students with ASD, while also asking how to engage those students that were
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**Teacher Perspective**

In research question four, the teacher and teacher assistants who participated in the study were asked to write their overall impressions of the class as a whole and the effectiveness of the project based learning environment in an inclusive setting. As each adult reflected on their own anecdotal records that were taken throughout the research projects, the emerging themes centered around the willingness of the students to work together and help each other on the projects and individual assignments. The level of positive student interaction was noted on all data sheets and anecdotal record sections of the behavioral data sheets with comments that were observed during the group sessions.

The following graphic visually displays the emerging themes of the qualitative data from both the students and the teachers that were involved in this study. The students with an autism spectrum disorder displayed fear and anxiety over the changes
that were taking place in their classroom through interfering behaviors and withdrawal. The students chosen to act as mediators continually communicated a sense of helplessness and inadequacy in dealing with the students with ASD. However, as the students were trained in the peer mediated instructional strategies, they became more confident in their roles of mediators in the classroom. This confidence allowed each mediator to reach out to the students with an autism spectrum disorder and build the relationships that emerged as a theme for those students. As the students with ASD moved away from the idea of the “us versus them” mentality, they were able to make connections with new friends. With this shift, the students became more comfortable in their new environment and were able to focus on the content of the assignments and the tasks that were assigned to them within the collaborative groups. As all of the students began to make connections, the peer mediators were able to see the strengths of the students and value their diverse talents.

The Figure 4.22 shown below graphically displays the process of coding the responses of the students with an autism spectrum disorder, the general education students who acted as peer mediators, and the teacher/researcher and paraprofessionals who collected data and participated in this study. The diagram moves down and from left to right to show the changes over time in the perspectives of the students and other stakeholders in this study.
As one considers the impact of the peer mediated instructional strategies on student engagement across the cognitive, emotional and behavioral domains, one must consider the use of those strategies successful for most students within the classroom (Stephanson et. al, 2016; Sperry, Neitzel, & Engelhardt-Wells, 2010). In the first research question, the development of social skills was examined through the observation
of student behaviors within the group setting of the project-based model. In this examination, it was found that the peer tutoring and peer initiation increased the levels of social skills development over baseline in significant levels across all four observable behaviors. Additionally, the inclusive nature of the classroom created an environment that allowed positive interactions between the peer mediators and the students with an autism spectrum disorders (Styla, & Michalopoulou, 2016).

The grades of the students were consistent with other classes for the typical peers. The students that were placed in the class were recruited by their guidance counselor, and each was driven to complete all work and enjoy learning. The level of interactions between the students with higher support needs and their typical counterparts increased significantly over the semester, and many of the students with autism made significant gains in grades across the semester in both individual and group grades. The range of individual and group scores improved an average of fifteen percentage points over the semester with the intervention of peer tutoring and peer initiation in place for all students across the individual and group grades.

Perhaps the most significant impact of the research project was seen in the impressions that each of the students had of their group interactions and the abilities of their peers. The level of diversity represented in the classroom was obvious, yet these differences were overcome as those students with an autism spectrum disorder were immersed in the project based learning environment with understanding peers who were willing to be strong mentors and tutors for those students.
Summary

This action research was conducted to combat a problem within the researcher’s school setting as the district administration began the paradigm shift from traditional, direct instruction to the project-based learning model utilized within the New Tech Network. The scope of this research was ambitious as it represented both general education students as well as students with an autism spectrum disorder served by an individual education plan within a challenging, yet rewarding project-based learning environment. There were so many factors to be considered in this research— the skills necessary to be successful in the project-based learning model, the needs of the students with an autism spectrum disorder, and the needs of the students who would act as peer mediators. In addition to all of these factors, the content area had to be presented at a level that would be meaningful to all of the students within the classroom; therefore, the interventions of peer tutoring and peer initiation were chosen to target to both the academic and social needs of the students with ASD so that each could fully participate in the class.

As the class began, the students were enthusiastic and excited to get started, even if some were anxious over the unknown; each student enrolled from the general education setting were informed in advance that the class was an inclusive setting that would also serve students with special needs. Each understood his or her special role within the class, and each worked diligently to apply the techniques that they learned to help each student fully participate in the project based learning environment. Within this setting, the teacher/researcher watched the students become one class with each student seen as an integral, equal part of the class. While there were challenges, there were
successes. The success that was seen in this class was more than academic achievement, gains were made in the social skills of each of the students with an autism spectrum disorder. Moreover, the understanding and friendships that were established through this process are still seen today as the peer mediators come in a visit with the students even now when they are no longer in the class.

The impacts of this research were significant; therefore, more research is needed to determine if the effects can be generalized to different students and content areas. The need for more research and further study within our school setting will drive the action plan that follows.
CHAPTER 5

IMPLICATIONS AND RECOMMENDATIONS

The current action research project was designed to measure the impact of the peer mediated instructional strategies of peer tutoring and peer initiation on the student engagement of both typical and non-typical students served in an inclusive, psychology classroom. Student engagement was monitored across the cognitive domain through the comparison of student grades, while the social/emotional domain of student engagement was measured through the reflections of journal activities and student surveys. The behavioral domain of student engagement was measured through behavioral data collected on four key behaviors that were targeted for improvement during an initial needs assessment performed at the outset of the research.

The purpose of Chapter 5 is to summarize the study and to create an action plan that reflects the findings of the research as well as their impact on the teacher/researcher’s practice going forward from the research.

Problem of Practice

The students with higher support needs within a school are often segregated from the general population due to academic and behavioral concerns. While students benefit from specialized instruction within the special education classroom, the opportunity to participate in the emerging learning environments in their schools are hindered. In the teacher/researcher’s school, the paradigm shift from the traditional classroom to the project based learning environment is well underway with two established schools within
a school adhering to the New Tech Network philosophy of project based learning. In this shift to the new learning environment, the representation of those students with higher support needs who were served with an IEP was minimal. As a teacher of students with autism and mild intellectual disabilities, this teacher/researcher sought to examine the use of peer mediated instructional strategies as a means to open this environment to a more diverse student population. In order to accomplish this, the teacher/researcher created a new psychology class to employ these strategies and address the diverse nature of all students. The psychology classroom was set up as a project based learning environment that conducted four different projects during the research timeframe. The projects that were completed during this research project were chosen by the students in the class; therefore, the students were interested in the subject matter of each project. The projects addressed multiple social phenomena such as drug and alcohol use, hurricane relief efforts, suicide, cyberbullying and social media, and diversity in our school and across our district. Within the setting of the inclusive psychology classroom, the following research questions were addressed:

1. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the development of social skills within an inclusive project based learning model for students with an autism spectrum disorder?
2. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on student engagement within the cognitive domain as measured by academic achievement of student with an autism spectrum disorder?
3. What impact does the peer mediated instructional strategies of peer initiation and peer tutoring have on the emotional domain of student engagement as measured
qualitatively through journals and student interviews on student satisfaction within the project based learning model?

4. What perception does the teacher have on the peer mediated instructional strategies of peer initiation and peer tutoring on the learning environment as measured qualitatively by teacher interviews?

The research questions were designed to inform the teacher/researcher of effective interventions that could lead to more open access to the general curriculum for students with an autism spectrum disorder within an inclusive, project based learning model. Simultaneously, the goal of the research was to increase awareness of and acceptance for those students with exceptionalities such as autism or intellectual disabilities.

Throughout this research project, the teacher/researcher encouraged each participant to examine his or her own ideas of diversity, ableism and personal engagement in the learning process.

Participants

In this research study, there were ten students in their junior or senior years within the general education curriculum who had expressed an interest in becoming a peer mentor for others students in our school. These students were participants in New Tech Network model “school within a school”; therefore, they were adept at project roll outs within the project based learning model. They were screened by the guidance counselors as they were added to the class to ensure that they would be comfortable working with students with autism and/or mild intellectual disabilities. Both male and female students from various racial and socio-economic backgrounds were represented within the group. The student participants with an autism spectrum disorder ranged in ages from 14 to 19
with documented disabilities of autism and /or mild intellectual disabilities. All of the students with disabilities had an individual education plan and all accommodations and modifications set forth in those plans were adhered to throughout the research project. All of the students with individual educational plans had the academic ability to participate in the projects, although the subject matter was unfamiliar to these students while the students from the general education environment has some prior knowledge of the content area.

Findings

In order to find the most beneficial areas of improvement in the behavioral domain for the students with an autism spectrum disorder, a Social Skills Inventory Scale was administered to each student enrolled in the Psychology class. Every student was given the opportunity to choose a teacher to fill out an inventory scale, and each parent was to fill out a parent inventory on his or her child. Those results were correlated and utilized to identify the target behaviors in the intervention phase the research.

In a review of the findings of the behavioral data, it is clearly seen that across three separate project opportunities, the participation of the students with an autism spectrum disorder increased in the positive targeted behaviors under the intervention phase in which peer tutoring and peer initiation were implemented to increase the percentage of meaningful interactions within the group. In the behavioral data, the percentage of intervals displaying the desired behaviors increased from an average of 30% in baseline with no support to more than 61% during the intervention phases.

The grades of each participant increased as the interventions were put in place, and the students with higher support needs gained a confidence in their abilities as they
were able to fully participate in the curriculum with the peer tutoring. The grades of the general education participants remained steady across all individual and group activities; the grades of the participants with an autism spectrum disorder increased significantly during the intervention phase of the research cycle.

Through anecdotal records, journal content, and student surveys, the student participants communicated their own growth as each gained a greater understanding of diversity and the abilities of those that may learn differently than others. The responses were positive, and the relationships that were built with the students in the researcher’s class have remained strong even after the end of the course. Each student that was involved in this research communicated strong positive experiences throughout each of the three projects completed during this research period.

**Action Plan**

The purpose of action research is to identify potential solutions to identified problems within the classroom (Mertler, 2017). As the teacher of students with autism, the researcher initiated this research in an effort to identify interventions that would allow students with higher support needs to access the project-based learning environment successfully. The participants in this study were identified as students with autism and/or intellectual disabilities who exhibit some form of communication and social skills deficits. Due to these limitations, these students find it difficult to participate fully in the self-paced, collaborative work environments found in the project based learning opportunities (McCurdy & Cole, 2014; Simpson & Bui, 2016). With this research, viable options to allow inclusive participation within the project-based learning environment
were identified and can be implemented across more content areas and various classrooms in the school.

As the students with autism were immersed into a collaborative work environment with the supports of the peer mediated instructional strategies of peer tutoring and initiation, they gained in social skill development and enjoyed a greater understanding of the content area. The results of the behavioral data showed a decrease in off task behaviors, a willingness to engage with their peers and a satisfaction with the learning opportunities. In an effort to share the results of the study with the faculty and staff of the school the following action plan will be implemented.

**Figure 5.1 Action Plan for Implementation of Peer Mediated Instructional Strategies**

Communicate results in the professional learning communities.

Communicate findings with the school administration and Office of Special Services.

Monitor the results of the peer mediated instructional strategies across student populations and content areas and adjust training as indicated.

Develop a training module to aid other teachers/students in utilizing peer mediated instructional strategies.

Continue the research with additional student groups across different content areas.
In order to communicate the findings of this action research, the teacher/researcher plans to present the research within our professional learning communities at the high school. In addition to the PLC’s, the findings will also be shared with the school administration and the Office of Special Services in an effort to increase the opportunities to build more inclusive, project based classrooms within our school setting.

In order to expand the program across content areas, a training module will be developed to aid in the instruction of the peer mediated instructional strategies of peer tutoring and peer initiation to be implemented by both general educators and special educators alike. As the program is expanded, it will also be necessary to monitor the effectiveness of the interventions with a greater number of students. It is important that any behavior intervention be generalized across settings; therefore the social skills and targeted behaviors within this study should be taught across content areas with different mediators to ensure that the skills can be generalized across content areas and people (Cooper, 2012).

**Implications for Practice**

Within the special needs classroom, there is an isolation from the typical peers within the school. This isolation deepens when the classroom environment that is emerging as ‘best practices’ within the school is not an environment that is accessible to our students with higher support needs. The diverse nature of our student populations mandate that the leaders of the school teach our students the value of each student, regardless of ability, race or socioeconomic status. The inclusive setting that was created during this research became a nurturing environment for all participants, as evidenced by
the emerging themes of friendship and appreciation found in both journals and survey responses among all students. With an overwhelming number of students expressing both satisfaction and surprise at all that was accomplished, the success of peer tutoring and peer initiation led to a greater degree of engagement among all students surveyed. Each student learned about their own talents, knowledge and ability to tackle the difficult questions of drug use, suicide, social media and cyber bullying, as well as diversity in our school. As each student worked alongside those who were different than they, each found a piece of common ground. The insights into one another’s differences have confronted the problem of ableism within our school, thus creating a truthful, honest dialog about the abilities of our students and the opportunities afforded to them to access the curriculum and their typical peers in a productive manner.

With all of these factors in mind, it is important to create those inclusive learning opportunities across multiple content areas to ensure that each student is able to maximize his potential to engage in both the academic and social areas of the school environment. This action research project addressed the needs of one group of students with autism and mild intellectual disabilities, so it is important to expand this research to include a wider student base.

**Implications for Further Research**

In an effort to create a more inclusive learning environment using the project-based learning model, the teacher/researcher is currently conducting the research within this study once more with a different section of psychology students. In comparing the results of the two sections under similar conditions, the effectiveness of the interventions can be examined across multiple student group. Additionally, the use of peer tutoring
and peer initiation should be implemented in core classes, such as math and English, to ensure that the content area did not contribute to the success of the interventions. As the interventions are expanded to other content areas and different populations of students, the effectiveness of the intervention should be monitored to create changes in the training modules for the interventions as needed for each setting. The students with an autism spectrum disorder who participated in this study should be followed across time to ensure that the skills taught in this action research are maintained and generalized to other settings across the school setting and even into the community.

**Challenges/Limitations**

In this action research, there were several challenges and limitations that must be considered. The students with an autism spectrum disorder were initially overwhelmed by the number of students in their classroom, and there were instances of greater off task behaviors maintained by avoidance during the initial phases of the research. The number of off task behaviors did subside after the students were acclimated to the changes in their natural environment; however, this was a factor in the initial behavioral data collection.

Secondly, in retrospect, the manner in which the students from the general curriculum were chosen to participate in the research may have positively skewed the results as those students were not a representative sample of the student body, but a sample of the highest 10% of the junior and senior classes. Thirdly, the scope of this research was broad; the factors of student engagement were examined across multiple domains and across a diverse student group. Therefore, data collection was intensive and time consuming.
Lastly, the number of students with higher support needs were fluid during the first few weeks of school as schedules were altered and students were shifted into and out of classes. Within this same area of concern, the number of students who participated in this study were few, and the results were specific to this particular group of participants. More study is needed to ensure that the results found within this study are representative of future findings across differing student populations and content areas. The Psychology content for this research was especially conducive to the nature of this research as it was placed within the natural contexts of the class. Within the content area of the class, students were taught about positive and negative reinforcement, the concepts of Maslow’s Hierarchy of Needs, shaping and the effects of these concepts on one’s behaviors. This content was a natural context in which to perform this action research; students were aware of how their own interactions affected the behavior of the class. Therefore, the results seen in this research may not be consistent across other content areas. The academic skills and expectations in some content areas could yield different results.

**Summary**

The standard for an effective behavioral intervention is its social significance (Hall, 2010). As the findings of this action research indicate, the effectiveness of the peer mediated instructional strategies is promising within the inclusive, project-based learning environment. Student engagement across the cognitive, emotional and behavioral domains were improved for students with an autism spectrum disorder, while those peer mediators gained an understanding of the nature of students with autism and mild intellectual disabilities (Sagayadevan, & Jayaraj, 2012). The teacher/researcher enjoyed
watching all of the students come together as one class and working together to discuss difficult topics with one another.

The opportunity for students to work together and begin to value each other’s differences is not only socially significant for the students with an autism spectrum disorder, it is also socially significant for the general education students. In the school setting in which this research took place, the divisions among the student body are evident; those divisions are mirrored in our communities. The ability to understand and appreciate the individual differences of our students and communities can only improve the relationships of our students within our school community. As those relationships are developed and strengthened, perhaps the differences will become visible within our communities as well.

As educators, we are charged with preparing our students to become 21st Century citizens. This action research addressed the areas of collaboration, communication, technology literacy, and social skills through the inclusive, project based learning environment. As the cycle of research continues, it is important to provide meaningful opportunities to further develop these skills.
REFERENCES


Simpson, L., & Bui, Y. (2016). Effects of peer-mediated intervention on social interactions of students with low-functioning autism and perceptions of typical


https://www.bie.org/index.php/site/RE/pbl_research/29


Retrieved from: http://www.bie.org/blog/inclusive_special_education_via_pbl


APPENDIX A

GLOSSARY OF TERMS

**Ableism:** the discrimination of people with disabilities (Young, 2013).

**Baseline:** the data gathered before the intervention is introduced (Cooper, 2014).

**Comorbid condition:** the presence of one or more distinct conditions within an individual, such as autism with a speech-language disorder.

**Intervention:** the program designed to bring about a behavioral or learning change (Cooper, 2014).

**Momentary Time Sampling:** an interval recording system that measures if a behavior occurs within a specified moment in time (Cooper, 2014).

**Negative reinforcement:** decreasing the rate of a behavior by removing a stimulus (Cooper, 2014).

**Positive reinforcement:** increasing the rate of a behavior by adding a stimulus (Cooper, 2014).

**Project Based Learning:** “a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging and complex question, problem, or challenge” (Buck Institute for Education, 2016).

**Social Skills:** the skills necessary to communicate using both verbal and nonverbal communication (Cooper, 2014).
**Soft skills:** those emotional skills that are necessary for success in most job fields, such as communication, teamwork, leadership, problem solving, ethics, and others (Ooi, & Ting, 2015).

**Student Engagement:** “refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education” (Student Engagement, 2016).
## APPENDIX B

### DIAGRAM OF CONVERGENT MIXED METHODS RESEARCH DESIGN

Converging Convergent Mixed Methods Research

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Intervention Phase</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QUANTITATIVE DATA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition: Baseline:</td>
<td></td>
<td>Converging patterns and data collection points will be analyzed to determine the effectiveness of the intervention for individual participants as well as the group as a whole. A multiple baseline design will be utilized to support observed changes.</td>
</tr>
<tr>
<td>- Social Skills: Student Form</td>
<td>Intervention Phase: Students begin a new project under research conditions.</td>
<td></td>
</tr>
<tr>
<td>- Observations of behaviors before intervention phase</td>
<td>Formative and Summative assessments integral to the project will be administered.</td>
<td></td>
</tr>
<tr>
<td>- Scores from project based learning</td>
<td>Direct observation of behaviors, measured through frequency, interval or per opportunity, identified as weaknesses in baseline.</td>
<td></td>
</tr>
<tr>
<td><strong>Qualitative Data:</strong></td>
<td>Journal Entries – digital or hardcopy format from both typical and non-typical learners.</td>
<td></td>
</tr>
<tr>
<td>Condition: Baseline:</td>
<td>Teacher and paraprofessional generated anecdotal records and interviews</td>
<td></td>
</tr>
<tr>
<td>Interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal Entries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data will be simultaneously collected in both qualitative and quantitative forms throughout the research project to allow for a greater understanding of the effects of the intervention phase across individual participants and the group as a whole (Mertler, 2017).
APPENDIX C
SAMPLE DATA COLLECTION SHEET

Observation Period: *(Insert time here)*

Targeted Skill: Active Listening/Responding

Noted Observations:

Student 1: If student 2 is not sharing his or ideas independently, student 1 will prompt student 2 by saying, “What do you think?”, “How do you think we could show/do this?” or a similar prompt appropriate to the task.

Student 2: Data was recorded in the following manner: Per opportunity during observational period.

Interval data *(length and number)* was collected using a momentary time sampling that rotated from group to group based on activities planned in the day and the length of time engaged in collaborative work groups.

<table>
<thead>
<tr>
<th>Time Intervals</th>
<th>Independent Communication by student 2.</th>
<th>Prompted by Peer</th>
<th>Student 1 or 2 Prompted by adult</th>
<th>Responds to Peer</th>
<th>On topic response</th>
<th>Off topic/ Off task</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 minute interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 minute interval</td>
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<tr>
<td>10 minute interval</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10 minute interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+ means that the student performed the behavior being observed.

- means that the student did not perform the behavior being observed.

Observer anecdotal records about student (2) response:


# APPENDIX D

## SAMPLE SOCIAL SKILLS INVENTORY SCALE

**Remember:**

*How True: N - Not True  L - Little True  A - A Lot True  V - Very True*

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I ask for information when I need it.</td>
<td>N  L  A  V</td>
<td>11. I show others how I feel.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
<tr>
<td>2. I pay attention when others present their ideas.</td>
<td>N  L  A  V</td>
<td>12. I do what the teacher asks me to do.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
<tr>
<td>3. I try to forgive others when they say “sorry.”</td>
<td>N  L  A  V</td>
<td>13. I try to make others feel better.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
<tr>
<td>5. I stand up for others when they are not treated well.</td>
<td>N  L  A  V</td>
<td>15. I let people know when there’s a problem.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
<tr>
<td>7. I feel bad when others are sad.</td>
<td>N  L  A  V</td>
<td>17. I help my friends when they are having a problem.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
<tr>
<td>10. I take turns when I talk with others.</td>
<td>N  L  A  V</td>
<td>20. I am polite when I speak to others.</td>
<td>N  L  A  V</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

RUBRIC FOR DARE PROJECT

Rubric for Content of DARE Project

<table>
<thead>
<tr>
<th></th>
<th>Beginner 1</th>
<th>Developing 2</th>
<th>Accomplished 3</th>
<th>Advanced 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Content is minimal and errors are present in the presentation.</td>
<td>Student addressed the issues of drug use and addiction on the individual, family, community, state and nation with 2 details and little or no analysis of the cycle of addiction.</td>
<td>Student addressed the issues of drug use and addiction on the individual, family, community, state and nation with 3 to 4 details and a basic analysis of the cycle of addiction.</td>
<td>Student addressed the issues of drug use and addiction on the individual, family, community, state and nation with 5 or more details and a strong analysis of the cycle of addiction.</td>
</tr>
<tr>
<td>Organization</td>
<td>No clear organization is present.</td>
<td>Organization of data is not organized throughout project.</td>
<td>Content is organized throughout project with minimal inconsistencies.</td>
<td>Content is strongly organized and easy to follow throughout the project.</td>
</tr>
<tr>
<td>Presentation</td>
<td>The presenter was unable to discuss the areas of drug use as identified in the project.</td>
<td>The presenter was able discuss 1-2 of the areas identified in the project.</td>
<td>The presenter was able to discuss 3-4 of the areas to be covered in the project and answer questions from</td>
<td>The presenter was able to discuss all areas of the project and answer questions from</td>
</tr>
</tbody>
</table>
## APPENDIX F

### RUBRIC FOR COLLABORATION

**Rubric for Collaboration**

<table>
<thead>
<tr>
<th>Contribution and Development of Ideas</th>
<th>Share lacks supporting reasoning</th>
<th>Shares ideas, and explains the reasons behind them</th>
<th>Provides ideas or arguments with convincing reasons</th>
<th>Acknowledges the strengths and limitations of their ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited acknowledgement of others thinking</td>
<td>Acknowledges others’ thinking</td>
<td>Builds on the thinking of others</td>
<td>Builds on the thinking of others and checks back for agreement</td>
<td></td>
</tr>
<tr>
<td>Equal Participation</td>
<td>Shares ideas without listening or listens without sharing ideas</td>
<td>Allows for equal participation by both sharing ideas and listening to the ideas of others</td>
<td>Encourages equal participation by asking clarifying or probing questions, paraphrasing ideas, and synthesizing group thinking</td>
<td>In addition to proficient, actively invites others to participate equitably, promoting divergent and creative perspectives</td>
</tr>
<tr>
<td>Group Norms</td>
<td>Follows group norms and processes but not with modeling and/or reminders</td>
<td>Understands and follows group created norms and processes</td>
<td>Understands and follows group created norms and processes and helps others do the same</td>
<td>In addition to proficient, initiates the use of norms and group processes in each meeting</td>
</tr>
<tr>
<td>Respectful Tone and Style</td>
<td>At times, words and tone indicate respectful intent, but not consistently</td>
<td>Words and tone indicate respectful intent, but might not be sensitive to others</td>
<td>Words and tone indicate respect and sensitivity to others</td>
<td>In addition to proficient, provides gentle feedback about others’ words and tone to foster an environment of respect</td>
</tr>
<tr>
<td>Positive Body Language Active Listening</td>
<td>Sporadically faces speaker, or engages without distraction some of the time</td>
<td>Faces speaker and is free of distractions when others are speaking</td>
<td>When others are speaking, both body language and verbal responses indicate engagement</td>
<td>When others are speaking, body language and verbal responses indicate positive, energetic engagement</td>
</tr>
<tr>
<td>Roles</td>
<td>Knows role, and fulfills it only some of the time</td>
<td>Accepts role and shows understanding by fulfilling it</td>
<td>Knows the roles of self and others, and uses the roles to maximize group effectiveness</td>
<td>In addition to proficient, uses group roles as opportunities to use strengths or address areas of weakness</td>
</tr>
<tr>
<td>Work Ethic</td>
<td>Completes only some assigned tasks</td>
<td>Completes all assigned tasks by deadline</td>
<td>Completes all assigned tasks by deadline; work is quality, and advances the project</td>
<td>Models consistently high standards for timeliness, quality, and ownership of work</td>
</tr>
<tr>
<td></td>
<td>Comes to meetings without evidence of preparation</td>
<td>Comes to meetings partially prepared</td>
<td>Comes to meetings fully prepared</td>
<td>Preparation for meetings surpasses expectations</td>
</tr>
</tbody>
</table>
APPENDIX G

RUBRIC FOR PRESENTATION

Presentation Rubric

<table>
<thead>
<tr>
<th>Clarity</th>
<th>EMERGING</th>
<th>PROFESSIONAL</th>
<th>ADVANCED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central message is unclear or unstated</td>
<td>Central message can be deduced but may not be explicit</td>
<td>Presents a clear central message</td>
<td>Presents a central message that is clear and original</td>
</tr>
<tr>
<td>Does not include alternate perspectives when appropriate</td>
<td>Includes alternate perspectives when appropriate</td>
<td>Addresses alternative or opposing perspectives when appropriate</td>
<td>Addresses alternative or opposing perspectives in a way that sharpens one's own perspective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence</th>
<th>EMERGING</th>
<th>PROFESSIONAL</th>
<th>ADVANCED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draws on facts, experience, or research in a minimal way</td>
<td>Draws on facts, experience, and/or research inconsistently</td>
<td>Draws on facts, experiences and research to support a central message</td>
<td>Facts, experience and research are synthesized to support a central message</td>
</tr>
<tr>
<td>Demonstrates limited understanding of the topic</td>
<td>Demonstrates an incomplete or uneven understanding of the topic</td>
<td>Demonstrates an understanding of the topic</td>
<td>Demonstrates an in-depth understanding of the topic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organization</th>
<th>EMERGING</th>
<th>PROFESSIONAL</th>
<th>ADVANCED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inconsistencies in organization and limited use of transitions distract from audience understanding of line of reasoning</td>
<td>Organization and transitions reveal the line of reasoning</td>
<td>Organization and transitions support the line of reasoning</td>
<td></td>
</tr>
<tr>
<td>A lack of organization and/or transitions makes it difficult to follow the presenter's ideas and line of reasoning</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of Digital Media/Visual Displays</th>
<th>EMERGING</th>
<th>PROFESSIONAL</th>
<th>ADVANCED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital media or visual displays are confusing, extraneous, or distracting</td>
<td>Digital media or visual displays are informative and relevant</td>
<td>Digital media or visual displays are informative and support audience engagement and understanding</td>
<td>Digital media or visual displays are polished, informative, and support audience engagement and understanding</td>
</tr>
</tbody>
</table>
APPENDIX H

STUDENT SATISFACTION SURVEY

An example for the first project was included. Each survey was the same except for the content related questions.