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A Mixed Methodology Study of How Neuroscience and Social-Emotional Learning Impact Students' Academic Achievement and Behavior

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A MIXED METHODOLOGY STUDY OF HOW NEUROSCIENCE AND SOCIAL-EMOTIONAL LEARNING IMPACT STUDENTS' ACADEMIC ACHIEVEMENT AND BEHAVIOR

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Approval Page

This dissertation was submitted by Laura S. Shipman under the direction of the persons listed below. It was submitted to the Gardner-Webb University College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Abstract

A MIXED METHODOLOGY STUDY OF HOW NEUROSCIENCE AND SOCIAL-EMOTIONAL LEARNING IMPACT STUDENTS' ACADEMIC ACHIEVEMENT AND BEHAVIOR. Shipman, Laura, 2022: Dissertation, Gardner-Webb University. This study is a mixed method case study using a qualitative and quantitative study structure. The intent of this study was to measure the impact of neuroscience or brain-based social-emotional (SEL) skills and strategies on students who have been identified with disruptive behavior and/or trauma. The impact is evaluated through the Collaborative for Academic, Social, and Emotional Learning (CASEL framework of five competencies (CASEL, 2020). The SEL program used in this study was the Second Step program. There were 33 students who were in an intervention pull-out group. Eight teachers and eight parents participated in the study. Quantitative data were gathered from a 10-item questionnaire distributed to the parents and teachers. Qualitative data were gathered through one-on-one interviews with the classroom teachers. They were asked five open-ended questions. The findings of this study suggested the younger a student was when identified with disruptive behavior and/or trauma, received SEL intervention, the greater the likelihood of positive change in behavior. This study suggests that when students are given SEL tools and are able to practice them, they may learn to make better decisions which range from personal to collaborative situations. Students who exhibit SEL skills, may be able to attend better to instruction, which in turn may result in an increase in academic performance. With SEL skills and strategies, students may be able to understand their emotions and use the skills and strategies to make changes in how they react.

Keywords: social-emotional learning, SEL, neuroscience, brain-based learning, social neuroscience, Second Step program, CASEL framework, CASEL, mixed method

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Chapter 1: Introduction

Introduction

In the modern world where students have more external and internal stimuli as well as stress and/or trauma presented to them, they need to have an understanding of how the stressors affect their brains as well as how they can overcome moments of anxiety, feeling stressed, or wanting to give up by using learned strategies. According to Eric Jensen, brain-based education is "learning in accordance with the way the brain is naturally designed to learn" (Jensen & McConchie, 2020, p. 1). The brain is the epicenter for all our emotions, and it continues developing as we age well into our twenties. Emotions are essential to many activities that include but are not limited to planning, monitoring, and making personal decisions. According to Sprenger (2020), in order for the brain to make any changes, there must be a chemical change or chemical movement within the brain. A healthy brain is a brain that can govern all the different chemicals and continue to regulate those chemicals within a normal range.

Scientists have discovered an intimate relationship between emotions and the decisions that shape our communications with others (Elias et al., 2003). If students are to be able to recognize their emotions, they need to understand what happens in the brain to make them feel these emotions. According to Jensen and McConchie (2020, p. 96), "emotions are essential at times. They aid us in our individual and group survival". Our emotions are both constant and certain. Sousa (2021) added that through research in the field of neuroscience, it has been discovered that social-emotional learning (SEL) growth can and does have a powerful effect on cognitive development. Students who lack these skills, any of which are foundational and traditionally learned at home, can demonstrate

reactive behavior at school. However, students learning SEL skills can move from reactive to proactive behaviors which can affect their classroom relationships and potentially their academics.

Statement of Research Problem

When students have emotions, regardless of whether the emotions are feel-good or fight/flight emotions, changes are made in the brain. The severity of the emotion can make a permanent change to the brain that will need to be rewired in order for the response to change. Students who are not able to recognize or verbalize their feelings or emotions need to learn how to cope. Emotional reactions can be automatic, similar, or a reflex from previous situations and/or trauma. Emotions expedite attention, while attention pushes learning and memory. Emotions are always present in school and the classroom, but we barely notice them or pay attention to them.

Many students are in survival mode, and the brain is most concerned with survival above all else. When the brain is in a state of fear and/or feels out of control, changes occur within the brain (Sprenger, 2020). When using learned strategies to relax, change occurs within the brain. By continually working on creating changes, the brain will learn to make decisions that are based on circumstances instead of reacting out of survival and will allow the student to make decisions that are based on circumstances. If the brain is in the state of survival, learning will not happen; therefore, students need to be given strategies that will help them to understand what they are feeling and be able to name the emotions if they are to become open to learning.

A self-aware student is ready to learn skills and strategies that target SEL. The student is aware of the emotions and feelings of others as well as has an understanding

that everyone experiences feelings and emotions. Students need to be taught evidence-based strategies that are brain focused so they can recognize their emotions and feelings and implement changes within the brain so the response will be similar when the same emotions or feelings are encountered.

The Collaborative for Academic, Social, and Emotional Learning (CASEL, 2020) defined SEL as the process of acquiring and effectively applying the knowledge, attitudes, and skills necessary to recognize and manage emotions; developing caring and concern for others; making responsible decisions; establishing positive relationships; and handling challenging situations capably. Tienken (2021) shared that SEL can help a student make connections to the content they are learning in school. He shared that this is increased when the content they are learning is devoid of realities that are happening in their own worlds. Tienken quoted Dewey (1946), who said, "effective teachers recognize the power of the social-emotional instincts of the students and use them to promote authentic learning" (p. 4). Sousa (2021) believed that SEL aptitude should not be separate from the quest for intellectual difficulty and academic standards. Combining social, emotional, and cognitive learning into a collaborative endeavor ensures that educators' efforts to develop SEL reach their full height in increasing overall academic achievement without it being a separate program from the standard curriculum.

Emotional intelligence is also known as emotional quotient (EQ). According to Elias et al. (2003), EQ is the set standard of SEL skills that empowers our intelligence so we turn action into accomplishments. They say that if we do not have EQ, then our intelligence quotient (IQ) consists more of possibilities than attainment. Our IQ is restricted more towards performance on specific types of tests than to interpretation of

the many tests of everyday life that we encounter in school, families, and communities. According to Griffin (2020), SEL competencies, which students learn and use to maintain their emotions and relate to others, are valuable both in school and life. Within the past 10 years, professors and specialists have grouped emotional intelligence into the same concepts as mindset, grit, and character. Griffin also added that emotional intelligence can be measured by using items that include a person's self-awareness, self-management, social awareness, and ability to measure and manage relationships. The level of understanding in these four areas helps predict a person's level of life success and satisfaction.

SEL competencies, through which students learn how to manage their emotions and connect with others, are beneficial both in school and life. Today, educational stakeholders use SEL practices to develop students' EQ. All 50 states require schools to implement some form of program and policies related to SEL in students; however, no states mandate the use of a specific SEL program.

As of 2018, 16 states had introduced SEL as an essential part of their educational guidelines; several additional states had included resources to support and implement SEL on their department of education websites (CASEL, 2020). Research has shown that SEL programs can increase a child's confidence, increase school engagement, increase test scores, and decrease behavior problems while emphasizing acceptable and wanted behavior. The long-term effects of SEL proficiency are that the students are more likely to be college ready, and succeed in their chosen careers, and have increased mental health and more positive relationships (Greenberg *et al*., 2017).

SEL is a fundamental requirement for building and sustaining learning

relationships needed for academic success, citizenship, a civilized and nonviolent classroom, and an effective inclusive education (Elias et al., 2003). SEL gives a student the freedom to manage stress and anxiety in ways that will allow them to focus and use higher-level thinking. Effective learning in schools is decisively influenced by attention to the social and emotional factors that are naturally present in students (Tienken, 2021). Educators more often than not feel pressured by accountability requirements and other required mandates (i.e., state testing), which may, in turn, combat time dedicated to instructional areas such as SEL. The strength and intensity teachers believe they can devote towards developing relationships with their students and managing student behavior, as well as creating an atmosphere of community within their classrooms and schools in general, can dictate how well they are able to contribute to the development and implementation of SEL programs in their classrooms (Kennedy, 2020).

There are three areas that have been researched that could affect the implementation of SEL: teacher stress involving workload and student behavior, teaching effectiveness, and job satisfaction. These fluctuations directly impact a teacher's motivation, engagement, and commitment to teaching, all of which impact students. Teacher perceptions of their school climate have been shown to determine the quality of relationships among individuals, the teaching and learning taking place, the collaboration between staff, and visible support in the classroom (Cvar, 2019). One of the many important roles of teachers is to create and try to maintain a healthy and energetic atmosphere in the classroom. Teachers not only try to establish and maintain a safe and healthy atmosphere, but they also work to create a classroom where there is respect, appreciation, and acceptance of everyone. Many educators are not allowed the time

required in the classroom to teach the much-needed social-emotional skills. There is no time to assess students for the social-emotional competencies needed. Most states also do not have policies in place that support schools that teach these types of skills. There are 37 states that currently have guidelines and policies in place so teachers can assess and teach these much-needed skills (Gabriel et al., 2021).

Many educators desire to be able to provide systematic instruction that heightens SEL for the students but do not know how to begin. At the same time, other educators are working to implement SEL in limited ways but require direct information on the best evidence-based program. They need direction on how to implement them, as well as how to effectively lead the charge to sustain them, which includes financial resources for support (Elias et al., 2003). Sprenger (2020) referenced Hattie and shared that according to Hattie, when students and teachers have positive relationships, the increase in achievement is .52 in learning. The effect size is a measure of how important the difference is between two groups. This shows that based on meta-analysis, teacher-student relationships can expedite learning greater than the average of .4, which is representative of a year's worth of growth in learning.

Developing SEL increases a student's ability to be successful in school and life. SEL can provide many transformative and powerful benefits. In order to make SEL a priority in schools, policies will need to shift in the federal, state, and local education realms. In the interest of maximizing the benefits of SEL for our youth, it will be imperative to push for policies that promote, strengthen, and sustain SEL initiatives across the nation (CASEL, 2020). Therefore, we need a new approach where education includes academics as well as social and emotional support for student growth and

development (Elias et al., 2003). The goal of SEL is to prepare students for making long-lasting connections throughout their lives. According to Tienken (2021), "Dewey reminded educators and policy makers that social and emotional learning are natural parts of the schooling process and need to be included in school and capitalized upon to provide an effective education" (p. 5).

Purpose of Study

The purpose of this study was to determine the impact of using SEL strategies that provide maximum impact to the brain with the intent to create resilience within students in terms of behavior, engagement, and academic achievement. According to Sprenger (2020), our emotions can and do influence where our brains store information that has been processed. She said that in order for learning to become a memory, it must go through our emotional filter (the amygdala) as it moves along the route to the meditative, higher-thinking brain in the prefrontal cortex. SEL strategies empower students with the freedom to deal with stress and/or anxiety so they are able to concentrate on critical or higher thinking (Sprenger, 2020). Therefore, it had been suggested that some students are not socially and/or emotionally proficient and ready to learn (Elias et al., 2003). Without the necessary skills, they are not able to successfully navigate areas of SEL such as self-awareness, self-management, social awareness, and relationship skills. These students have difficulty with responsible decision-making which can impact academic achievement and engagement as they make decisions based on current academic and emotional abilities. They require strategies and skills that will empower them and give them access to many choices that would otherwise not be available (Elias et al., 2003).

The intent of this study was to measure the impact of social-emotional strategies

on students who have been identified with behavior and/or trauma; and how using SEL strategies that provide maximum impact to the brain can create plasticity within the brain. The impact was evaluated through self-awareness, self-management, social awareness, relationship skills, and how SEL strategies and neuroscience may impact behavior, academic performance, and engagement.

Research Questions

This study sought to answer the following research questions:

1. How does incorporating SEL strategies within the intervention group impact student behaviors in and out of the classroom?
2. How does incorporating SEL strategies within the intervention group impact student academic performance?
3. What differences exist in behavior between grade levels?
4. What differences exist in academic performance between grade levels?

Theoretical Framework

SEL is the byproduct of theories of emotional intelligence by Goleman (2011) and the recent expanse of literature that pinpoints many aspects of social and emotional skills that affect a person's success in school and life (Ross & Tolan, 2018). Goleman shared that social and emotional skills are just as important as intellectual skills, if not more important (Ross & Tolan, 2018). SEL can guide and direct many types of inequity and increase the power of all people and all ages in order to increase their quality of learning and life along with bringing prosperity and the ability to contribute to their familial environments and communities. The research of CASEL (2020) has shown that SEL programs can increase academic achievement, create healthier relationships, and improve

mental health.

The theoretical framework of this study is governed by neuroscience/brain-based learning and SEL. According to CASEL (2020), the theoretical groundwork of SEL recognizes five core competencies. These competencies are in part founded on the cognitive-behavioral theory that was first presented by Bandura which evolved into the social learning theory. Bandura's theory maintains that there is importance in studying, modeling, and mimicking the behaviors, attitudes, and emotional reactions of those with whom we are most closely associated. In other simpler terms, behavior is learned rather than what we are born with. Social learning theory takes into account how both environmental and cognitive factors connect and help to alter human learning and behavior (McLeod, 2016). Bandura's theory shares that external stimulation, such as practiced strategies for self-awareness, self-management, and relationship skills, can change the behavior of how a person responds to certain situations.

The SEL program that was evaluated in this case study, Second Step, also uses the Ecological Framework for Human Development (Rosa & Tudge, 2013) as a theoretical foundation. Bronfenbrenner's framework puts the child in the center of six inherent levels that will shape an individual's development, just as CASEL places the child in the middle of the five competencies. The levels of Bronfenbrenner's framework can be woven into the framework of CASEL. Just as in Bandura's (McLeod, 2016) social learning theory, Bronfenbrenner and CASEL share that a person's environment, along with what they see and experience, shapes and forms them.

Brain-based learning is defined as "learning in accordance with the way the brain is naturally designed to learn" (Jensen & McConchie, 2020, p. 1). Brain-based learning is

new to the theoretical concept in that learning is based on what is known about the structure and function of the brain (Wlodek, 2018). With the understanding that through instruction the brain can be changed, it is noted that emotions trigger chemical changes within the brain that can affect one's moods and behaviors (Jensen & McConchie, 2020). Therefore, this means that emotions can sway our thinking and decision-making.

The brain is the epicenter for all our emotions, and it is not finished developing until a person reaches their mid-20s. As a part of this study, the students were taught about how using the SEL strategies can impact their ability to use higher-thinking strategies, cope with stress, and increase their academics as well as decrease their behavioral incidents. Therefore, by learning strategies that can make changes within the brain, a person can reshape and change the process within the brain.

Overview of Methodology

The study was a mixed methods case study that used a qualitative and quantitative study structure. This lends itself to more nuances and details but also allows for gathering data that take into account opinions and perspectives of others that may or may not be obvious (Butin, 2010). This study investigated how students responded academically and behaviorally to strategies focused on SEL and how those strategies can be used to create resilience. SEL is a popular buzzword in the educational world; brought even more to the forefront of education due to the current world pandemic.

The quantitative data were acquired by surveying the student's general education teacher and parents. The short answer survey was specific to academic and/or behavioral changes the student may or may not demonstrate. The survey asked questions that pertain to the student's participation within the classroom and academic performance on

classroom performance, as well as performance on assessments either formative or summative, and questions about school-wide and classroom behaviors were included.

The qualitative data were acquired through one-to-one interviews with the SEL teacher and general education teachers of the students who participated in the pull-out intervention program. The open-ended questions sought to understand what changes the students have demonstrated since beginning the program; how quickly changes were noticed, if any; if the students enjoyed the small group instruction; if the students were able to share what skills and strategies helped them the most; and lastly, what the students' responses were to the strategies they were learning.

Definitions of Terms

The following is a list of key terms and definitions that are referred to throughout this study.

Axon Cell

A long slender projection of a nerve cell, or neuron, that conducts electrical impulses away from the neuron's cell body or soma. Axons are in effect the primary transmission lines of the nervous system, and as bundles, they help make up nerves (Sousa, 2016, p. 444).

Brain-Focused Strategies

Strategies for learning based on neuroscience.

Executive Functions

A set of mental processes that help you achieve a goal. These include impulse control, emotional control, organization, and working memory (Hawn Founcation, 2011).

CASEL

A leading and nationally renowned organization that "strives to advance SEL science, evidence-based practice, and policy" (CASEL, 2020, p. 3). According to its website, "CASEL supports educators and policy leaders and enhances the experiences and outcomes for all PreK-12 students" (CASEL, 2020, para. 1).

Dendrite

Named for their probing, "tree-like" or dendritic shapes, are responsible for the initiation of adaptive immune responses and hence function as the "sentinels" of the immune system (Sousa, 2016, p. 48).

Glial

Non-neuronal cells in the central nervous system (brain and spinal cord) and the peripheral nervous system that do not produce electrical impulses. They maintain homeostasis, form myelin in the peripheral nervous system, and provide support and protection for neurons (Sousa, 2016, p. 47).

Mindfulness

The state of being aware of something; the practice of maintaining a nonjudgmental state of heightened or complete awareness of one's thoughts, emotions, or experiences on a moment-to-moment basis; the basic human ability to be fully present, aware of where we are and what we are doing, and not overly reactive or overwhelmed by what is going on around us.

Mindfulness-Based Social and Emotional Learning

Designed to enhance social and behavioral aptitude through attention practices and are organized in a nonlinear and often organic fashion (Greenland, 2010) where the

teacher is guided by the collective experiences of the children.

Myelin Sheath

The insulating covering that surrounds an axon with multiple spiral layers of myelin, that is discontinuous at the nodes of Ranvier, and that increases the speed at which a nerve impulse can travel along an axon (Sousa, 2016).

Neuron

A grayish or reddish granular cell that is the fundamental functional unit of nervous tissue transmitting and receiving nerve impulses and having cytoplasmic processes which are highly differentiated frequently as multiple dendrites or usually as solitary axons which conduct impulses to and away from the cell body (Sousa, 2016).

Parasympathetic System

The part of the autonomic nervous system that tends to act in opposition to the sympathetic nervous system, by slowing down the breathing and heartbeat and dilating the blood vessels; activates rest and digest (Sousa, 2016).

Present

The awareness of what is occurring at the very moment in which it happens (Jensen & McConchie, 2020, p. 67).

Second Step

A program rooted in SEL that helps transform schools into supportive, successful learning environments uniquely equipped to encourage children to thrive (Committee for Children, 2021).

Self-Awareness

Having a clear perception of your personality, including strengths, weaknesses,

thoughts, beliefs, motivation, and emotions (CASEL, 2020).

Self-Efficacy

An individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments. Self-efficacy reflects confidence in the ability to exert control over one's own motivation, behavior, and social environment (CASEL, 2020).

Self-Management

The ability to regulate one’s emotions, thoughts, and behaviors in different situations (CASEL, 2020).

Self-Regulation

The ability to monitor and control our own behavior, emotions, or thoughts, altering them in accordance with the demands of the situation (CASEL, 2020).

Self-Soothe

To comfort oneself when unhappy or distressed (CASEL, 2020).

SEL

The process of acquiring the skills to recognize and manage emotions, develop caring and concern for others, establish positive relationships, make responsible decisions, and handle challenging situations effectively. SEL provides schools with an evidence-based framework for preventing problems and promoting student well-being and success (CASEL, 2020).

Social Awareness

The ability to take the perspective of and empathize with others from diverse backgrounds and cultures (CASEL, 2020).

Sympathetic System

A part of the autonomic nervous system that serves to accelerate the heart rate, constrict blood vessels, and raise blood pressure; activated by "fight, flight, or freeze" (Jensen & McConchie, 2020, p. 5).

Summary

Chapter 1 shared that brain-based SEL strategies have the potential to change a person's life. The different theories that have been introduced share that a person is not inherently born with certain behaviors or lack of academic success, but they have developed the behaviors and mindsets from their experiences within their homes, communities, and schools as well as from other people with whom they interact or observe.

Students are exposed to many different types of stimulations at home, school, and in the community. Added to that are the changes that have taken place in the past year and a half because of the COVID-19 pandemic. Through the use of brain-based learning and SEL skills, students can learn to navigate difficult situations by using the knowledge, skills, and strategies in every aspect of their lives. Students who learn and use these strategies and skills can potentially create an opportunity for success and a better quality of life for themselves.

Chapter 2: Literature Review

Neuroscience/Brain-Based Learning

Neuroscience, according to Merriam-Webster (n.d.-c), is "a branch (such as neurophysiology) of the life sciences that deals with the anatomy, physiology, biochemistry, or molecular biology of nerves and nervous tissue and especially with their relation to behavior and learning." The theory of neuroscience is closely related to "Brain-Based Learning, which is defined as learning that is in accordance with the way the brain is naturally designed" (Jensen & McConchie, 2020, p. 1). Researchers use neuroscience and brain-based learning to consider how we learn best. The brain has its own way of learning and therefore does not learn on demand in accordance with the rigid, inflexible schedule of modern schools (Sprenger, 2020). Maçorano (2020) said, "The ultimate goal of neuroscientific research is to understand how the brain works" (p. 5). Brain-based training includes programs or activities that are thought to improve cognitive ability and/or the ability to repeat certain cognitive tasks over a period of time (Rossignoli-Palomeque et al., 2018). This is supposed to produce some changes in behavior, as well as at a neuroanatomical and functional level.

Sigmund Freud was an early pioneer of neuroscience (Surbeck et al., 2018). He believed that cognition was not a simple matter and that the current theories of brain research during his lifetime were not complete. Freud believed that the brain was a complicated organ and that it controlled many different aspects of the body. Cognition, the brain, was not a strict parallel structure, but it was a structure that could be bent for learning (Surbeck et al., 2018). Jensen and McConchie (2020) contended that the brain is not designed for formal instruction and/or education. Jensen and McConchie shared that

the brain develops best when it considers what is most effective and most efficient for its survival. Using this ideal, if the brain understands a particular skill or knowledge is important to its survival, the brain prioritizes it and will place it above other skills or knowledge and may even remove or dump the previous skill or knowledge. A serious consideration is that the brain is designed solely for survival; therefore, students will do whatever they need to do to survive in the formal educational setting, as the brain's sole purpose is to survive.

The recent and current research in neuroscience and brain-based learning has educational leaders and instructors rethinking models of instruction. Jensen and McConchie (2020) believed the brain-based approach to learning increases social connectedness in students; boosts involvement in extracurricular activities such as theater, music, and sports; and encourages educators to greet all students with a smile. Emotions can promote or interfere with children's academic commitment, work ethic, engagement, and ultimately their success in school (Durlak et al., 2011). Because relationships and emotional processes affect how and what we learn, schools and families must effectively address these aspects of the educational process for the benefit of all students. Brain research can help educators understand learning at a much deeper level and lead instructors to organize formal teaching and training to discover a student's natural obstacles and natural motivators in order to achieve desired learning and changes in behavior (Jensen & McConchie, 2020).

A British psychologist, Charles Spearman (1863-1945), wrote a book about general intelligence (Williams et al., 2003). He theorized that every human has a general factor of intelligence, which he referred to as the g factor (Williams et al., 2003).

Spearman wrote looking at the correlation between general intelligence and factors of learning. In the concluding section, he shared that there is a common element to sensory activities that corresponds to a person's intelligence (Williams et al., 2003). Learning was summarized by Jensen and McConchie (2020) as the ability to acquire new information such as knowledge, behaviors, skills, values, or preferences. They suggested that the best way to define brain-based education is with three words: "engagement, strategies, and principles" (Jensen & McConchie, 2020, p. 10).

How Learning Impacts the Brain

> According to Mayer (2017), there are three facets of learning:
>
> the science of learning, which is defined as the scientific study of how people learn; the science of instruction, which is the scientific study of how to help people learn; and the science of assessments, which is the scientific study of how to determine what people know. (p. 837)

Mayer shared that through instruction, learning happens; and when learning happens, that is when reflection or assessments are given, there is a change that takes place within the brain.

Sprenger (2020) added to the research that when you teach students that their brain works like a muscle, it gives them an understanding that they need to develop and exercise their brains. Jensen and McConchie (2020) shared that there are five components to students understanding their learning: context, triggers, process, systems, and structures. Elias et al. (2003) said, "active learning promotes retention" (p. 42). One of the best ways to retain information is to involve students in the process of how they make sense of newly learned concepts (Elias et al., 2003).

Learning can happen anywhere and at any time, which is considered the context of learning. Learning happens when a new and/or familiar experience, such as when a feeling and/or a situation occurs, triggers the brain in either an internal or external way, such as a smell; seeing a person, place, or thing; or tasting a food that is familiar. This process can be as familiar as listening to music or a reaction to something that had been heard or seen before but the brain did not put it into the long-term memory the first time it was encountered. In order to process these interactions, the brain must include a larger system such as emotional, cognitive, sympathetic, and/or parasympathetic systems.

The brain can include multiple structures such as the peripheral nervous system, prefrontal cortex, hypothalamus, and amygdala. However, when there is increased activation in the amygdala, it can reach overload, which will set off the brain's control system to go into survival mode. The result of the amygdala blockage then restricts input to the upper part of the brain, which is where memory and storage take place. An extension of the blockage is that brain communication confines the top-down control of the messages from the prefrontal cortex. It should also be noted that another dominant cause of amygdala overload can come from long-term or repetitious boredom or frustration. Students who struggle with long-term boredom or frustration can create inequities in a student's access to education (Willis, 2021).

The brain, along with the five strategies, can create changes within the brain that create what is called plasticity, "the ability of the brain to continually change during our lifetime in subtle ways as a result of experience" (Sousa, 2016, p. 26); this change is what creates memories. These five components are connected to the brain or "control center," which flushes the experiences through other structures such as the peripheral nervous

system, or prefrontal cortex, etc., while in the learning process. The end of the chain of events is that a physical change has taken place in the brain that is now a memory. Brain-based learning informs us that if we want to improve, we need to have a better understanding of the brain (Jensen & McConchie, 2020).

Brain science says that every child has the ability to learn. How this happens is highly dependent on the individual and dependent on what their immediate experiences, relationships, and environments consist of. Learning and development are neither the same nor are they even, and each student has their own set of strengths and vulnerabilities. Teaching and learning practices that are centered and based on neuroscience are the most effective strategies for every student's learning, regardless of background (Rimm-Kaufman & Jodl, 2020).

The Brain

Larimore (2017) shared,

> In order to understand how the brain works, we need to understand what the brain is. The term brain usually refers to the tissue found within a skull that generates behavior. The mind usually refers to personality, opinions, experiences, and memories. (p. 2)

The brain is made up of many parts. These parts include the lobes, motor cortex and somatosensory cortex, the limbic system, thalamus, hippocampus, amygdala, cerebrum, cerebellum, brain cells, and neurons. These are focused on as they are used for learning and what is known about what parts allow us to learn and what the process of learning is. Although the brain has strongly connected parts, there is an ever-expanding body of research that suggests science may not completely understand the higher-order structure

of how the brain networks or organizes or the flexibility of how it processes information (Barbey, 2018).

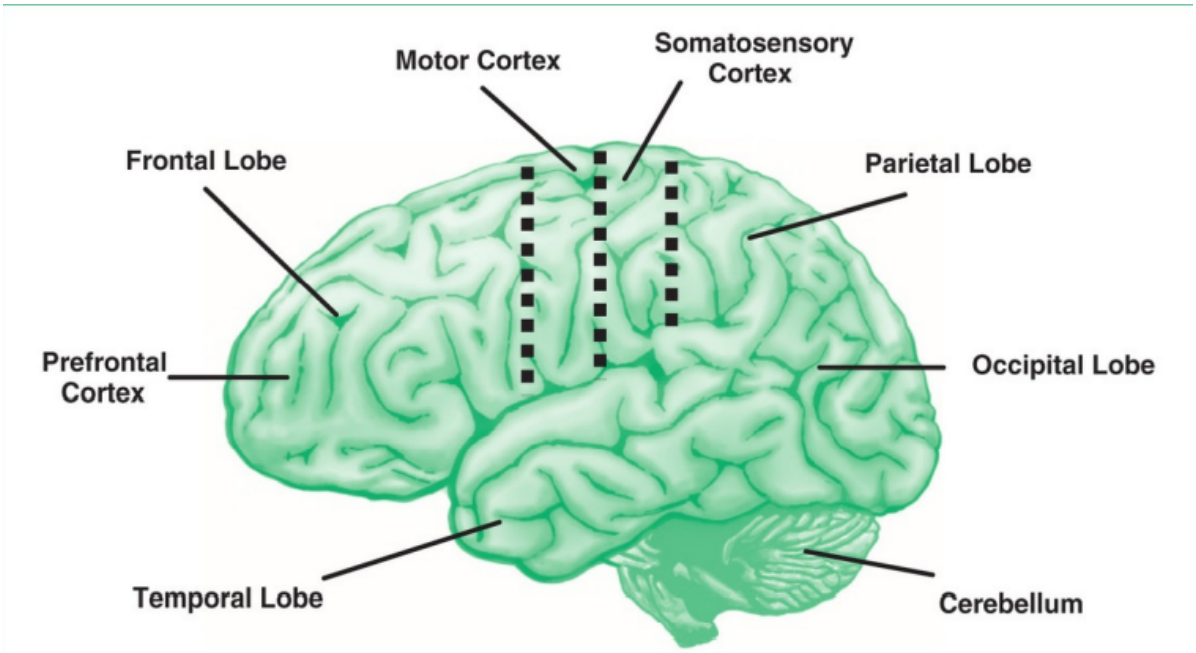
There have been many studies on how the brain functions using magnetic resonance imaging. Pierotti (2016) shared that his studies in neuroscience have composed scientific evidence on how highly specialized the functions of the brain are. He shared the importance of color and how the brain reacts to it. Within his study, when color was used as an activator, it was possible to see how the different parts of the brain signaled the other and different regions would light up.

Anatomy of the Brain and Their Functions

The brain is a highly complex, greatly repetitive, and non-aligned neural network. It is surprisingly elastic and buoys our amazing capacity for learning from each experience as well as adapting to new situations (Denève et al., 2017). The whole brain is created by two hemispheres, the right and left. Included in these hemispheres are four lobes: frontal, temporal, occipital, and parietal. Figure 1 shows the major exterior regions of the brain. These four lobes are observable while they are developing and are formed to become specific regions, which brings into focus the need for an extremely coordinated developmental process to become the human brain (Larimore, 2017).

Figure 1

The Brain



Note. Major Exterior Brain Diagram. Reprinted from *How the Brain Learns* (p. 16), by Sousa, 2016, Corwin Press.

As shown in Figure 1, the frontal lobe is located in the front of the brain, which also includes the prefrontal cortex. This is known as the executive control center and deals with planning and thinking (Sousa, 2016). Larimore (2017) said that the frontal lobe is the chief executive officer of the brain and added that it is responsible for decision-making as well. The frontal lobe includes the analytical and managerial control center. It monitors the higher-order thinking processes, guides problem-solving, and controls the excess emotions of the emotional system. The frontal lobe also includes a person's personality as well as how we adapt to our environment (Klein et al., 2018). If trauma occurs in the frontal lobe, it can create excessive and/or long-lasting behavior and personality changes, which can include difficulties with memory (Sousa, 2016). For

example, if a person experiences some type of trauma, such as falling and hitting their forehead or being hit by a baseball in the forehead, it can cause damage to the frontal lobe. The injured may forget how to do a simple task such as tying their shoes, or they exhibit a personality trait that was not present before the trauma. The working memory, or short-term memory, is housed within the frontal lobe. Short-term memory is the immediate experience of what is just experienced in that moment that is being processed by the brain.

The temporal lobe, located above the ears, deals with sound, music, face and object recognition, and a portion of the long-term memory. The temporal lobe also controls hearing, language, smell, and taste (Larimore, 2017). The left side of the temporal lobe includes the speech center. A study conducted by Brennan and Pylkkänen (2017), shared that if the temporal lobe is damaged, it creates a disconnect with sentence reading. Brennan and Pylkkänen demonstrated that if the temporal lobe is damaged, the brain is not able to make sense of complex sentences. If the temporal lobe experiences trauma, it can create changes to the hearing, as well as the ability to smell and taste, and recognition of things that are familiar to us. It also can interrupt our processing sensory information (Sousa, 2016).

The occipital lobe, which is at the back of the brain, is “used almost exclusively for visual processing, including perceiving shapes and colors” (Sousa, 2016, p. 17). This lobe houses the primary visual cortex. It is also responsible for visual processing (Larimore, 2017). If the occipital lobe is damaged, it can create distortions in vision, whether we see colors as well as whether we can see the shape of an item (Sousa, 2016).

The parietal lobe is located near the top of the head where the head begins to

round from the top to the side (temporal lobe). The parietal lobe helps to blend sensory information from various parts of the body (Sousa, 2016). Larimore (2017) contributed that the parietal lobe is the helm for reading, attention, short-term memory, spatial awareness, and visual perception. This includes hot, cold, touch, and pain and can help with spatial orientation. If the parietal lobe is damaged, it can create a change in the brain's ability to recognize and potentially locate other parts of the body (Sousa, 2016).

The motor cortex and somatosensory cortex are located between the parietal and frontal lobes just at the top of the forehead. These are based at the top of the brain and run from ear to ear. The area closest to the front is the motor cortex. It controls movement of the body and works with the cerebellum to duplicate the learning of motor skills (Sousa, 2016). The motor cortex works to help a body create the actions it has seen. The area right behind the motor cortex, which begins at the parietal lobe, is the somatosensory cortex, and its function is to process signals of touch that are received from assorted parts of the body. If this is damaged, a person may experience numbness or may not be able to tell the exact location of touch (Guy-Evans, 2021). Therefore, if a student was to be hit by a ball at recess, the student would not be able to tell an adult where the ball actually hit.

The cerebellum is a two-hemisphere structure that is located right behind the brain stem. It is an extremely organized structure, and it contains a larger collection of neurons than any other part of the brain (Sousa, 2016). This part of the brain helps to coordinate movement and monitors the impulses that come from nerve endings within the muscles. Jelgersma's theory demonstrates that the cerebellum concentrates on "higher coordination," which he described as the learning of complex, voluntary movements that

are learned correctly (Voogd, 2022).

The cerebellum also stores memories that include automatic movements such as riding a bike and/or typing on a keyboard. Sousa (2016) shared that "it also acts as a support structure in cognitive processing by coordinating and fine tuning our thoughts, emotions, senses (especially touch), and memories" (p. 21). Mitoma et al. (2018) completed research that showed the cerebellum is able to restore itself, as well as compensate for trauma or damage that has taken place. This part of the brain is also linked to the portion of the brain that we use to perform mental and sensory tasks, and it can complete these tasks with automaticity and without conscious thought.

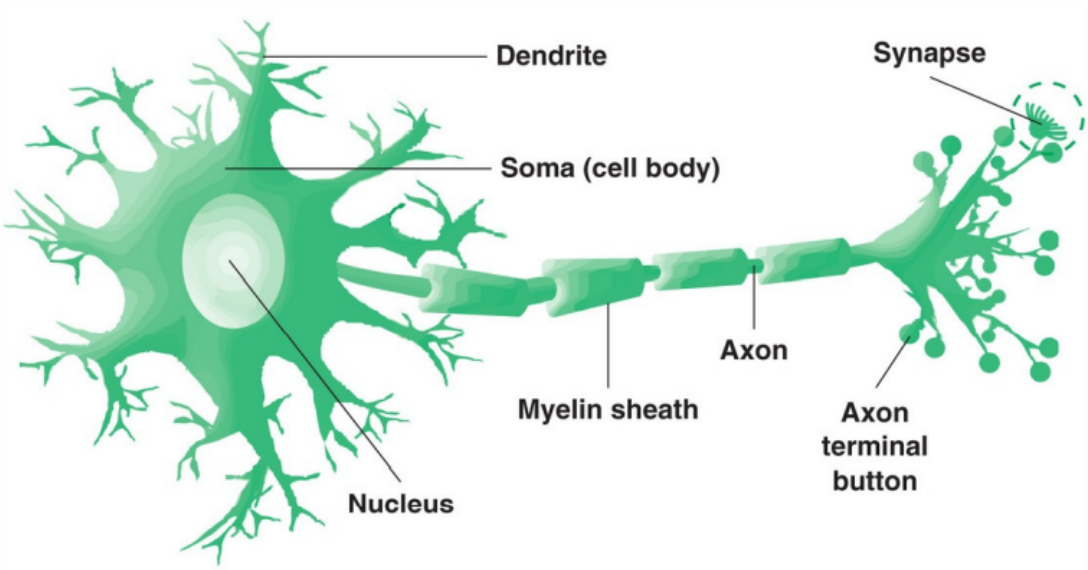
While the brain is developing, there are cells that are in transit and changing to become their own special form in order to perform their specific function. They are becoming specialized regions that are responsible for specific functions. By studying these specific regions, we can have a better understanding of the overall organization of our brain (Larimore, 2017). The brain is composed of approximately a trillion cells, of which 100 billion are neuron cells. Most of the cell matter contained within the brain is called glial. These cells are called the "glue" and keep the neurons together. They also act as a filter to protect the neurons from damaging substances.

Neurons

Neurons, pictured in Figure 2, are considered the working core of the brain as well as the whole nervous system. The human brain contains between 100 million and 100 billion neurons (BrainFacts.org, 2021). Neurons appear in different sizes; however, the neurons within the brain are about 100^{th} the size of a period that is at the end of a sentence (Sousa, 2016). Figure 2 illustrates the anatomy of the neuron.

Figure 2

Anatomy of a Neuron



Note. Anatomy of a Neuron. Reprinted from *How the Brain Learns* (p. 23), by D. Sousa, 2016. Corwin Press.

. A neuron has tens of thousands of small branches, like structures that originate from the heart; these are called dendrites. A single neuron can be composed of up to 10,000 dendrite branches. The dendrites catch magnetic pulses from nearby neurons and then send them down the line to a thread called the axon. Normally, each neuron only has one axon. There is a layer that surrounds each axon, called the myelin sheath. This sheath safeguards the axon from other cells and prevents the electrical impulse from leaking into other cells and their environments. This helps to increase the speed of the impulse transmissions.

When a neuron is charged, it releases what is called a neurotransmitter, which is a chemical that moves a small distance across an open place called the synapse, before reaching other neurons (Queensland Brain Institute, 2017) Sousa (2016) shared that the

neuron “impulse travels along the neurons through an electrochemical process and can move through the entire length of a six-foot adult in two tenths of a second and a neuron can transmit between 250-2500 impulses per second” (p. 22). However, neurons do not touch one another. In the space between each dendrite and the axon is a small area that measures approximately a millionth of an inch, called the synapse. Each synapse is covered in thousands of tiny bumps, called spines (Sousa, 2016). This is called a nerve impulse. This impulse is the vital workings of the brain. It allows the neurons to talk to each other and helps the brain figure out what is to be performed and what information is to be processed (Queensland Brain Institute, 2017).

Neurons communicate by sending electrical impulses through the axon to the end of the synapse, and these impulses release a chemical stored in the synaptic vesicles (tiny sack-like structures) at the end of the axon. The chemicals that are released when electrical activity takes place in the neuron are called neurotransmitters. The neurotransmitters shoot across what is called the synaptic gap and either create excitement or hinder the end of the neuron that is next door. This activity is repeated with all neurons that are nearby. Learning occurs when the neurotransmitters are communicating as the synapses of the neurons change and other neurons that respond are affected by the activity and are also changed. According to Sousa (2016), there is a direct connection that exists between the expectations of a person’s physical world and the actual effort it takes to navigate it and how it changes the brain. The more complex the skills for navigation, the larger the number of dendrites on that person’s neurons.

Mirror Neurons

A mirror neuron is a type of neuron that becomes energized when an action is

performed as well as when the same action is observed in someone else completing it. These neurons glow both when someone performs an action as well as when someone is observed performing the same action, such as reaching for something (Lim, 2019). These neurons respond to someone else's action just as if you yourself are doing it. These neurons are located in the premotor cortex. The premotor cortex is in front of the motor cortex which schedules movement. These neurons begin firing just as a person carries out a programmed movement, and these same neurons become active when another person is observed performing the very same movement (Sousa, 2016).

According to Sousa (2016), "neuroscientists believe these mirror neurons may help an individual to decode the intentions and predict the behavior of others" (p. 24). This allows us to duplicate the experience of others, gain an understanding of others' emotions, and empathize. Neuroscientists have questioned whether mirror neurons can explain and give insight into a lot of mental behaviors that have thus far remained a mystery. Lim (2019) shared that mirror neurons may be strongly involved in social interactions; because they respond to the other person's expressions and actions, the brain is able to understand what is happening in the interaction.

Neurotransmitters

Neurotransmitters are often called the body's chemical messengers. These are the fragments that are used by the nervous system to send messages between neurons or from neurons to muscles (Queensland Brain Institute, 2017). There are approximately 100 different neurotransmitters that have been discovered. However, only approximately 10 have been shown to do the work within the brain. Five of the most common are

Acetylcholine–it affects learning, movement, memory, and rapid eye movement (REM) sleep.

Epinephrine–affects metabolism and glucose, release of energy during exercise

Serotonin–affects sleep, impulsivity, mood, appetite, and aggression

Glutamate–most predominate one that affects learning and emotion

Dopamine–a chemical that alters movement, focus, learning, pleasure, and reinforcement. (Sousa, 2016, p. 22)

Growth of Neurons in Children

Neuron growth beings in utero approximately 4 weeks after conception. There are 200 billion neurons that are grown within the first 4 months of gestation. However, approximately half of them will die during the fifth month due to a failure to make a connection with any other area of the embryo (Sousa, 2016). This process is the body's way of genetically programming an embryo so that only neurons that made a connection are safeguarded in order to prevent an overload within the brain with unconnected cells (Sousa, 2016).

Neurons in the different brain regions will begin producing chemicals that will signal molecules, and these molecules will set up communication between nerve cells. These fibered tissue paths that are forming will become the brain's superhighway of information (Konkel, 2018). The neurons in a newborn are underdeveloped due to there being few connections that have been made as well as many of the axons do not have the protective myelin layer. According to Konkel (2018), "brain function itself continues to develop after birth, driven largely by sensory input. The number of neural connections explodes in the first years of life—a phenomenon sometimes referred to as a synaptic 'big

bang'" (p. 112001-2).

The neurons within a child's brain can and do make many more connections than an adult's brain (Sousa, 2016). For a newborn, infant, toddler, or child, "the richer the environment, the greater the number of interconnections that are made" (Sousa, 2016, p. 26). Because infants, toddlers, and children make more connections, they are able to learn faster and develop a greater understanding of their surroundings.

As a person grows, particularly in adolescence, the growth of neurons decreases, and two other processes begin (Sousa, 2016). One of these new processes is that the brain will decide what connections are useful and then make the connection permanent. If the brain finds a connection not useful, it will eliminate it. The brain will then strengthen the useful connections and shape them based on experience. This process takes place during a lifetime; however, it is at its greatest between the ages of 3 to 12 (Sousa, 2016). The capability of the brain to constantly change during a person's lifetime is called plasticity or neuroplasticity (Sousa, 2016).

Neuroplasticity in the Brain

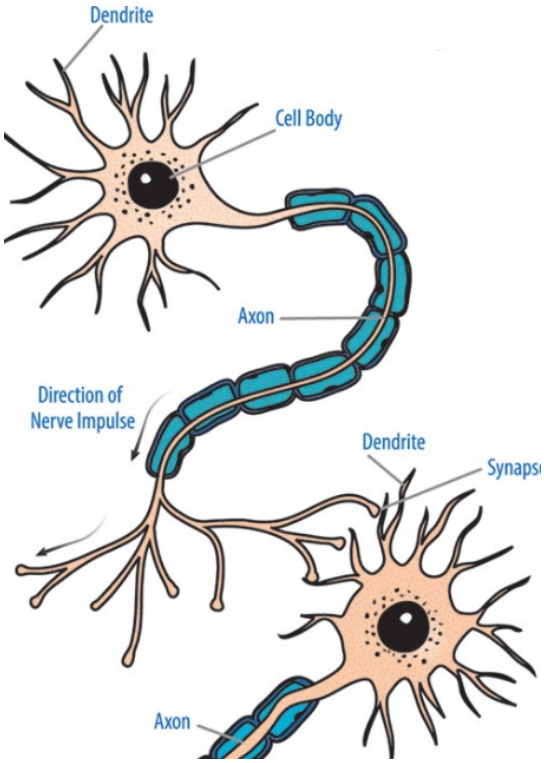
According to Merriam-Webster (n.d.-b), neuroplasticity is "the capacity of the brain to develop and change throughout life." Teachers who explicitly teach neuroplasticity can also teach metacognition, which is the practice of regulation, and it helps students understand as well as monitor their own learning (National Research Council, 2000). Jensen and McConchie (2020) shared that neuroplasticity is an instinctive action within the brain. It is the brain's ability to make changes within itself based on forces that can be either external or internal. Shenenman et al. (2019) shared that the information integration theory is how the neuroplasticity of the brain works. They

shared that the information integration theory is the system that makes decisions based on information that comes from multiple external stimuli sensors and combines this with knowledge from past outcomes. Shenenman et al. believed that the brain's neuroplasticity works in a similar manner. Whenever a person creates a motion, thought, or activity, a memory is either created or accessed, and the brain will strengthen and/or change the neurons that are associated with the action or the memory. As previously noted, this happens when electrical impulses pass from one neuron to another through the synaptic gap (Jensen & McConchie, 2020). Therefore, Jensen and McConchie reported that daily experiences and learning can change the brain. However, Denève et al. (2017) shared that it takes an extreme amount of energy for our neurons to process and make connections, and it takes approximately 20% of our overall mental energy for neurons to fire to connect to those close by.

Neuroplasticity is a built-in property of the brain and has the ability to make either permanent or temporary changes to the brain. It can be originated from many sources including learning something new or practicing a skill, nutrition, exercise, and the environment. It can also result from neurofeedback (Jensen & McConchie, 2020). Figure 3 shows how neurons make connections during learning.

Figure 3

Impulse Path of Neuron



Source: Conyers, M., & Wilson, D. (2020). Believing in the Brain. *Educational Leadership*.

Neurofeedback is the "technique of making brain activity perceptible to the senses (as by recording brain waves with an electroencephalograph and presenting them visually or audibly) in order to consciously alter such activity" (Merriam-Webster, n.d.-a). It can take place when a person makes a conscious decision to act on a thought or some other stimuli around them, such as when a person moves forward to be a part of the activity, a change is made to the brain. Neurological changes can also be made from internal or external sources. An internal process can be as simple as self-talk, whether negative or positive. An external process can be the influence of a friend, teacher, co-worker, or boss who is passionate about a subject they are sharing. However, whether the stimuli are

internal or external and whether they are positive or negative can cause the brain to make changes within itself (Jensen & McConchie, 2020).

Neuroplasticity is important because the brain does not always learn things perfectly; therefore, there is a need to repeat learning. Neuroplasticity allows for some types of learning that are easily learned the first time around. This happens when it triggers sensory receptors or when a location is associated with when the learning took place. Guidotti et al. (2021) shared that the brain processes cannot function using confined brain activities but that it requires larger parts to enable an effective exchange of information between different lobes of the brain. However, when words, pictures, and/or sounds are involved, there is often a need to make corrections to the brain's understanding. This is also true of some of our hands-on learning, such as when we make or build, or when a demonstration is involved (Jensen & McConchie, 2020).

The brain's ability to learn and change is not limited to any specific type of learning. Neuroplasticity can and does include many forms of inputs, outputs, and/or experiences that meet an individual need to learn (Jensen & McConchie, 2020). While researching neuroplasticity, researchers have looked at how plasticity is changed and manipulated during exercise, music, or strength training to just name a few. Because the brain does not have limitations on learning, it is assumed that the process of neuroplasticity can be increased. According to Jensen and McConchie (2020), "there are three key factors that can strengthen or weaken neuroplasticity, as well as influences that can speed the process up or slow it down. Indeed, there are certain conditions that allow for much greater plasticity" (p. 84). Some types of neurological change can happen in an instant, which can involve forms of trauma or epiphanies. However, the three most

prevalent factors Jensen and McConchie referred to are readiness, coherent construction, and consolidation.

Readiness involves the relevance of learning or the buy-in factor of the learning. This creates energy and meaning, inspires goals, and helps to establish clear beginning and ending points along with what needs to take place along the process. Jensen and McConchie (2020) believed that "the more alert and motivated to learn a person is, the greater the potential for change in the person's brain" (p. 85). This effect is also known as the critical period and/or sensitive period that we associate with early childhood learning.

Coherent construction includes a quick initial learning curve, assurance, increased complexity, and challenge, along with breaks in learning to include focused practice. In this stage, our brain is building or constructing our learning. It is trying to piece together new learning and make sense of it and associate it with old learning. However, we must understand that all new learning is not useful to the brain; although within the brain, coherence is king.

Lastly, consolidation includes quick and clear feedback in order to correct any error in learning, the use of breaks or sleep, and the use of retrieval practices to ensure that the learning is complete. Unfortunately, even though neuroplasticity is a powerful engine within the brain, accurate memory formation is not guaranteed. When consolidation is happening, there is a process of reinforcement that takes place in order for the new learning to move to long-term memory. In the long run, taking a "brain break" after learning has been activated helps the brain to process the information and moves it to the long-term memory in order to evaluate it for importance. In order to create long-term change, new learning needs to be reinforced repeatedly. If new

information is not validated and practiced, then the brain "forgets" the new learning (Jensen & McConchie, 2020). Further studies have shown that when the body is asleep, the brain will strengthen its new connections.

Neuromodulators

Neuromodulators are various substances, such as certain hormones and amino acids, that influence the function of neurons but do not act as neurotransmitters. The three most influential of these naturally made chemicals are dopamine, norepinephrine, and acetylcholine. Dopamine is most closely associated with rewards and hope. Dopamine is a neurochemical that when it increases can generate a feeling of pleasure and deep satisfaction. The added benefit of it is that when the levels rise, it will usually bolster enhanced perseverance, motivation, focus, curiosity, and memory (Willis, 2021). Norepinephrine is the chemical that creates "heightened receptivity" (Jensen & McConchie, 2020, p. 86) to form long-term memories. Acetylcholine is the chemical that is released when a person experiences surprises or something unique or odd. These three chemicals help to enhance the synaptic neuroplasticity in the brain.

An additional chemical or hormone that impacts plasticity is cortisol. A high level of cortisol has been shown to interrupt the strengthening of synaptic connections. Cortisol is also associated with stress and/or chronic stress which has a negative impact on learning and memory and with prolonged exposure, can cause brain structures to shrink (Jensen & McConchie, 2020). However, thanks to neuroplasticity, this effect can be reverted to a healthy state. Finally, neuroplasticity is the root of learning and at the most basic level, learning is the process of making new connections within the brain.

Brain-based learning or neuroscience is a way to understand how the brain works

and learns. Understanding what portions of the brain are responsible for the different types of learning is key to unraveling the mystery of how the brain is able to adapt, rewire, and continuously evolve. The studies that have been conducted previously on the brain and how it works demonstrate that the brain is more complex and malleable than previously believed. Through this understanding, educational practitioners can use strategies to target the learning of a student in all core learning disciplines as well as SEL.

Learning is an emotional experience. When the brain experiences positive emotions, it can increase learning and help to create greater focus and a higher level of achievement. Emotions can either impede or accelerate learning, therefore it is important that students have strategies that can be employed that will allow for optimal learning. These strategies are known as SEL.

SEL

What is SEL?

According to CASEL (2020), SEL is the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities; manage emotions; achieve personal and collective goals; feel and show empathy for others; establish and maintain supportive relationships; and make responsible and caring decisions.

SEL arose from theories of emotional intelligence by Goleman (2011) and the expanse of literature that points to a plethora of social and emotional skills that affect a person's success in school and life (Ross & Tolan, 2018). Goleman proposed that these social and emotional skills are just as important as cognitive skills, if not more important (Ross & Tolan, 2018). SEL can give direction to many different forms of inequity and

give power to people of all ages so they prosper and contribute to their communities. Research through CASEL (2020) has shown that SEL programs can increase academic achievement, create healthier relationships, and improve mental health.

"School-based curricula or programs that target reducing students' problem behaviors while increasing students' prosocial behaviors have often been characterized as SEL or character development programs" (Top et al., 2016, p. 25). Educating a person's mind without teaching the heart is not education at all, according to Carstarphen (2020). Carstarphen shared that SEL empowers us to cultivate students in a whole-child progression. SEL supports academic achievement, bringing advancements in practical skills, enriching experiences, as well as supporting fairness, goodwill, and comfort. SEL is the process in which students and adults achieve the insight, skills, and character needed to perceive and understand emotions, along with showing empathy and sympathy for others, being able to develop positive relationships, learning to make good decisions, and having the ability to self-regulate in challenging situations.

Carstarphen (2020) believed that as "students acquire social-emotional skills, they become more focused on academics and learn to manage all of the other noise around them" (p. 11). She shared that SEL embeds students in their own behaviors, which in turn allows them to be confident in their learning so they can do more without distractions (Carstarphen, 2020). Therefore, students are better able to cope with issues whether they be external or internal distractions and/or issues.

According to CASEL (2020), there are five basic categories of social and emotional competencies. Figure 4 provides a diagram of the SEL framework.

Figure 4

CASEL SEL Framework

Note. "About CASEL," by Collaborative for Academic, Social, and Emotional Learning, 2021, https://casel.org/

The five core competencies, as shown in Figure 4, are self-awareness, self-management, responsible decision-making, relationship skills, and social awareness. Self-awareness involves knowing what we feel in that moment, then taking that information and using it to help make decisions. It is like a real-time assessment of our emotions. Self-awareness is having a healthy understanding of who we are and how we think about ourselves. It helps us understand our culture, thoughts, feelings, and what we believe we are capable of, along with how these things can influence our behaviors and beliefs (CASEL, 2020). How we develop these competencies is impacted by the environments in

which we spend time.

Self-management is how we can manage our thoughts, emotions, and actions in specific situations so we are able to obtain our personal goals along with being able to work collaboratively with those around us to achieve the goals. This includes our ability to manage stress and anxiety, work through challenges and difficult situations, and be able to create positive change. It involves controlling our emotions, helping to guide our actions instead of interfering with them. Self-management helps us to understand our feelings. It is being mindful of our emotions and potentially delaying our need to fulfill our immediate impulse or urge. Responsible decision-making helps us to make decisions that will improve our potential setbacks and decrease frustration levels.

The skills learned from managing emotions and navigating social interactions effectively can help students succeed in school and relationships (Khazanchi et al., 2021). Relationship skills involve learning to understand what others feel and being able to see the perspective of others while still being able to develop a relationship across diversity (CASEL, 2020). Social awareness is how we understand others and helps with our ability to take on other perspectives. It is being in control of our emotions in relationships and being able to gauge and understand expectations in diverse social settings. It is our ability to empathize and create a greater understanding of other norms within other cultures. It helps us to create a greater understanding of our own sense of belonging (CASEL, 2020).

Social awareness skills are important in that they give us the ability to lead and guide, diffuse and/or negotiate problems, as well as facilitate collaboration and teamwork. The competencies are encircled by other areas that help to promote and support learning in the places where we interact with others the most. These interrelated

areas include SEL instruction within the classroom, school-wide culture and practices, real partnerships, and community relationships. These competencies help us understand who we are; how we manage stress, empathize, and sympathize with others; how we work together within our school and communities; and finally, how we develop a good decision-making process (Elias et al., 2003). The foundations of SEL can incorporate a student's ability to learn how to manage their own emotions as well as promote confident synergy with those around them (Khazanchi et al., 2021).

Relationship skills are our ability to engage and connect with others. This is achieved through our ability to communicate with others effectively, being able to problem solve collectively, manage conflict and disagreements, and have the forethought to stand up for others' rights (CASEL, 2020). Being able to communicate, both orally and in writing, is a key to handling relationships.

Sprenger (2020) shared strategies for relationship building. These include brainstorming, as it engages many different social-emotional skills including careful listening, turn taking in speaking, and respectful communication. Brainstorming can be used in either small or large group settings and is an exceptional avenue to promote relationship-building skills. Relationship-building skills require a range of social-emotional competence. Careful listening, also known as active listening, is a core competence in relationship building in that the listener needs to hear what the other person is saying in order to understand them and develop relationships. Lastly, not only is being a careful listener important, but using respectful communication is also important for relationship building. Respectful communication is when we listen carefully and respond kindly to others, whether we disagree with them or not. It allows everyone to

express their opinions and/or thoughts and understand each other's perspectives.

The final core competency of CASEL's framework is responsible decision-making. This is how we put all the previous competencies together to create responsible decision-making which includes critically thinking about our actions and their consequences along with analyzing how our actions impact us and those around us and being able to come up with solutions that support our overall well-being. Sprenger (2020) shared that there are three factors in decision-making: time, is there enough time and/or information to make a well-rounded decision to meet the problem; values, which are our beliefs and remain constant and do not change over time; and priorities, which tell us what the most important element or outcome is we are trying to achieve. Decision-making is established on our values and our priorities and is important to our discussions and problem-solving (Sprenger, 2020).

The development of the five SEL competencies is a critical component of a student's academic achievement and can dictate success later in life. SEL is a stimulant that can bolster academic progress and well-being in school. It can also bolster other aspects of the student's life by learning how to develop positive behaviors and learn how to measure and answer the emotions in their social, emotional, and cognitive development (Khazanchi et al., 2021).

According to Gimbert et al. (2021), CASEL's framework does not account for any of the aspects of diversity, culture, and observational trauma. Although a program based on the five competencies of CASEL may not necessarily have cultural responsiveness, it can be explained through a research-based ambition to build an evidence-based framework. CASEL has acknowledged that its framework does lack

facets of diversity, culture, and observational trauma, and they are working to improve the framework to include equity.

Benefits of SEL

SEL programs can heighten children's confidence in themselves; increase their commitment to school, along with their test scores and grades; as well as reduce behavior problems while increasing desirable behaviors (Greenberg et al., 2017). School-based SEL programs can improve a student's capabilities, build up their academic achievement, and make them less likely to experience future behavioral and emotional problems (Greenberg et al., 2017). Cavioni et al. (2017) said that there is a positive impact on all school-age children when an SEL program is taught. The impacts, regardless of a student's race, socioeconomic status, or location, are effective and can be especially effective in students who are at risk. Clarke et al. (2015) shared that those universal interventions that target increasing SEL competencies and decreasing problematic behaviors were especially effective in children and adolescents who were most at risk of developing problematic behaviors. Elias et al. (2003) believed that SEL interventions that are all inclusive and bring academic and SEL together have the greatest effect in helping students. This includes recognizing and being able to regulate emotions, recognizing their strengths and needs, while being able to communicate accurately and clearly, which includes listening, being able to take perspective, and having respect for others. Milligan et al. (2016) said that effective SEL programs need to include activities that focus on communication skills that include learning to manage a conversation and how to ask questions and listen, along with SEL skills that include self-regulation, anger management, cooperation, and perspective taking.

SEL can provide the strategies by which children can learn to properly manage and direct their emotions (Williams, 2020). When students are taught and learn empathy, they sense they are better understood along with being able to show empathy to others. SEL teachings and practices can help students learn to self-regulate their feelings, how to interact with others, and how to interact within relationships so they can play or communicate with others from different backgrounds and cultures. Williams (2020) shared that SEL increases overall academic outcomes, increases graduation rates and test scores, and improves the total quality of life.

SEL gives a solid foundation when it is presented well and with consistency. It helps support skills students need to be prosperous, happy, effective, and ultimately, well-adjusted adults (Carstarphen, 2020). SEL skills guide students in how to make wise decisions that may affect their future (Sprenger, 2020). SEL programs need to be used in conjunction with and supported in the classroom as well as the whole school. Effective support by the classroom teacher who is in a caring relationship will signal acceptance, encouragement, and respect for individuals while at the same time provide a sense of belonging (Cavioni et al., 2017).

Implementing SEL can be a challenge for teachers and administrators. The skills that are taught can offer a strategic way for students to regulate their behaviors. SEL can increase academic success and the quality of student relationships with those around them, including empathy, peer acceptance, and positive behavior (Khazanchi et al., 2021). For SEL curriculum to be effective, it must be ordered with fidelity to develop the SEL skills. However, teachers need to take ownership and combine SEL in the classroom with other core subjects instead of just implementing it to meet the school requirement

(Khazanchi et al., 2021). According to Khazanchi et al. (2021), "students with these soft skills are more likely to succeed in school, work, and life: make friends and maintain friendships; gain confidence; manage stress and anxiety; make appropriate decisions; resist negative pressures; and grow awareness of others' feelings" (p. 17).

Neuro-Based Social-Emotional Curriculum

Through the COVID-19 pandemic, SEL has come to the forefront to become a major player in how to help students overcome depression and potential trauma that are results of the pandemic. Three curriculums that blend neuroscience and SEL are MindUP, Second Step, and Mindfulness.

MindUP Curriculum

MindUP is an evidence-based SEL curriculum that is based on four pillars: neuroscience, mindful awareness, positive psychology, and SEL. It was founded by Goldie Hawn and the Goldie Hawn Foundation in 2003. According to the developers of the MindUP curriculum, students who are taught and learn SEL strategies persistently have higher scores on tests that require the use of neuroscience understanding (Hawn Foundation, 2011). The mission of MindUP is to "help children develop the knowledge and tools they need to manage stress, regulate emotions and face the challenges of the 21st century with optimism, resilience and compassion" (Hawn Foundation, 2011, p. 3). The purpose of an SEL curriculum such as MindUP is to help students have a greater understanding of their own mental thought processes (Hawn Foundation, 2011). It is used to teach students how their emotions can either be reactive or a thought-out process. When students use SEL strategies, they slow down their reactions and use their thoughts to potentially make a better choice.

A study of the MindUP program with a group of third- through fifth-grade students by Hai et al. (2021) was conducted to evaluate if the MindUP program could effectively improve the conduct of students within a behavioral classroom who had behavioral challenges. The outcomes of the study were that all participants showed decreased behaviors during the implementation of the program and the follow-up activities.

Mindfulness

Mindfulness is an SEL program that is "maintaining a moment-by-moment awareness of our thoughts, emotions, bodily sensations, and surrounding environment with openness and curiosity" (Mindful Schools, 2021b). Mindful Schools (2021a) stated that the brain can be developed through the practice of meditative activities. They also shared that through the use of their strategies, stress can potentially be reduced, creating an increase in the effectiveness of job performance, as well as increased organization and greater emotional support within the classroom environment.

The benefits of mindful meditation have been thought to improve behavioral control and reduce impulsivity (Korponay et al., 2019). Queries into Mindfulness started in the 1950s; however, it has taken over 50 years for scientists to begin to understand the benefits of Mindfulness and neurological changes that occur with its use. The use of Mindfulness interventions has shown to be successful in treating anxiety and post-traumatic stress disorders (Wheeler et al., 2017). The effects on the brain after using Mindfulness strategies have shown that several of the brain regions have been changed, which include the cerebral cortex, brain stem, and cerebellum, which proposes that the effects of Mindfulness strategies might involve several of the large-scale brain networks

(Tang et al., 2015).

According to Quaglia et al. (2019), the use of Mindfulness may reinforce successful cognitive control in social situations through the use of top-down attention. Mindfulness is believed to promote cognitive control by focusing the attention on emotions that are involved at the beginning and ongoing maintenance of attention. Mindfulness in kids is able to teach them the reflective skills necessary to develop and increase the executive functions in their brains. Mindfulness strategies can teach students how to calm the reactive system of the brain. When students practice Mindfulness, they create new neural pathways from the prefrontal cortex to the limbic system, including the brainstem, which in turn will calm the amygdala. This causes the neurotransmitter to send signals that will produce a calming effect within the student (Castillo, 2019).

Second Step Curriculum

The Second Step program is, "a holistic approach to building supportive communities for every child through social-emotional learning" (Committee for Children, n.d.-b, 2020, Programs, SEL section). Second Step's guiding theoretical basis is founded on cognitive-behavioral theory which evolved from Bandura's social learning theory. Bandura's theory said,

> Social learning theory emphasizes the importance of observing, modeling, and imitating the behaviors, attitudes, and emotional reactions of others. Social learning theory considers how both environmental and cognitive factors interact to influence human learning and behavior. (McLeod, 2016, para. 1).

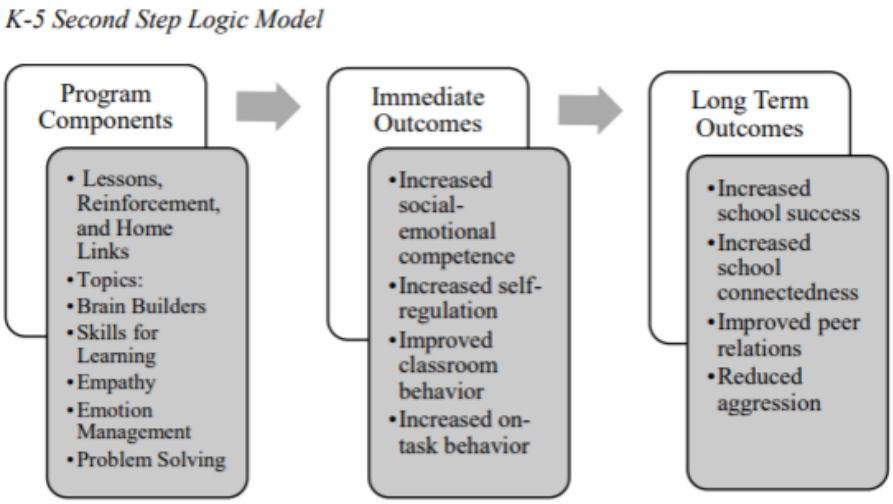
Second Step was piloted in 1988-1991with pre and posttest results showing

significant growth in school children's empathy, problem-solving, and anger management skills compared to students who did not receive the program (Moore & Beland, 1992). Strategies Second Step addresses in their curriculum include teaching compassion in the classroom, using the same language in all environments that students are in, and teaching teachers how to use self-care using strategies of the program for themselves. Second Step teaches that SEL and cognitive abilities depend on each other. Committee for Children (2021) stated, "Regardless of socio-economic factors, social-emotional competence leads to improved relationships and increased school connectedness, which all provide powerful support for academic success" (Success stories section).

The components of the program result in immediate outcomes, such as increased social-emotional competence and self-regulation. Figure 5 displays the flow of the K-5 Second Step logic model lessons that are used in elementary-level schools.

Figure 5

K-5 Second Step Login Model



Note. Second Step social-emotional learning: A strong foundation for lifelong learning,

by Committee for Children, 2021.

The lessons are presented to the students by their classroom teachers using a scripted lesson provided by Second Step. The lessons are intended to last anywhere from 25 to 40 minutes in length, depending on the grade level. The lessons introduce key concepts and situations through videoed stories and simulated photo cards. The questions students are asked about in each situation are intended to encourage them to look at a situation from a different viewpoint. As lessons progress, students work together in collaboration to come up with strategies for how to solve problems in the video or photo card. Sometimes, they role play situations and practice self-regulatory strategies and behavioral skills. With continued use of the program, long-term effects include improved peer relations, school connectedness, and success (Committee for Children, 2016).

The units of Second Step include skills for listening, empathy, emotion management, and problem-solving. Each unit has five to seven specific lesson concepts along with objectives students need to be able to demonstrate (Committee for Children, 2016). During these lessons, students learn how to listen and focus attention on the talker and how to listen and follow directions while using their eyes, ears, and brain. A strategy that is taught is for students to use self-talk to help themselves stay on task and stay focused. Another unit focuses on empathy where students are taught how to name their feelings and are encouraged to allow others to help them. They learn to identify anger and compassion; use the feelings their body is having in order to identify and understand their feelings; manage frustration; and use deep belly breathing to calm down and manage anger, disappointment, and being “knocked down” by others or tasks that are difficult (Committee for Children, 2016). The lessons begin with kindergarten and continue

through Grade 12. Each grade level builds upon the previous grade level learning in order to build a greater capacity and understanding of feelings, emotions, and reactions.

The Second Step program teaches that SEL skills that are developed early on in a child's life are a predictor of other skills that are developed later. The Second Step program is evidence-based and designed specifically for students in kindergarten through 12th grade. Currently, the Second Step program is used with more than 10 million students each year in the United States (Committee for Children, 2016). Therefore, SEL is not only to change a student's mindset early on, but it can also be used throughout the lifetime of the student so they are able to understand and manage situations, emotions, and relationships that become more complicated over time. "Children participating in the Second Step Elementary program who received more lessons in one school year experienced greater gains in SEL and lower levels of disruptive behavior than those who received fewer" (Committee for Children, 2016, Blog section).

The Second Step elementary curriculum is made up of targeted skills that combine into sets of lessons that are developed to be used from preschool through eighth grade for 36 weeks, once a week for 30 minutes. The program also includes additional activities that can be taught through the use of positive behavioral interventions and supports along with restorative practice frameworks.

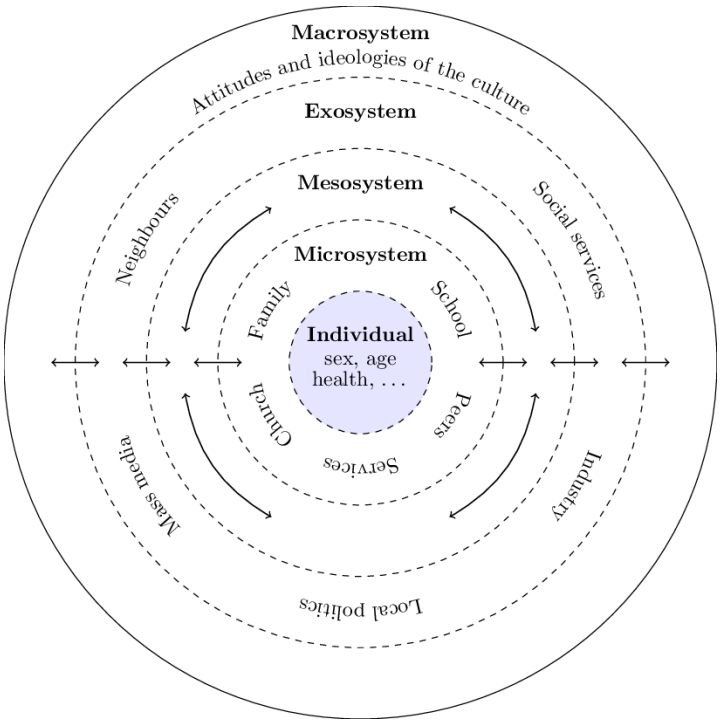
The Second Step program focuses on four main skills for development. These skills can include classroom and in-home activities such as brain builder games (to increase decision-making), weekly activities based on the week's theme, activities for reinforcement, and home activities that extend the lessons beyond the classroom. The home activities have the option of both Spanish and English. These skill activities can

connect a student to other areas of their lives and may envelop a wide range of topics that could include understanding their ability to learn, to practice empathy, to understand emotional management, to develop skills for friendship, and potentially the ability to problem solve (CASEL, 2020) and may incorporate visuals that range from puppets to role-playing, or photos of children from a variety of backgrounds, cultures, and ethnicities (Demitrowicz, 2017).

The Second Step program also uses a theoretical foundation based on the Bronfenbrenner's Ecological Framework for Human Development (Rosa & Tudge, 2013). Figure 6 illustrates Bronfenbrenner's theory, the Ecological Framework for Human Development.

Figure 6

The Ecological Framework for Human Development



Note. Rosa, E. M., & Tudge, J. (2013). Urie Bronfenbrenner's theory of human

development: Its evolution from ecology to bioecology. *Journal of Family Theory & Review, 5*(4), 243-258.

Bronfenbrenner's framework, according to Rosa and Tudge (2013), puts the child in the center of six systemic levels that will shape an individual's development. These levels are

> the individual; the microsystem, which includes the child's family, friends, educators, and others who directly interact with and influence the child; the mesosystem, which includes connection between individuals in the microsystem; the exosystem, which includes individuals and circumstances that indirectly influence the child's microsystem such as the caregivers' work schedules or the community's resources; the macrosystem, which includes broad societal forces that shape a child's environment, such as cultural values, customs, and laws; and the chronosystem, which represents time's influence on the child through experience and developmental changes (Committee for Children, n.d.-a, p. 2).

The Second Step program develops school success, learning how to connect, within a safe and respectful school climate. It teaches students the skills needed to strengthen their skills to learn how to have empathy, how to manage emotions, and how to problem solve (Committee for Children, n.d.-a).

Bronfenbrenner's theory (Rosa & Tudge, 2013) suggests that children learn through observation of their peers' interactions and adult interactions with them. Rosa and Tudge (2013) shared that Bronfenbrenner's theory is described as a theory of human development; from the start, the developing individual was consistently viewed as influencing, and being influenced by, the environment. The family thus plays a key role: It

does so as a microsystem context in which development occurs; it does so in terms of the personal characteristics of all individuals in the family; and most importantly, it does so in terms of the interactions among family members as part of proximal processes.

Bronfenbrenner's theory supports the CASEL framework in that each part of a student's life shapes and changes them (Rosa & Tudge, 2013). The two models use different outside forces to develop and change a child; however, these forces are intrinsically similar in that it is the family, community, and caregivers along with schools that help to shape and define a child over time.

When using a comprehensive approach, SEL will support children and educators. SEL helps to provide a positive and supportive environment across the whole of the day and across the years and developmental stages of a child's life (Committee for Children, 2016). This approach creates positive outcomes when public school units enlist the framework of SEL. They have experienced growth in student SEL competencies, increased classroom grade averages, and a decrease in behavioral reports.

The SEL skills that are learned and that facilitate the use of intellect can turn our reactions into thinking before we react, and this is also referred to as our EQ (Elias et al., 2003). According to Elias et al. (2003), EQ includes skills we learn and use for social and emotional learning; they are those skills that regulate elements of everyday life that include classroom life, school life, and our life away from school including family and friends. The aspects of our lives that SEL or EQ impact are our effectiveness in communication, collaborative work, monitoring or expressing our emotions and spontaneous actions, graciously de-escalating conflicts, and showing clear and precise character traits while using reflection in all areas of our lives. In the emotion management

unit of Second Step, students learn proactive strategies that include how to use deep breathing and positive self-talk, which help to prevent strong emotions from accelerating into negative behaviors. Children who manage emotions well and can self-regulate are better able to cope with strong emotions and express them in socially acceptable ways (McNeeley, 2016). Elias et al. (2003) contributed,

> SEL provides systematic classroom instruction that enhances children's capacity to recognize and manage their emotions, appreciate the perspectives of others, establish prosocial goals, and solve problems, and use a variety of interpersonal skills to effectively and ethically handle developmentally relevant tasks. (p. 28)

SEL or EQ is seen as the process in which teaching and developing SEL skills and aptitude in a classroom-based instructional curriculum can include but is not limited to role-play, modeling, or some form of reinforcement across the school day.

SEL strategies can be an important component for creating learning environments that are conscious of all students, including those who have experienced adversity, including exposure to trauma. SEL can also create and support a positive school climate in which students feel safe, feel they belong, and feel they have a sense of control over their experiences by developing decision-making and communication skills that will assist them in school and beyond (Browning, 2020).

Neuroscience and SEL

Neuroscience has come to the forefront and has been spotlighted to show the impact of emotion on how the brain learns, which opens doors for guiding learners so they can reach their highest potential (Willis, 2021). The brain is always changing based on the environment and experiences. Learning changes the structure and function of our

brains, and creating, strengthening, and cropping of neural connections are key to learning (National Academies of Sciences, Engineering, and Medicine, 2018). Brain-based instruction enlists three stages of learning: readiness, construction, and consolidation (McConchie & Jensen, 2020).

Educators have many ways to prepare a student for learning, but one of the most important ones to consider is the state of the student. It is rare for students to enter a classroom in one of the many optimal readiness states for learning—curiosity, anticipation, feeling accepted, belonging, or even feeling challenged, yet highly successful teachers evoke those states every day (McConchie & Jensen, 2020).

These are biological stages that students' brains need for success. Brain science normally does not integrate directly into educational policies or practices. However, educational policies and practices that are at work on how the brain develops are more likely to increase learning and development than those that undermine or are not formulated with brain science (Immordino-Yang et al., 2018). McConchie and Jensen (2020) shared that using strategies to prepare the brain for learning will create a brain that is ready to learn; then starts the second phase, which is building new learning or construction. The third step in increasing learning is being able to consolidate what has been learned. When the learning has been proven and has been through the error correction process, that is when meaning is made and retrieval is practiced. The brain infrequently encodes complex information perfectly the first time. Our brain is a summary of what is learned; it requires "just enough" information for survival (McConchie & Jensen, 2020).

Sousa (2021) shared that our emotions increase our memory, and people tend to

remember the most positive and negative events within their lives. This is because there is a small almond-shaped structure in the brain called the amygdala, which is located in the brain's emotional or limbic area. It is responsible for encoding our strong emotional responses and storing them in our long-term memory. It is also believed that our mirror neurons are partially responsible for our feelings of empathy as well as directing our social interactions.

Immordino-Yang et. al (2019) shared that SEL is gaining evidence and absorption in the public sector of education, and there is a great amount being learned about teaching SEL and the links between it, motivation, and academic achievement. It is becoming visible that culture and social-emotional experience as a result of everyday personal communication and knowledge play a crucial role in the brain's development as well as the learning across a person's lifetime (Immordino-Yang et al., 2019).

As a person involves themself in situations, problems, ideas, and social relationships, all these experiences will influence the patterns within the brain structure and function, which can solidify a person's acquired skills and learning over time (Immordino-Yang et al., 2018). As a person involves themself within life situations, problems, and social situations or relationships, they will influence the patterns within the brain structure and function which reinforces the person's growing skills and capabilities over time (Immordino-Yang et al., 2019). When an educator can recognize what the unique stressors are that push students into the low-brain-control, it can be a compelling way to promote top-down control (Willis, 2021).

Sousa's (2021) research shared that our social behavior is maturing faster than our emotional system and our cognitive abilities. He said that this happens between the ages

of 10 and 12 years old. According to Sousa (2021), our social competencies appear earlier, and our emotional competencies and cognitive competencies appear later. Because these competencies develop at a staggard rate, Sousa (2021) believed there is attention to developing the social competencies in the preschool years, while understanding that the emotional and cognitive abilities are still in the early stages of development. When learners have an understanding that they can "build" brain capacity, they are then able to act accordingly in the same way that people build physical size or space, and they are more likely to continue learning and less likely to be deterred by any setbacks along the journey (Tomlinson & Sousa, 2020).

A top priority should be to learn to identify and manage emotions. The brain's cognitive system, which is located in the frontal lobe, controls our emotional responses. However, according to Sousa (2021), this area is still approximately 10 years behind in full maturation; therefore, the brain's ability to control emotional balance can be very limited. The areas of the brain responsible for social-emotional processing are tangled into the cognitive center that processes information within the brain. "From a neuroscience standpoint, for social and emotional competencies to truly manifest, SEL must be embedded in an instructional approach that includes rigorous cognitive learning" (Sousa, 2021, p. 7). How emotions alter learning and memory is not always equivalent, studies have shared that our emotions either increase learning or reduce learning and long-term memory retention, which depends on many different factors (Tyng et al., 2017).

SEL competencies should not be separated from the quest for cognitive rigor and academic standards. Social, emotional, and cognitive learning should not be learned

separately, rather they should be integrated in order for students to develop SEL strategies and help them to reach their full potential while raising academic achievement. Since the brain develops the emotional system so early, it should be noted that understanding how a student may be feeling about entering a classroom is more important than what they think about what they are learning in the classroom (Sousa, 2021).

When a student arrives at school or the classroom, their backpacks are not the only baggage they are carrying. Many of them bring with them different mental, emotional, and physical issues which can and do affect their readiness and willingness to learn. Students who act out in class are unable to identify and understand what they are feeling. The adults need to help the students to identify their emotions or feelings. Our emotions, including those we understand and do not understand, order our behaviors, which may be appropriate or not appropriate at the moment. This is where students and adults need to be self-aware, being able to recognize the emotions in several different situations and put a name to them (Sprenger, 2020).

Brain functioning that will support learning is linked to physical development which then builds upon social and emotional experiences. This particular brain function will then establish a person's SEL path and tendencies of their situational responses. The most significant periods of SEL are when the brain is energetically molding and changing, and these are most likely high-leverage spans when SEL interventions are most effective. Emotional prosperity can increase a person's general health and brain development and increase their optimal learning (Immordino-Yang et al., 2019).

It is imperative that parents, administrators, and teachers recognize the importance

of SEL and how it affects how the brain develops and learns. Knowing this can provide the knowledge necessary to see every student's success realized. Teachers can tap into the dopamine response by individualized achievable challenges and feedback. By doing this, it can diminish stressors of boredom and/or frustration (Willis, 2021). This relies on all of us to model, teach, encourage, and provide multiple opportunities for building systems within our school that support the social and emotional well-being of students, which ultimately increases student learning capacity (Sprenger, 2020).

Having positive emotional experiences is important in a student's academic success and can have a noticeable impact on a student's overall success in the academic realm (Mega et al., 2014). If students are explicitly taught about the brain's ability to change, their motivation to learn can likely increase. If they also receive detailed instruction on how to effectively use learned strategies, there is amazing potential for students to make steady academic increases. Moreover, as students make increases, their growth mindsets (the belief that intelligence is malleable) can be continuous over time (Conyers & Wilson, 2020). Students develop fortitude when they have an understanding of their own brain's responses to increased stress, which can include but is not limited to academic, emotional, familial, physical, and psychological stresses. This can cause a shift in the brain, and it will move into a protective survival state that will increase reactive behavior and reduce memory construction (Willis, 2021).

Summary

SEL is an important component of education. In order for students to be successful in the classroom, they need to have skills that direct them in how to navigate the social situations they will encounter. Students who develop skills for understanding

their own feelings and have the ability to think through situations that can be reactive are students who will potentially be able to achieve a higher academic success rate as well as be able to problem solve and not react to situations or individuals. Students who learn strategies and use skills that are based on neuroscience are tapping into the brain's neuroplasticity and making connections and changes within the brain that will change their reactions and create pathways for increased problem-solving over their lifetime.

Chapter 3: Methodology

Introduction

Students today are exposed to and have to navigate more external and internal stimuli, stressors, and/or trauma than perhaps ever before. They are in need of tools, skills, and strategies in order to understand how these things can make changes in their brains. These strategies and tools build skills that allow them to overcome moments of anxiety, feeling stressed, or wanting to give up. According to Sousa (2021), a new field of scientific research is a combination of neuroscience and educational pedagogy along with cognitive psychology to drive research in order to help understand how the brain learns in the classroom. The brain is the epicenter for all our emotions, and it continues developing as we age well into our 20s. Emotions play an important role in everything we plan, everything that requires a decision, and everything we are involved in at a moment in time. Khazanchi et al. (2021) stated that the basics of SEL encompass a student's learning ability and managing their emotions. When SEL is included in the everyday curriculum, it gives students the support they need to navigate everyday issues no matter how minor or major they are.

SEL is a subject that is being propelled to the forefront of education. Our emotions drive our learning; therefore, if our emotions are in an intense state, learning is not going to happen. SEL educates students on how to recognize their emotions and how emotions can make long-term changes to their brains. Students can use SEL strategies and skills to overcome learning and social challenges. Brain research can help educators understand how learning can change the brain in a positive way so there is greater understanding, which can lead instructors organizing their lessons to discover a student's

natural obstacles and natural motivators to achieve desired learning and changes in behavior (Jensen & McConchie, 2020).

Research Design

This case study used a mixed methodology of quantitative and qualitative data. I explored a specific program of social-emotional curricula within a single site. A mixed methods design is described by using a combination of at least one qualitative and one quantitative research component (Schoonenboom & Johnson, 2017). Schoonenboom and Johnson (2017) described mixed methods as,

> research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (p. 108)

According to Worthen et al. (1997), mixed methods evaluations involve the use of two or more different types of observational design and/or gathering of data along with tools for analysis within the same study. Schoonenboom and Johnson (2017) shared that the overall goal of mixed methods research, which is combining qualitative and quantitative research components, is to expand and strengthen the study's conclusions and contribute to the published literature. In all studies, the use of mixed methods should contribute to answering the research questions.

In this mixed methods case study, the research questions I sought to answer were

1. How does incorporating SEL strategies within the intervention group impact student behaviors in and out of the classroom?

2. How does incorporating SEL strategies within the intervention group impact student academic performance?
3. What differences exist in behavior between grade levels?
4. What differences exist in academic performance between grade levels?

Setting and Participants

The study took place in a small elementary school in District X in the western North Carolina region. District X serves 5,700 students in 14 different schools with 438 teachers. The school of study serves prekindergarten through fifth grade. In the 2019-2020 school year, there were 228 students enrolled in the school. It is a Title I school with 100% free or reduced lunch. There are 23 teachers employed. The student population is made up of 54% males, and 46% females. It is just shy of 50% minority enrollment. The school's student diversity is 50% White, 39% Hispanic, 6% two or more races, 5% Black/African American, and seven-tenths American Indian, Alaskan, or Asian.

The school uses the Second Step program as a Tier 2 intervention with students who demonstrate a need for behavior intervention. The Second Step Tier 2 intervention group serves 33 students in kindergarten through fifth grade. There were 12 general education classroom teachers asked to participate: two kindergarten through second grade (K-2) multi-grade, two kindergarten, two first grade, one second grade, three third grade, one fourth grade, and one fifth grade teacher. The 12 general education teachers were asked to participate in both the survey that was distributed three times and a follow-up interview.

The school employs an SEL teacher who works with the students in 40-minute

sessions, five times per week. This is a pull-out program where students come to the SEL classroom during intervention time. The teacher uses the Second Step program with the students at their respective grade levels. The SEL teacher was asked to participate in both the survey that was distributed three times and a follow-up interview.

A total of 33 students have been receiving the intervention for half of the school year. Students are added to the SEL intervention classroom by the principal on an individual basis. Parents/caregivers of the 33 students were asked to participate in a survey that was distributed three times.

Curriculum

The lessons the students are involved in are based on the yearly implementation schedule and Second Step social-emotional program (Committee for Children, 2021). The scope and sequence of the Second Step program are the same across kindergarten through fifth grade. Each grade level focuses on the same skill. However, with each grade level, the objectives are targeted to that developmental age. Each lesson begins with a story and a discussion of the story. This is reinforced by daily practice. There are songs that are included within each lesson to help reinforce any new skills that have been taught. According to the curriculum, it is suggested that students are given the opportunity and encouraged to practice the skills and strategies they learn daily (Committee for Children, 2021).

The Second Step program begins each week with a new lesson being taught along with a new skill. The following 4 days of the week they will have daily practice activities to help reinforce the skill that was learned. On the last day of the week, there is a weekly skill check-in that the students complete in order for them to gain an understanding of the

skill they have learned Committee for Children, 2021).

There are 22 lessons total in the four units. The first unit has four lessons, while the last three units have six lessons each. Unit 1, Lessons 1-4, presents strategies that help students become better listeners through attention and focus; use self-talk to stay on task and handle distractions; and be assertive in a calm, firm, and respective manner. The upper elementary grades add a lesson for students on learning how to help themselves learn better (Committee for Children, 2021).

Unit 2, Lessons 1-6, focuses on empathy and how to identify others' feelings, understand others' perspectives, how to work through conflicting feelings, how to accept differences, strategies for showing compassion, and finally how to make friends (Committee for Children, 2021).

Unit 3, Lessons 1-6, focuses on emotion management. Students learn to identify physical clues that can help them name their own feelings; how to manage test anxiety; strategies for handling accusations; and how to manage disappointment, anger, and hurt feelings (Committee for Children, 2021).

In Unit 4, Lessons 1-6, students focus on problem-solving. The students learn calm down steps that help them to identify and state responses to a problem and/or scenario. They learn to recognize if their solutions are safe and respectful as well as analyze whether their solutions have positive or negative consequences (Committee for Children, 2021).

Role of the Researcher

Throughout the case study, I was the exceptional children administrator as well as the researcher. I am familiar with the school, teachers, and administration. I have been

trained to implement and teach the Second Step program in the classroom. I collected behavior and academic performance data from participating teachers and parents. The SEL teacher collected data on student participation within the intervention and follow-up of strategies learned within the lessons.

Data Collection

The study incorporated the use of both surveys and interviews over a 10-week period. The surveys were developed to ask questions of both teacher and parent participants regarding their students who are in the pull-out intervention group. Collection of survey data occurred during a 9-week timeline in which I administered the Teacher Survey of Program Effectiveness and Parent Survey of Program Effectiveness (Appendices A, B, and C [Spanish Version of Parent Survey of Program Effectiveness]) at the beginning, middle, and end of the study to the SEL teacher and the classroom teachers along with parents of the students who participated in the SEL class. The baseline was a result of the SEL teacher completing the first survey for each student. Each subsequent survey was distributed to the classroom teachers and parents who agreed to participate, along with the SEL teacher. After the last survey and at Week 10 of the study, I interviewed teachers who volunteered to be interviewed, allowing me to further probe regarding changes in academic performance and behavior of the students.

The surveys and reflective interviews explored the understanding of using a brain-based social-emotional curriculum and how it impacts student academic achievement and behavior within the school. Greene (2015) said a mixed methods approach to collective inquiry provides more than one viewpoint. The Spanish version of the surveys was reviewed by the Hispanic Family Liaison County X employs for translation and clarity

(Appendix C).

The survey was distributed at Week 1 to the SEL teacher and at Weeks 5 and 9 of the study to the general education teachers and parents. The survey was designed to clarify how students responded to the interventions provided through Second Step; if/how the student was sharing what they have learned; their thoughts on the strategies they are learning; if they were sharing the information with other peers or family members; and if the teacher and parent participants were able to see evidence that the students are demonstrating a change in their response to various stimuli, both in and out of the classroom, that can be a direct result of the intervention.

Interviews with the participating teachers occurred following the completion of the surveys. The teacher interviews were designed as open-ended questions in order to get a deeper and more meaningful response from the teachers. The interviews consisted of five questions looking for if the teacher noticed a change in the students' behaviors or academics once they began to attend the pull-out intervention sessions; if the student talked about the small group and what they were learning; if they were sharing any of the information, skills, or strategies with classroom peers or other peers; and finally, if they observed any significant change in student behavior and academic performance.

Table 1 presents the timeline for the data collection process of the surveys and interviews.

Table 1

Data Collection Process

Timeline	Data collection instrument
Prior to beginning of study	I asked for permission to conduct the case study from the superintendent and school principal and the Second Step developers, Committee for Children, for copyright permission to use the study (see Appendix F). Deliver letter for teacher and parent participants via email or hard copy included with the letter is the informed consent to participate. I requested a return of the consent either electronically or by delivery to the school office within 3 weeks of delivery.
Week 1	First delivery of survey via paper and/or email for teacher and parent participants, requesting a 1-week turnaround.
Week 5	Midpoint delivery of survey via paper and/or email for teacher and parent participants, requesting a 1-week turnaround.
Week 9	Final delivery of survey via paper and/or email for teacher and parent participants, requesting a 1-week turnaround.
Week 10	Face-to-face survey with participating teachers

Prior to the beginning of the study, I asked the superintendent of District X for permission to conduct the research and collect data and asked for approval from the principal of the school through email. I also asked the Second Step developers, Committee for Children, for copyright permission to use the curriculum in the study. "Committee for Children is not affiliated with this study and did not participate in its development, administration, or authorship. This research and its conclusions are my own." Prior to the beginning of the 10-week data collection, I delivered a letter and informed consent, either by hard copy or email, to the prospective teacher participants and the parents of the students who participated in the Second Step interventions. I

outlined my role in the study, the purpose of the research, how the teachers and parents could participate, and what data would be used. At Weeks 1, 5, and 9, I sent a digital copy of the Teacher Survey of Program Effectiveness and asked them to mark a response on the survey that most closely reflects the academic performance and behavior of the students involved in the intervention. I delivered a paper copy of the Parent Survey of Program Effectiveness to the teachers to send home to the willing parent participants. I asked the parents to mark a response on the survey that most closely reflects the academic performance and behavior of the students involved in the intervention. At the conclusion of Week 10, I completed in-person interviews of the SEL teacher and classroom teacher participants (Appendix D).

Reliability

Reliability refers to the likelihood that the application and response to this research would produce similar findings (Riege, 2003). This case study sought to measure the research questions of whether learning SEL strategies impacts student behaviors in and out of the classroom and/or if their academic performance is impacted during the intervention timeline. The SEL teacher who implements the program used the scripted material that is provided by Second Step. The scripted material for each grade level includes a Teacher Implementation Survey which is a checklist that can be used by the teacher to determine if they have presented all the components of the K–5 Second Step program (Committee for Children, 2021).

Validity

Validity "involves the approval of research findings by either interviewees or peers as realities may be interpreted in multiple ways" (Riege, 2003, p. 78). Validity was

ensured by using the research-developed surveys and interview questionnaires based on the Second Step unit implementation questionnaire. The SEL intervention teacher ensured validity through the use of the K–5 Second Step implementation preparedness checklist to ensure that all steps within the program were being taught (Committee for Children, 2016). The survey and the teacher interview questions were validated by the principal of the school where the case study took place, the district director of exceptional children, and an exceptional children program specialist. The principal was chosen to validate the survey and post-interview questions because she has intimate details of the students, parents, and teachers who are in the pull-out intervention group. The exceptional children director and exceptional children program specialist were also used to validate the survey instruments and interview questions, as the study falls into the realm of the delivery of Exceptional Children's services. The Spanish version of the parent participant survey and introduction letter was reviewed by the county Hispanic Family Liaison to ensure the translation was correct and understandable.

Data Analysis

Quantitative data are displayed three times (at the conclusion of Weeks 1, 5, and 9 data collection) using tables that present the frequency of the responses. The qualitative data were gathered from one-on-one interviews with participating teachers at the end of the study. The data from the interviews were displayed showing the common themes gathered from the responses from the participating teachers. The following addresses the protocol for answering each research question.

Research Question 1: How Does Incorporating SEL Strategies Within the Intervention Group Impact Student Behaviors in and Out of the Classroom?

Research Question 1 was answered using quantitative data through the use of surveys. The Teacher Survey of Program Effectiveness and Parent Survey of Program Effectiveness were distributed three times during the life of the case study. Surveys were returned either electronically or by submitting them to the school office. I analyzed for frequency of responses for Survey Questions 5, 6, 7, 8, 9, and 10. The responses are displayed visually in a table to show the distribution of the responses by grade level. In addition, qualitative data acquired and transcribed from Questions 1-5 of the Post-Intervention Teacher Interview Questionnaire (Appendix D) are presented in table form, showing common themes from the responses to the questions.

Research Question 2: How Does Incorporating SEL Strategies Within the Intervention Group Impact Student Academic Performance?

Research Question 2 was answered using quantitative data through the use of surveys. The Teacher Survey of Program Effectiveness and the Parent Survey of Program Effectiveness were distributed three times during the life of the case study. Surveys were returned either electronically or by submitting them to the school office. I analyzed the data for frequency of responses for Survey Questions 1, 2, and 3. The responses were displayed visually in a table to show the distribution of the responses by grade level. In addition, qualitative data acquired and transcribed from Questions 1-5 of the Post-Intervention Teacher Interview Questionnaire were presented in table form, showing common themes from the responses to the questions.

Research Question 3: What Differences Exist in Behavior Between Grade Levels?

Research Question 3 was answered using the same data used to answer Research Question 1, looking at it from a different context. The Teacher Survey of Program

Effectiveness and Parent Survey of Program Effectiveness were distributed three times during the life of the case study. Surveys were returned either electronically or by submitting them to the school office. I analyzed for frequency of responses for Survey Questions 5, 6, 7, 8, 9, and 10. The responses were displayed visually in a table to show the distribution of the responses by grade level. In addition, qualitative data acquired and transcribed from Questions 1-4 of the Post-Intervention Teacher Interview Questionnaire are presented in table form, showing common and different responses by grade level to the questions in the survey. The qualitative data are from Questions 1-5 of the Post-Intervention Teacher Interview Questionnaire. The data are displayed visually in tables using the common themes for each grade level. The data were then compared across grade levels to look for similar answers and presented visually in tables.

Research Question 4: What Differences Exist in Academic Performance Between Grade Levels?

Research Question 4 was answered using the same data used to answer Research Question 2, looking at it from a different context. The Teacher Survey of Program Effectiveness and Parent Survey of Program Effectiveness were distributed three times during the life of the case study. Surveys were returned either electronically or by submitting them to the school office. I analyzed for frequency of responses for Survey Questions 1, 2, and 3. The responses were displayed visually in a table to show the distribution of the responses by grade level. In addition, qualitative data acquired and transcribed from Questions 1-5 of the Post-Intervention Teacher Interview Questionnaire are presented in table form, showing common themes from the responses to the questions. The data were then compared across grade levels to look for similar answers

and presented visually in tables.

Ethical Issues Addressed

Prior to beginning the study, I received approval from the superintendent of District X Schools to conduct a study regarding the use of Second Step as a Tier 3 SEL intervention for the case study. I also contacted Second Step developers, Committee for Children, before the study began and was granted copyright permission through the Second Step Program K-5 Kit License Agreement (Appendix E). In addition, I received approval from the Gardner-Webb University Institutional Review Board prior to conducting the study. After the approvals, I obtained consent from the participants using the Gardner-Webb University informed consent form. Once the participants agreed to be a part of the study, I began data collection with the teacher and parent participants.

Data were collected through the use of the survey of willing participating parents and teachers and interviews with willing teachers. Figure 7 is an example of how teachers, students, and parents were identified in each of the grade levels.

Figure 7

Identifier of Teachers, Students, and Parents for Two Grade Levels

Teacher K-2 Multi-Grade	Teacher Identifier	Student Name	Student Identifier	Parent Identifier
	K-2_T1		K-2T1S1	K-2_T1P1
	K-2_T1		K-2T1S2	K-2_T1P2
	K-2_T2		K-2_T2S1	K-2_T2P1
	K-2_T2		K-2_T2S2	K-2_T2P2

Teacher-Kindergarten	Teacher Identifier	Student Name	Student Identifier	Parent Identifier
	K-T1		K-T1S1	K-T1P1
	K-T1		K-T1S2	K-T1P1
	K-T-2		K-T2S1	K-T2P1
	K-T2		K-T2S2	K-T2P2
	K-T2		K-T2S3	K-T2P3
	K-T2		K-T2S4	K-T2P4
	K-T2		K-T2S5	K-T2P5
	K-T2		K-T2S6	K-T2P6

To protect the confidentiality of the participants, I coded all the participants with an identifier. To begin the identifier process, each student was coded by student number and grade level identifier, e.g., 2nd-S1. Parents were given an identifier that correlates to their child, e.g., 2nd-P1. Teachers were given an identifier that correlates to the student and grade level taught, e.g., 2nd-T. I possessed the master list for the assigned identifiers. Teachers were given the list of their students by identifier so each student could be properly addressed through the survey.

Confidentiality was critical to this study. I held a master copy of the students and their identifiers, while the teachers had a list of the students in their classroom so they could align the student's identifier with the teacher and parent responses. Collected data

in hard copy form was secured first in the school office until I retrieved the returned surveys and then at my home. Electronic surveys are secured on a password-protected computer. Transcripts from the interviews are secured at my home. All data will be retained for 3 years and then destroyed. No identifying information from the district, school, principal, teachers, parents, or students is shared with the presentation/publishing of the data.

Summary

The methodology used for this study is a mixed methods case study. I sought to understand if students who are receiving Tier 2 interventions for behaviors and/or trauma through the Second Step SEL program experience behavior and/or academic change while receiving the intervention. This study took place in a rural school in District X of North Carolina. A Likert scale-based survey was used for both teacher and parent participants of students who are in the intervention group. There were also face-to-face interviews with the general education teachers of the students who are in the intervention group. I created the instruments to gather qualitative and quantitative data from the participants. I analyzed the data from the instruments through coding and provided confidentiality to protect participant identities. The Second Step program is not currently a scientifically based program, and based on the outcomes of this study, could contribute to evidence of its effectiveness (U.S. Department of Education, n.d.).

Chapter 4: Results

The purpose of this study was to determine the impact of SEL strategies with the intent to create resilience within students in terms of behavior and academic achievement. Data were collected from participating teachers and parents on what changes they have noticed since their students began attending the SEL pull-out intervention program. The data were collected during the 2021-2022 school year through the use of surveys and interviews. The findings of this case study contribute to existing literature on the outcomes of students who participate in the Second Step program pull-out SEL intervention group.

I collected quantitative and qualitative data to explore and understand how learning SEL strategies affects student behaviors and academics. The quantitative surveys were completed by teachers and parents to understand the impact of the Second Step program on student behaviors and achievement. The survey consisted of 10 questions that used a 4-point Likert scale, ranging from strongly disagree (1) to strongly agree (4). The teachers and parents responded to each question.

The qualitative data were collected following the final survey collection using open-ended interview questions of teacher participants. There were five interview questions the teacher participants were asked. The interview questions were used to explore what changes the teachers were able to observe in their students during and after participation in the SEL intervention pull-out group. I analyzed the interviews for common themes.

Prior to beginning the interviews, I reminded the teacher participants to refrain from using student names, any identifiable attributes, or student information. During the

interviews, I asked the teacher participants to elaborate on their answers further if more information was needed. Once all data collection was completed, I analyzed the quantitative data for trends within individual grade levels and across grade levels. The qualitative data were analyzed for common themes among the teacher responses.

Quantitative Data Results

The participants in the case study, all from District X, were teachers and parents of students who were in the SEL intervention pull-out group at school. Ten of 11 possible teachers, including the SEL teacher, agreed to participate in the survey. The teachers taught in K-2 multi-grade classrooms as well as single grade levels including kindergarten, first, second, and third grades. The teachers who agreed to participate in the study were sent an electronic link for the survey.

There were 11 of 33 possible parents who agreed to participate in the study. The parents were given the choice to receive the survey link electronically or on paper. All the parents chose a paper copy. The paper copies of the surveys were sent home with the student and were labeled with the student's specific identifier. The parents were then asked to return the survey through their student to the classroom teacher, who then returned the survey to the principal's office, where they remained until I picked them up.

The initial survey was sent electronically to the SEL teacher. The SEL teacher completed a survey for each student who attended the pull-out intervention group. The data from this survey served as the baseline for the students. The SEL teacher used the student's identifier when completing the survey (see Figure 7).

Survey 1 Data

The electronic link for the first survey was sent to the SEL teacher. The teacher used the Likert rating scale that was provided in the form: 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree. Table 2 shows the responses from the teacher who completed the survey for the kindergarten students.

Table 2

Survey 1: Teacher Baseline Kindergarten

Student	Student average	Question	Question average
K-T1S1	2.3	1	3.88
K-T1S2	2.8	2	2.125
K-T2S1	1.9	3	1.875
K-T2S2	2.8	4	2.125
K-T2S3	2.7	5	2.65
K-T2S4	2.2	6	2.375
K-T2S5	2.9	7	2.5
K-T2S6	2.8	8	1.625
		9	2.5
		10	2.5
Teacher average	2.55	Grade level average	2.416

Note. N=8; q=10.

The numerical ratings are based on a 4-point scale. The SEL teacher completed one survey for each of the students who participated in the SEL pull-out intervention group. To calculate the average for each student, the responses from the 10 questions were added together and then divided by (q=10) in order to reach an average score. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=8). To calculate the average for the questions, the student scores for each of the questions were added together and that number was divided by the number of students (N=8). The average teacher score for each question ranged

from 3.88 for Question 1 to a 1.625 average for Question 8 (see Table 2). The overall average for each student's cumulative score for Survey 1 ranged from 1.9 to 2.8. Overall, the teacher average score was 2.55. The grade level average score was 2.416.

When comparing the average scores for the questions, there is more than a 2-point difference between the highest-scoring question, Question 1, and the lowest-scoring question, Question 8. This demonstrates the students enjoy attending the intervention group, but students were not using the strategy of self-talk commonly. Through the analysis, it can be said that the baseline shows that two of the students fall into the disagree to strongly disagree area, while six of the students' scores are closer to the agree area of effectiveness of the Second Step program.

The electronic link for the first survey was sent to the SEL teacher. The teacher used the Likert rating scale that was provided in the form: 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree. Table 3 shows the responses from the SEL teacher for the K-2 multi-grade.

Table 3

Survey 1: Teacher Baseline K-2 Multi-Grade

Student	Student average	Question	Question average
K-2-T1S1	2.7	Q1	3.5
K-2-T1S2	2.4	Q2	2
K-2-T2S1	2.6	Q3	2
K-2-T2S2	2.8	Q4	2
		Q5	2.5
		Q6	2.75
		Q7	3
		Q8	2
		Q9	2.75
		Q10	3.75
Teacher average	2.625	Grade level average	2.625

Note. N=4; q=10.

The numerical ratings are based on a 4-point scale. The SEL teacher completed one survey for each of the students who participated in the SEL pull-out intervention group. To calculate the average for each student, the responses from the 10 questions were added together and then divided by (q=10) in order to reach an average score. Once the students' average scores were calculated, those scores were added together and then divided by the number of students (N=4). To calculate the average for the questions, the students' scores for each of the questions were added together and that number was divided by the number of students (N=4). The average teacher score for each question ranged from 3.75 for Question 10 to an average of 2 for Questions 2, 3, 4, and 8 (see Table 7). The overall average for each student's cumulative score for Survey 1 ranged from 2.4 to 2.8. Overall, the teacher average score was 2.625. The grade level average score was 2.625. Although the averages were different for each of the questions and

students when the average for the teacher score and the question scores were compared, it resulted in the same score for both.

Through analysis of each question average, the difference between the scores was 1.75. Question 10 received the highest rating, 3.75, which demonstrates that the students were noticed showing empathy towards their peers and teachers.

When comparing the grade level average of the kindergarten responses to the grade level averages of the K-2 multi-grade, the K-2 multi-grade grade level average was .209 higher than the kindergarten average. The teacher average for the K-2 multi-grade was .115 greater than the average for the kindergarten teacher.

Table 4 displays the responses from the SEL teacher who completed Survey 1 for the first-grade students. The SEL teacher's responses were the baseline for each of the students and grade level averages. The teacher used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 4

Survey 1: Teacher Participant Response Baseline First Grade

Student	Student average	Question	Question average
1st-T1S1	2.9	Q1	3.57
1st-T1S2	2.8	Q2	2.14
1st-T1S3	2.1	Q3	2
1st-T1S4	2.4	Q4	2.14
1st-T2S1	2.3	Q5	2.71
1st-T2S2	2.8	Q6	2.71
1st-T2S3	2.8	Q7	2.71
		Q8	1.85
		Q9	2.71
		Q10	3.57
Teacher average	2.585	Grade level average	2.611

Note. N=7; q=10.

The SEL teacher completed the survey for the students who were in the SEL intervention pull-out group in order to create a baseline (see Table 4). The numerical ratings are based on a 4-point scale. To calculate the average for each student, the responses from the 10 questions were added together and then divided by the number of questions (q=10) in order to reach an average score. Once the students' average scores were calculated, those scores were added together and then divided by the number of students (N=7). To calculate the average for the questions, the students' scores for each of the questions were added together and that number was divided by the number of students (N=7). The average teacher score for each question ranged from 3.57 for Questions 1 and 10 to a 1.85 average for Question 8 (see Table 4). The students demonstrated that they enjoy attending the pull-out group and they have been noticed showing empathy towards their peers and teachers. However, Question 8 demonstrates that the students have not been heard using positive self-talk when irritated, angry, or upset.

The overall average for each student's cumulative baseline score ranged from 2.1 to 2.9. The difference between the highest score and the lowest score is 0.8. Overall, the teacher average score was 2.585. The grade level average score was 2.611. When the scores are compared, the difference between the teacher average and grade level is 0.026.

When comparing the teacher average of the first grade, 2.585, to the grade level average of the previous two grades, kindergarten and K-2, the first grade fell in between the kindergarten class (see Table 2), with a score of 2.55 and the K-2 class (see Table 3) with a score of 2.625. During the analysis, I noticed that the grade level average for the first grade was 0.014 points less than the K-2 grade level average and 0.195 more than

the kindergarten grade level average.

Table 5 displays the responses from the SEL teacher who completed Survey 1 for the second-grade students. The SEL teacher's responses were the baseline for each of the students and grade level averages. The teacher used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 5

Survey 1: Teacher Participant Responses Baseline Second Grade

Student	Student average	Question	Question average
2nd-S1	2.5	Q1	2.5
2nd-S2	1.7	Q2	2.25
2nd-S3	3	Q3	2
2nd-S4	3	Q4	2.25
		Q5	2.75
		Q6	3
		Q7	3
		Q8	2
		Q9	2.75
		Q10	3
Teacher average	2.55	Grade level average	2.55

Note. N=4; q=10.

The SEL teacher completed the survey for the students who were in the SEL intervention pull-out group in order to create a baseline (see Table 5). The numerical ratings are based on a 4-point scale. To calculate the average for each student, the responses from the 10 questions were added together and then divided by the number of questions (q=10) in order to reach an average score. Once the students' average scores were calculated, those scores were added together and then divided by the number of students (N=4). To calculate the average for the questions, the students' scores for each

of the questions were added together and then that number was divided by the number of students (N=4). The average teacher score for each question ranged from 3 for Questions 6, 7, and 10 to an average of 2 for Questions 3 and 8 (see Table 5). The students demonstrated that they have been noticed being able to name their feelings; they are able to calm down when irritated, angry, or upset; and they show empathy for their fellow students and teachers. However, Questions 3 and 8 demonstrate that the students do not talk to other students about the skill they are learning in the Second Step program and have not been heard using positive self-talk when irritated, angry, or upset.

The overall average for each student's cumulative baseline score ranged from 1.7 to 3. The difference between the highest score and the lowest score is 1.3 points. Overall, the teacher average score was 2.55. The grade level average score was also 2.55. When the scores are compared, the difference between the teacher average and grade level, the averages were identical.

When comparing the grade level average of the second grade, 2.55, to the grade level average of the previous two grades, kindergarten and K-2, the second grade is identical to the kindergarten class average (see Table 2), with a score of 2.55 and is 0.075 less than the K-2 class (see Table 3) with a score of 2.625. The second-grade average is 0.061 less than the first-grade average.

Table 6 displays the responses from the SEL teacher who completed Survey 1 for the third-grade students. The SEL teacher's responses were the baseline for each of the students and grade level averages. The teacher used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 6

Survey 1: Teacher Survey Responses Baseline Third Grade

Student	Student average	Question	Question average
3rd-T1S1	2.7	Q1	3.75
3rd-T1S2	2.7	Q2	2.29
3rd-T1S3	2.2	Q3	1.63
3rd-T2S1	2.8	Q4	2
3rd-T2S2	2.4	Q5	2.63
3rd-T2S3	2.5	Q6	2.38
3rd-T3S1	2	Q7	2.38
		Q8	1.88
		Q9	3
		Q10	2.63
Teacher average	2.47	Grade level average	2.457

Note. N=7; q=10.

The SEL teacher completed the survey for the students who were in the SEL intervention pull-out group in order to create a baseline (see Table 6). The numerical ratings are based on a 4-point scale. To calculate the average for each student, the responses from the 10 questions were added together and then divided by the number of questions (q=10) in order to reach an average score. Once the students' average scores were calculated, those scores were added together and then divided by the number of students (N=7). To calculate the average for the questions, the students' scores for each of the questions were added together and then that number was divided by the number of students (N=7). Analyzing the teacher responses, it is noted that the student's teacher averages were similar.

The student averages, as reported by the SEL teacher responses, have a 0.8 spread from lowest to highest. Student 3rd-T3S1 has the lowest teacher average, while student

3rd-T2S1 has the highest rating. Analysis of the responses from Question 1, "Does the student enjoy attending Second Step WIN time," produced a score of 3.75. However, Question 3, "Does the student talk to others about Second Step skills they are learning," received the lowest score of 1.63. There is over a 2-point difference between ratings from Questions 1 and 3.

Analyzing the grade level averages across the kindergarten, K-2, first, second, and third grades, there is a difference of 0.17. The K-2 grade level average is 2.65 (see Table 3), while the lowest grade level average is the third grade, 2.457 (see Table 6). The other three grade level averages (see Tables 2, 4, 5) fall between the K-2 average and the third-grade average.

Table 7 shows the responses from the SEL teacher who completed Survey 1 for the fourth-grade students. The SEL teacher's responses were the baseline for each of the students and grade level averages. The teacher used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 7

Survey 1: Teacher Survey Response Baseline Fourth Grade

Student	Student average	Question	Question average
4th-S1	2.1	Q1	4
4th-S2	2.7	Q2	1.3
4th-S3	2	Q3	1.3
		Q4	1.67
		Q5	2.67
		Q6	2
		Q7	2.33
		Q8	2
		Q9	2.33
		Q10	3
Teacher average	2.267	Grade level average	2.26

Note. N=3; q=10.

The SEL teacher completed the survey for the students who were in the SEL intervention pull-out group in order to create a baseline (see Table 7). The numerical ratings are based on a 4-point scale. To calculate the average for each student, the responses from the 10 questions were added together and then divided by the number of questions (q=10) in order to reach an average score. Once the students' average scores were calculated, those scores were added together and then divided by the number of students (N=3). To calculate the average for the questions, the students' scores for each of the questions were added together and then that number was divided by the number of students (N=3). The average teacher score for each question ranged from 4 for Question 1 to a 1.3 average for Questions 2 and 3 (see Table 7). The students demonstrated that they enjoy attending the pull-out group, as they scored a perfect score of 4. However, they scored in the strongly disagree area when they were asked if the students talk about the skills and strategies they are learning in the Second Step program, and that they do not demonstrate that they are talking to others about the skills and strategies they are learning in Second Step.

The overall average for each student's cumulative baseline score ranged from 2 to 2.7. The difference between the highest score and the lowest score is 0.7. Overall, the teacher average score was 2.267, while the grade level average score was 2.26. The teacher average was 0.007 higher than the grade level average.

When comparing the teacher average of the fourth grade, 2.26, to the grade level average of the previous two grades, kindergarten and K-2, the fourth grade received the lowest overall grade level average. During the analysis, I noticed that the grade level

average between the highest grade level average which was K-2, 2.625, was 0.365 higher than that of the fourth grade.

Table 8 displays the responses from the SEL teacher who completed Survey 1 for the fifth-grade student. The SEL teacher's responses were the baseline for the student and grade level averages. The teacher used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 8

Survey 1: Teacher Survey Response Baseline Fifth Grade

Student	Student average	Question	Question average
5th – S1	1.9	Q1	3
		Q2	1
		Q3	1
		Q4	1
		Q5	2
		Q6	2
		Q7	2
		Q8	2
		Q9	2
		Q10	3
Teacher average	1.9	Grade level average	1.9

Note. N=1; q=10.

The SEL teacher completed the survey for the student who was in the SEL intervention pull-out group in order to create a baseline (see Table 8). The numerical ratings are based on a 4-point scale. To calculate the average for the student, the responses from the 10 questions were added together and then divided by the number of questions (q=10) in order to reach an average score. Once the student's average score was calculated, those scores were added together and then divided by the number of students

(N=1). To calculate the average for the questions, the student scores for each of the questions were added together and then that number was divided by the number of students (N=1).

While analyzing the teacher responses for fifth grade (see Table 8), it is noted that the student's teacher average, student average, and grade level average were identical. This is due to being the only fifth-grade student who attended the pull-out intervention group. The spread between the highest-rated question and the lowest-rated question was 2 points. During the analysis of the responses, the question with the highest rating, 3, was that the student enjoyed attending the Second Step pull-out group. There were three questions that received a score of 1: Questions 2, 3, and 4. The teacher strongly disagreed that the student talks about the skills and strategies taught during the intervention group, talks to others about the skills learned, and that the teacher has not observed the student using skills or strategies from the Second Step program in the classroom (see Table 8).

When analyzing the grade level average baselines across kindergarten, K-2, first, second, third, fourth, and fifth grades, K-2 multi-grade has the highest grade level average baseline, 2.625 (see Table 3). The other grade levels, kindergarten, K-2, second, third, and fourth, were all within 0.365 points of one another. The grade with the lowest baseline is the fifth grade, with a grade level average of 1.9. All the other grade levels have anywhere from three to eight students, while the fifth grade has one student.

When comparing all the teacher averages and grade level averages, the teacher averages ranged from 1.9, fifth grade, to 2.625, K-2. There was a 0.725 difference between the highest teacher average and the lowest grade average. When comparing the grade level averages, the scores ranged from 1.9 (fifth grade) to 2.625 (K-2), which again

has a gap of 0.725.

Survey 2 Data

Ten of 11 teachers agreed to participate in the survey. The electronic survey link was sent to the classroom teachers, along with the SEL teacher. Nine of 11 classroom teachers completed surveys for each of the students in their classroom, and the SEL teacher, again, completed a survey for each student who participated in the pull-out intervention group. The parents who agreed to participate in the survey were given a paper copy of the survey. These were sent home by the teacher through the student for the parent to complete and return. Eleven parents agreed to participate in the survey. Each survey was marked with the student's identifier on the survey in order to assure the responses would be accurate. Eight of 11 parents returned the survey for their student.

Table 9 displays the responses from the baseline of Survey 1 and the responses from the classroom teachers, parents, and SEL teacher from Survey 2. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 9

Surveys 1 and 2: Baseline, Teacher and Parent Survey Responses

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Question average Survey 2	Parent question average
K-T1S1	2.3	2.7	X	Q1	3.8	4	4
K-T1S2	2.8	2.9	X	Q2	2.125	1.75	2.33
K-T2S1	1.9	2.1	1.75	Q3	1.875	1.75	2.33
K-T2S2	2.8	2.9	3.3	Q4	2.125	2.75	3
K-T2S3	2.7	2.9	X	Q5	2.65	3	2.66
K-T2S4	2.2	2.7	X	Q6	2.375	2.875	2.66
K-T2S5	2.9	2.9	X	Q7	2.5	3	2.33
K-T2S6	2.8	2.9	3.5	Q8	1.625	2.75	2.66
				Q9	2.5	2.875	4
				Q10	2.5	3.75	4
Teacher average	2.55	2.75		Grade level average	2.416	2.75	
Parent average			2.85				3

Note. N=8; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. The general education kindergarten classroom teachers did not complete the survey; however, the SEL teacher and three parents did complete the survey.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. There were three kindergarten parents who completed a survey for their students. To calculate the parent average, the same formula was used as the teachers. The SEL teacher

also completed a second survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=8) to create the teacher overall average score.

The average teacher score for each question ranged from 1.75 for Question 1 to an average of 4 for Question 8 (see Table 9). The overall average for each student's cumulative score for Survey 2 ranged from 2.1 to 2.9. The parent average for students ranged from 1.75 to 3.5. Overall, the parent average score was 2.85, and the teacher average was 2.75. There was a 0.1 difference between parent and teacher. The grade level baseline average was 2.416, while the grade level average for Survey 2 was 2.75. There is a 0.334 increase in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 2.416, the teacher questions average for Survey 2 was 2.75, and the parent questions average was 3. The teacher question average for Survey 2 falls in between the baseline and parent average. The baseline, teacher question average, and parent question average responded similarly in that for Question 1, they all agreed or strongly agreed that their student enjoys attending Second Step WIN time. The greatest difference is Question 8. The baseline rated Question 8 at 1.625, while the teachers rated Question 8 at 2.75 on the second survey (see Table 9).

Table 10 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the K-2 multi-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and

4=strongly agree.

Table 10

Surveys 1 and 2: Baseline, Classroom Teacher and Parent Responses for K-2

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Question average Survey 2	Parent question average
K-2-T1S1	2.7	3	X	Q1	3.5	3.83	2.5
K-2-T1S2	2.4	2.8	X	Q2	2	2.5	3
K-2-T2S1	2.6	2.3	2.5	Q3	2	1.33	2
K-2-T2S2	2.8	2.5	3	Q4	2	2.16	2.5
				Q5	2.5	2.833	3
				Q6	2.75	2.833	3
				Q7	3	3	2.5
				Q8	2	1.833	3
				Q9	2.75	3.166	2
				Q10	3.75	3.33	4
Teacher average	2.625	2.683		Grade level average	2.625	2.682	
Parent average			2.75				2.75

Note. n=4; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There were two K-2 teachers who completed the survey along with the SEL teacher, and there were two parents who completed the survey.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation.

There were two K-2 parents who completed a survey for their students. To calculate the parent average, the same formula was used as the teachers. The SEL teacher also completed a second survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=4) to create the teacher overall average score.

The average teacher score on Survey 2 for each question ranged from 1.75 for Question 1 to an average of 4 for Question 8 (see Table 10). The overall average for each student's cumulative score for Survey 2 ranged from 2.3 to 3. The parent average for students ranged from 2.5 to 3. Overall, the parent average score was 2.75, and the teacher average was 2.683. There was a 0.067 difference between parent and teacher. The grade level baseline average was 2.625, while the grade level average for Survey 2 was 2.683. There is a 0.058 increase in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 2.625; the teacher question average for Survey 2 was 2.682, and the parent question average was 2.75. The teacher question average for Survey 2 falls in between the baseline and parent average. The baseline, teacher question average, and parent question average responded similarly in that for Questions 1 and 10, they all agreed or strongly agreed that their student enjoys attending Second Step WIN time and their student shows empathy for their fellow students and teachers. The greatest difference is Question 8. The teacher Survey 2 rates at 1.833, while the parents rated Question 8 a 3 on the second survey (see Table 10). The difference between the teacher and parent ratings of Question 8 is 1.167.

Table 11 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the first-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 11

Surveys 1 and 2: Baseline, Teacher and Parent Responses for First Grade

ID	St avg baseline	St avg 2	Parent avg 2	Q	Q baseline avg	Q avg 2	Parent Q avg
1st-T1S1	2.9	2.9	X	Q1	3.57	3.6	X
1st-T1S2	2.8	2.9	X	Q2	2.14	1.6	X
1st-T1S3	2.1	2.2	X	Q3	2	1.7	X
1st-T1S4	2.4	2.7	X	Q4	2.14	2.4	X
1st-T2S1	2.3	1.6	X	Q5	2.71	2.7	X
1st-T2S2	2.8	2.7	X	Q6	2.71	2.6	X
1st-T2S3	2.8	3.2	X	Q7	2.71	2.7	X
				Q8	1.85	2	X
				Q9	2.71	3	X
				Q10	3.57	3.10	X
Tchr avg	2.585	2.54		Gr lvl avg	2.611	2.54	
Parent avg			X				X

Note. N=9; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There was one classroom teacher and the SEL teacher who completed Survey 2. However, there were no parents who completed Survey 2.

To calculate the average for each student, the responses from the 10 questions

were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. The SEL teacher also completed a second survey and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=9) to create the teacher overall average score.

The average teacher score for each question ranged from 1.60 for Question 2 to a 3.10 average for Question 10 (see Table 11). The overall average for each student's cumulative score for Survey 2 ranged from 1.6 to 3.2. The grade level baseline average was 2.585, while the grade level average for Survey 2 was 2.54. There is a loss of 0.045 in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 2.611, and the teacher question average for Survey 2 was 2.54. The teacher question average for Survey 2 is 0.071 less than the baseline. The baseline and teacher question average responded similarly in that for Question 1, they all agreed or strongly agreed that their student enjoys attending Second Step WIN time. The greatest difference is Question 3. The baseline rated a 2, while the teachers rated Question 3 a 1.70 on the second survey (see Table 11). There is a 0.3 decrease in Question 3 from the baseline.

Table 12 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the second-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 12

Surveys 1 and 2: Baseline, Teacher and Parent Responses for Second Grade

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Question average Survey 2	Parent question average
2nd-S1	2.5	2.9	X	Q1	2.5	3.75	X
2nd-S2	1.7	2.2	X	Q2	2.25	2	X
2nd-S3	3	2.9	X	Q3	2	1.75	X
2nd-S4	3	3	X	Q4	2.25	3	X
				Q5	2.75	2.75	
				Q6	3	3	
				Q7	3	2.75	
				Q8	2	1.75	
				Q9	2.75	3	
				Q10	3	3.75	
Teacher average	2.55	2.75		Grade level average	2.55	2.75	
Parent average			X				X

Note. N=4; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There was one classroom teacher and the SEL teacher who completed Survey 2. However, there were no parents who completed Survey 2.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. The SEL teacher also completed a second survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating

the student's teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=4) to create the teacher overall average score.

The average teacher score for each question ranged from 1.60 for Question 2 to a 3.10 average for Question 10 (see Table 12). The overall average for each student's cumulative score for Survey 2 ranged from 2.2 to 3. The grade level baseline average was 2.55, while the grade level average for Survey 2 was 2.75. There is a gain of 0.20 in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 2.55; the teacher question average for Survey 2 was 2.75. The teacher question average for Survey 2 is a 0.20 gain from the baseline established in Survey 1. The baseline and teacher question average were identical for Question 5, 2.75. They rated Question 5 closer to agree than disagree. The greatest difference is Question 1. The baseline rate was 2.50, while the teachers rated Question 1 a 3.75 on the second survey (see Table 12).

Table 13 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the third-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 13

Surveys 1 and 2: Baseline, Teacher and Parent Responses for Third Grade

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Question average Survey 2	Parent question average
3rd-T1S1	2.7	3.25	X	Q1	3.75	3.5	3.33
3rd-T1S2	2.7	2.83	3	Q2	2.29	2.28	1.33
3rd-T1S3	2.2	2.75	X	Q3	1.63	1.92	1.33
3rd-T2S1	2.8	2.7	X	Q4	2	2.64	1.66
3rd-T2S2	2.4	2.5	X	Q5	2.63	2.75	3
3rd-T2S3	2.5	2.25	2.70	Q6	2.38	2.61	2.66
3rd-T3S1	2	2.55	1.9	Q7	2.38	2.92	2.33
				Q8	1.88	2.14	2.66
				Q9	3	3	3.33
				Q10	2.63	3.07	3.66
Teacher average	2.47	2.69		Grade level average	2.457	2.69	
Parent average			2.53				2.53

Note. n=7; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There were three third-grade teachers who completed the survey along with the SEL teacher, and three parents who completed the survey.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. There were three third-grade parents who completed a survey for their students. To calculate the parent average, the same formula was used as the teachers. The SEL teacher

also completed a second survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=7) to create the teacher overall average score.

The average teacher score on Survey 2 for each question ranged from 1.92 for Question 3 to 3.5 for Question 1 (see Table 13). The overall average for each student's cumulative score for Survey 2 ranged from 2.25 to 3.25. The parent average for students ranged from 1.9 to 3. Overall, the parent average score was 2.53, and the teacher average was 2.69. There was a 0.16 difference between parent and teacher. The grade level baseline average was 2.457, while the grade level average for Survey 2 was 2.69. There was a 0.233 increase in the grade level average from the baseline to Survey 2. The parent average was 2.53, which falls between the baseline and the teacher average.

When comparing the teacher average scores for the questions, the baseline score was 2.457, the teacher question average for Survey 2 was 2.69, and the parent question average was 2.53. While reviewing the question scores, the baseline, Survey 2, and parent averages were all within a 0.2 difference. The parent average fell between the baseline and Survey 2 averages. The greatest difference was on Question 2: The baseline was 2.29, teacher Survey 2 was 2.28, while the parent was 1.33. The parent average for Question 2 was 0.96 less than the baseline and 0.95 less than the teacher question average. The question that was most consistent when rated was Question 9: Both parents and teachers had noticed their students asking for help when they did not understand. The baseline was 3, teacher question average was 3, and the parent average was 3.33.

Table 14 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the fourth-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 14

Surveys 1 and 2: Baseline, Teacher and Parent Responses for Fourth Grade

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Question average Survey 2	Parent question average
4th-S1	2.1	2.9	X	Q1	4	4	X
4th-S2	2.7	2.9	X	Q2	1.3	2	X
4th-S3	2	2.8	X	Q3	1.3	2	X
				Q4	1.67	3	X
				Q5	2.67	3	X
				Q6	2	3	X
				Q7	2.33	3	X
				Q8	2	2.33	X
				Q9	2.33	3	X
				Q10	3	3.33	X
Teacher average	2.267	2.86		Grade level average	2.26	2.86	
Parent average			X				X

Note. n=3; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. The classroom teacher did not complete a survey; however, the SEL teacher did complete Survey 2. There were no parents who completed Survey 2.

To calculate the average for each student, the responses from the 10 questions

were added together and then divided by 10 (q=10). The SEL teacher also completed a second survey; however, the classroom teacher did not complete a survey for the students who attended the SEL pull-out intervention class. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=3) to create the teacher overall average score.

The average teacher score for each question ranged from 2 for Question 2 to an average of 4 for Question 10 (see Table 14). The overall average for each student's cumulative score for Survey 2 ranged from 2.8 to 2.9. The grade level baseline average was 2.267, while the grade level average for Survey 2 was 2.86. There is a gain of 0.593 in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 2.26, and the teacher question average for Survey 2 was 2.86. The teacher question average for Survey 2 is a gain of 0.6 from the baseline established in Survey 1. The baseline and teacher question average (4) were identical for Question 1. The greatest differences were for Questions 2, 3, and 4. The baseline rate for Questions 2 and 3 was 1.30, while the rating of Survey 2 was 2. Questions 2 and 3 had a 0.7 increase over the baseline. Question 4 had a baseline of 1.67, and the rating in Survey 2 was 3. The increase from the baseline to Survey 2 was 1.33 (see Table 14).

Table 15 displays the baseline scores along with the ratings from Survey 2 which include classroom teacher and parents for the fifth-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 15

Surveys 1 and 2: Baseline, Teacher and Parent Responses for Fifth Grade

Student	Student average baseline	Student average Survey 2	Parent average Survey 2	Question	Question baseline average	Teacher question average Survey 2	Parent question average
				Q1	3	4	X
5th – S1	1.9	1.85	X	Q2	1	1	X
				Q3	1	1.50	X
				Q4	1	2	X
				Q5	2	1.5	X
				Q6	2	1.5	X
				Q7	2	1.5	X
				Q8	2	1	X
				Q9	2	3	X
				Q10	3	2	X
Teacher average	1.9	1.85		Grade level average	1.9	1.85	
Parent average			X				X

Note. n=1; q=10.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. One classroom teacher and the SEL teacher completed Survey 2. However, no parents completed Survey 2.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). The classroom teacher and the SEL teacher averages were added together and then divided by 2 (t=2) in order to calculate an overall teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=1) to create the teacher overall average score.

The average teacher score for each question ranged from 1.50 for Question 2 to an average of 4 for Question 10 (see Table 15). The overall average for the student's cumulative score for Survey 2 was 1.85. The grade level baseline average was 1.90. There is a loss of 0.05 in the grade level average from the baseline to Survey 2.

When comparing the average scores for the questions, the baseline score was 1.9, and the teacher question average for Survey 2 was 1.85. The teacher question average for Survey 2 had a 0.05 loss when compared to the baseline established in Survey 1. The baseline and teacher question average (1) were identical for Question 2. There were several questions that either had a loss or gain. Questions 1, 3, 4, 9, and 10 all demonstrate a gain of 0.5 to 1 from the baseline to Survey 2. Questions 5, 6, 7, 8, and 10 demonstrate a loss from the baseline to Survey 2 that ranges from 0.5 to 1 (see Table 15).

Survey 3 Data

Ten of 11 teachers agreed to participate in the survey. The electronic survey link was sent to the classroom teachers, along with the SEL teacher. Six of 11 classroom teachers completed surveys for each of the students in their classroom, and the SEL teacher again completed a survey for each student who participated in the pull-out intervention group. The parents who agreed to participate in the survey were given a paper copy of the survey. These were sent home by the teacher through the student for the parent to complete and return. There were 11 parents who agreed to participate in the survey. Each survey was marked with the student's identifier on the survey in order to assure the responses would be accurate. Four of 11 parents returned the survey for their student.

Table 16 displays the baseline, Survey 2, and Survey 3 scores which include

classroom teacher and parents for the kindergarten class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree.

Table 16

Surveys 1, 2, and 3: Baseline, Teacher and Parent Responses for Kindergarten

ID	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg 3	Q.	Q base-line avg	Q avg 2	Q avg 3	Parent Q avg 2	Parent Q avg 3
K-T1S1	2.3	2.7	2.4	X	X	Q1	3.8	4	3.875	4	4
K-T1S2	2.8	2.9	2.9	X	X	Q2	2.125	1.75	1.75	2.33	3.50
K-T2S1	1.9	2.1	1.9	1.75	X	Q3	1.875	1.75	1.75	2.33	3
K-T2S2	2.8	2.9	2.8	3.3	3.50	Q4	2.125	2.75	2.375	3	3.50
K-T2S3	2.7	2.9	2.8	X	X	Q5	2.65	3	2.75	2.66	3.50
K-T2S4	2.2	2.7	2.4	X	X	Q6	2.375	2.875	2.875	2.66	3
K-T2S5	2.9	2.9	2.9	X	X	Q7	2.5	3	2.75	2.33	3
K-T2S6	2.8	2.9	2.7	3.5	3.5	Q8	1.625	2.75	1.5	2.66	4
						Q9	2.5	2.875	2.875	4	4
						Q10	2.5	3.75	3.50	4	3.50
Tchr Avg	2.55	2.75	2.60			Gr Lvl avg	2.416	2.75	2.60		
Parent avg				2.85	3.50					3	3.50

Note. N=8; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in

the SEL pull-out intervention group. There was no classroom teacher who participated, however, the SEL teacher completed Survey 3. There was one parent who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). The average teacher score for Survey 3 ranged from 1.50 for Question 2 to a 3.875 average for Question 10 (see Table 16). The overall average for the student's cumulative score for Survey 3 was 2.60 which is 0.15 greater than Survey 2 and 0.15 greater than the baseline.

When comparing the average scores for the questions, the baseline score was 2.416, and the average for Survey 3 was 2.60. The total question average for Survey 2 was 0.15 greater than Survey 3 and 0.334 greater than the baseline. There was a 0.184 gain in the scores of Survey 3 when compared to the baseline.

Table 17 displays the baseline, Survey 2, and Survey 3 scores which include classroom teachers and parents for the K-2 multi grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree.

Table 17

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses K-2

ID	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg 3	Q	Q Base-line avg	Q Avg 2	Q Avg 3	Parent Q Avg 2	Parent Q Avg 3
K-2-T1S1	2.7	3	3.20	X	X	Q1	3.5	3.83	3.75	2.5	3.0
K-2-T1S2	2.4	2.8	2.85	X	X	Q2	2	2.5	2.125	3.0	3.0
K-2-T2S1	2.6	2.3	2.80	2.5	2.4	Q3	2	1.33	2.125	2.0	3.0
K-2-T2S2	2.8	2.5	3.00	3.0	3.9	Q4	2	2.16	3.00	2.5	2.50
						Q5	2.5	2.833	3.125	3.0	3.50
						Q6	2.75	2.833	3.125	3.0	3.50
						Q7	3	3.0	3.125	2.5	4.00
						Q8	2	1.833	2.625	3.0	2.50
						Q9	2.75	3.166	3.125	2.0	2.50
						Q10	3.75	3.33	3.428	4.0	4.00
Tchr Avg	2.625	2.683	2.962			Gr Lvl Avg	2.625	2.682	2.955		
Parent Avg				2.75	3.15					2.75	3.15

Note. n=4; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teachers, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There were two classroom teachers who participated, along with the SEL teacher who completed Survey 3. There were two parents who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation.

There were two K-2 parents who completed a survey for their students. To calculate the parent average, the same formula was used as the teachers. The SEL teacher also completed a third survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=4) to create the teacher overall average score.

The average teacher score on Survey 2 for each question ranged from 2.125 for Questions 2 and 3 to a 3.75 average for Question 1 (see Table 17) on Survey 3. The overall average for each student's cumulative score for Survey 3 ranged from 2.8 to 3. The parent average for students ranged from 2.4 to 3.90. Overall, the parent average score was 3.15, and the teacher average was 2.926. There was a 0.187 difference between parent and teacher on Survey 3. The grade level baseline average was 2.625, the grade level average for Survey 2 was 2.683, and the grade level average for Survey 3 was 2.962. There was a 0.058 increase in the grade level average from the baseline to Survey 2, and an increase of 0.279 from Survey 2 to Survey 3.

When comparing the average scores for the questions, the baseline score was 2.625; the teacher question average for Survey 2 was 2.682, and the parent question average was 2.75. The average scores for the questions on Survey 3 were 2.955, and the parent average for the questions on Survey 3 was 3.15. The teacher question average for Survey 3 increased 0.273 from Survey 2 and increased 0.33 over the baseline average. The parent average score for Survey 2 was 2.75, and for Survey 3, it was 3.15, which is an increase of 0.4.

Table 18 displays the baseline, Survey 2, and Survey 3 ratings which include classroom teachers and parents for the first-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 18

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses Firth Grade

ID	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg 3	Q	Q Base-line avg	Q Avg 2	Q Avg 3	Parent Q Avg 2	Parent Q Avg 3
1st-T1S1	2.9	2.9	3	X	X	Q1	3.57	3.6	3.80	X	X
1st-T1S2	2.8	2.9	3.10	X	X	Q2	2.14	1.6	1.90	X	X
1st-T1S3	2.1	2.2	2.70	X	X	Q3	2	1.7	1.70	X	X
1st-T1S4	2.4	2.7	2.70	X	X	Q4	2.14	2.4	2.10	X	X
1st-T2S1	2.3	1.6	2.20	X	X	Q5	2.71	2.7	2.60	X	X
1st-T2S2	2.8	2.7	2.80	X	X	Q6	2.71	2.6	2.70	X	X
1st-T2S3	2.8	3.2	2.35	X	X	Q7	2.71	2.7	2.70	X	X
						Q8	1.85	2	2.20	X	X
						Q9	2.71	3	3	X	X
						Q10	3.57	3.10	3.20	X	X
Tchr avg	2.585	2.54	2.69			Gr lvl avg	2.611	2.54	2.62		
Parent avg				X	X					X	X

Note. N=7; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teachers, SEL

teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. One classroom teacher and the SEL teacher completed Survey 3. However, there were no parents who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. The SEL teacher also completed a third survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=9) to create the teacher overall average score.

The average teacher score for each question ranged from 1.70 for Question 3 to a 3.80 average for Question 1 (see Table 18). The overall average for each student's cumulative score for Survey 2 ranged from 2.35 to 3. The grade level baseline average was 2.585, the grade level average for Survey 2 was 2.54, and the grade level average for Survey 3 was 2.69. There is a loss of 0.045 in the grade level average from the baseline to Survey 2. However, there was a 0.19 increase from Survey 2 to Survey 3, and from the baseline to Survey 3 there was an increase of 0.105.

When comparing the average scores for the questions, the baseline score was 2.611, and the teacher question average for Survey 2 was 2.54. The teacher question average for Survey 2 was 0.071 less than the baseline. However, the teacher question average for Survey 3 was 2.62. This was an increase of 0.08 over Survey 2 and an increase of 0.009 over the baseline to Survey 3. The baseline and teacher question

average for Surveys 2 and 3 responded similarly in that for Question 1, they all agreed or strongly agreed that their student enjoys attending Second Step WIN time. The greatest difference is Question 3. The baseline rated 2, while the teachers rated Question 3 a 1.70 on the second and third survey (see Table 18). There is a 0.3 decrease in Question 3 from the baseline.

Table 19 displays the baseline, Survey 2, and Survey 3 scores which include classroom teachers and parents for the second-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree.

Table 19

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses Second Grade

Id	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg3	Q	Q base-line avg	Q avg 2	Q avg 3	Parent Q avg 2	Parent Q avg 3
2nd-S1	2.5	2.9	3.05	X	X	Q1	2.5	3.75	4	X	X
2nd-S2	1.7	2.2	2.3	X	X	Q2	2.25	2	2.28	X	X
2nd-S3	3	2.9	3	X	X	Q3	2	1.75	2.28	X	X
2nd-S4	3	3	3.25	X	X	Q4	2.25	3	3	X	X
				X	X	Q5	2.75	2.75	3.14	X	X
				X	X	Q6	3	3	3	X	X
				X	X	Q7	3	2.75	3.14	X	X
				X	X	Q8	2	1.75	2.28	X	X
				X	X	Q9	2.75	3	3.14	X	X
				X	X	Q10	3	3.75	3.57	X	X
Tchr avg	2.55	2.75				Gr lvl avg	2.55	2.75	2.98		
Parent avg				X	X					X	X

Note. N=4; q=10; St avg=student average; Q=question; Q avg=question average; Tchr

avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. One classroom teacher and the SEL teacher completed Survey 3. However, there were no parents who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. The SEL teacher also completed a third survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=4) to create the teacher overall average score.

The average teacher score for each question on Survey 3 ranged from 2.28 for Questions 2 and 3, to a 3.57 average for Question 10 (see Table 19). The overall average for each student's cumulative score for Survey 2 ranged from 2.2 to 3, while the average overall student score for Survey 3 ranged from 2.30 to 3.25. The grade level baseline average was 2.55, while the grade level average for Survey 2 was 2.75, and the grade level average for Survey 3 was 2.90. There is a gain of 0.20 in the grade level average from the baseline to Survey 2. There was a 0.15 increase from Survey 2 to Survey 3, and from the baseline to Survey 3, there was an increase of 0.35.

When comparing the average scores for the questions, the baseline score was 2.55; the teacher question average for Survey 2 was 2.75, and the teacher average for

Survey 3 was 2.98. The teacher question average for Survey 2 showed a 0.20 gain from the baseline, while Survey 3 was a 0.23 increase from Survey 2 to Survey 3. When comparing the baseline of 2.55 to Survey 3, there is a 0.35 increase. The baseline and teacher question average (2.75) were identical for Question 5, while for Survey 3, there was a 0.39 increase. Teachers rated Question 5 closer to agree than disagree. The greatest difference is Question 1, where the baseline rate was 2.50, while the teachers rated Question 1 a 3.75 on the second survey and a 4 on Survey 3.

Table 20 displays the baseline, Survey 2, and Survey 3 ratings which include classroom teachers and parents for the third-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 20

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses Third Grade.

Id	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg 3	Q	Q base-line avg	Q avg 2	Q avg 3	Parent Q avg 2	Parent Q avg 3
3rd-T1S1	2.7	3.25	3.05	X	X	Q1	3.75	3.5	3.57	3.33	X
3rd-T1S2	2.7	2.83	3.05	3	X	Q2	2.29	2.28	2	1.33	X
3rd-T1S3	2.2	2.75	2.7	X	X	Q3	1.63	1.92	2	1.33	X
3rd-T2S1	2.8	2.7	2.9	X	X	Q4	2	2.64	2.57	1.66	X
3rd-T2S2	2.4	2.5	2.3	X	X	Q5	2.63	2.75	2.92	3	X
3rd-T2S3	2.5	2.25	2.45	2.70	X	Q6	2.38	2.61	2.92	2.66	X
3rd-T3S1	2	2.55	2.55	1.9	X	Q7	2.38	2.92	2.78	2.33	X
						Q8	1.88	2.14	1.92	2.66	X
						Q9	3	3	3.14	3.33	X
						Q10	2.63	3.07	3.28	3.66	X
Tchr avg	2.47	2.69	2.71			Gr lvl avg	2.457	2.69	2.71		
Parent avg				2.53	X					2.53	X

Note. N=7; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teachers, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. There were three third-grade teachers who completed the survey along with the SEL teacher, but no parents completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). For the students whose classroom teacher completed a survey, the average was created by completing the same calculation. There were three third-grade parents who completed a survey for their students. To calculate the parent average, the same formula was used as the teachers. The SEL teacher also completed a second survey, and the average from the SEL teacher was added to the average of the classroom teacher and then divided by 2 (t=2), creating the student's teacher average. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=7) to create the teacher overall average score.

The average teacher score on Survey 3 for each question ranged from 1.92 for Question 8 to 3.57 for Question 1 (see Table 20). The overall average for each student's cumulative score for Survey 3 ranged from 2.30 to 3.05. The student averages were similar to Survey 2 student averages with a range of 2.25 to 3.25. The grade level baseline average was 2.457, Survey 2 was 2.69, and Survey 3 was 2.71. There is a 0.233 increase in the grade level average from the baseline to Survey 2 and an increase of 0.02 between Surveys 2 and 3.

When comparing the teacher average scores for the questions, the baseline score was 2.457, the teacher question average for Survey 2 was 2.69, and Survey 3 question average was 2.71. The greatest increase was on Question 10 where the baseline was 2.63, and teacher Survey 3 was 3.28 which is an increase of .65. The question that was most consistent when rated was Question 1: The teachers had noticed their students asking for help when they do not understand. The baseline was 3.75, Survey 2 was 3.5, and Survey 3 was 3.57 (see Table 20).

Table 21 displays the baseline, Survey 2, and Survey 3 ratings which include classroom teacher and parents for the fourth-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 21

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses Fourth Grade

Id	St avg base-line	St avg 2	St avg 3	Par avg 2	Par avg 3	Q	Q base-line avg	Q avg 2	Q avg 3	Parent Q avg 2	Parent Q avg 3
4th-S1	2.1	2.9	2.10	X	X	Q1	4	4	3.66	X	X
4th-S2	2.7	2.9	2.40	X	X	Q2	1.3	2	1.33	X	X
4th-S3	2	2.8	2.20	X	X	Q3	1.3	2	1.33	X	X
						Q4	1.67	3	2	X	X
						Q5	2.67	3	3	X	X
						Q6	2	3	2.33	X	X
						Q7	2.33	3	2.33	X	X
						Q8	2	2.33	1	X	X
						Q9	2.33	3	2.33	X	X
						Q10	3	3.33	3	X	X
Tchr avg	2.267	2.86	2.23			Gr lvl avg	2.26	2.86	2.23		
Parent avg				X	X					X	X

Note. N=3; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Par avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. The classroom teacher did not complete a survey; however, the SEL teacher did complete Survey 3. There were no parents who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). The SEL teacher also completed a third survey; however, the classroom teacher did not complete a survey for the students who attend the SEL pull-out intervention class. Once the student average score was calculated, those scores were added together and then divided by the number of students (N=3) to create the teacher overall average score.

The average teacher score for each question on Survey 3 ranged from 1 for Question 8 to an average of 3.66 for Question 1 (see Table 21). The overall average for each student's cumulative score for Survey 2 ranged from 2.10 to 2.40 on Survey 3. However, this was a decrease from Survey 2. The average scores for students on Survey 3 ratings were more compatible with the baseline. The grade level baseline average was 2.267, for Survey 2 it was 2.86, and for Survey 3, it was 2.23. There was a gain of 0.593 in the grade level average from the baseline to Survey 2, while there was a decrease from Survey 2 to Survey 3 of 0.63 and a decrease from the baseline of 0.037.

When comparing the average scores for the questions, the baseline score was 2.26, Survey 2 was 2.86, and Survey 3 was 2.23. The teacher question average for Survey

2 is a gain of 0.6 over the baseline, while there is a decrease from Survey 2 to Survey 3 of 0.63. The baseline and teacher question average (4) were identical for Question 1. The greatest difference in ratings occurs in Questions 2, 3, and 4. The baseline rate for Questions 2 and 3 was 1.30, while the rating of Survey 3 was 1.33. Questions 2 and 3 had a 0.03 increase over the baseline (see Table 21).

Table 22 displays the baseline, Survey 2, and Survey 3 ratings which include classroom teachers and parents for the fifth-grade class. The teachers and parents used the Likert rating scale of 1=strongly disagree, 2= disagree, 3=agree, and 4=strongly agree.

Table 22

Surveys 1, 2, & 3: Baseline, Teacher and Parent Responses Fifth Grade

Id	St avg base-line	St avg 2	St avg 3	Parent avg 2	Parent avg 3	Q	Q base-line avg	Q avg 2	Q avg 3	Parent Q avg 2	Parent Q avg 3
						Q1	3	4	3.50	X	X
5th-S1	1.9	1.85	1.925	X	X	Q2	1	1	1	X	X
						Q3	1	1.50	1	X	X
						Q4	1	2	1.50	X	X
						Q5	2	1.5	2	X	X
						Q6	2	1.5	2	X	X
						Q7	2	1.5	1.50	X	X
						Q8	2	1	1	X	X
						Q9	2	3	3	X	X
						Q10	3	2	2.50	X	X
Tchr avg	1.9	1.85	1.925			Gr lvl acg	1.9	1.85	1.9		
Parent avg				X	X					X	X

Note. N=1; q=10; St avg=student average; Q=question; Q avg=question average; Tchr avg=teacher average; Gr lvl avg=grade level average; Parent avg=parent average.

The numerical ratings are based on a 4-point scale. The classroom teacher, SEL

teacher, and parents completed one survey for each of the students who participated in the SEL pull-out intervention group. One classroom teacher and the SEL teacher completed Survey 3. However, there were no parents who completed Survey 3.

To calculate the average for each student, the responses from the 10 questions were added together and then divided by 10 (q=10). The classroom teacher and the SEL teacher averages were added together and then divided by 2 (t=2) in order to calculate an overall teacher average. Once the student's average score was calculated, those scores were added together and then divided by the number of students (N=1) to create the teacher overall average score.

The average teacher score for each question on Survey 3 ranged from 1 for Questions 2, 3, and 8 to a 3.50 average for Question 1 (see Table 22). The overall average for the student's cumulative score for Survey 2 was 1.85, while the average student score for Survey 3 was 1.925. This is an increase of 0.075 from Survey 2 to Survey 3 and a 0.025 increase from the baseline to Survey 3.

When comparing the average scores for the questions, the baseline score was 1.9, Survey 2 was 1.85, and Survey 3 was 1.90. The teacher question average for Survey 2 showed a 0.05 loss when compared to the baseline, and Survey 3 showed a 0.05 increase over Survey 2 and was identical to the baseline (see Table 22).

Qualitative Data Analysis

I met one on one with the classroom teachers who agreed to participate. Eight of 11 teachers agreed to be interviewed. The teachers were assigned specific identifiers (see Table 7). The interviews were transcribed using the dictation button in the Word document. This was done in order to capture the interview verbatim. The teacher

participants were each asked the following questions in a one-on-one setting.

1. What is the greatest change that has been observed in students after beginning the SEL intervention?
2. How quickly was a change noticed in the student's behaviors and/or academics after the onset of the SEL intervention?
3. Did it appear as if the students enjoyed the small group instruction of the SEL skills and strategies? Why?
4. How often do the students talk about how the SEL skills and strategies help them throughout the day in the classroom or at home?
5. Can you share how the students have responded to the skills and strategies they are learning?

I analyzed the qualitative data by looking for specific themes using deductive coding. Keeping the interview questions in mind, I coded the responses in order to identify how using the skills and strategies within the Second Step program impacted the student's behaviors in and out of the classroom along with their academic performance. I was also able to distinguish the difference in student behaviors and academic performance across grade levels.

The interview transcripts were reviewed looking for common words or thoughts that answered the interview questions. Through this process, the eight teachers I interviewed used the same or similar words that I was able to use to identify themes that addressed the research questions. The themes that were common among all the interviewees were recognizing feelings, self-control, how quickly behavior changes were noticed with the onset of the SEL interventions, the student's enjoyment of the SEL pull-

out intervention class, and what changes in academics have occurred.

Table 23 displays the themes and codes of the qualitative data that answer the research questions that are driven by behavioral changes in students. Table 23 shows the definition of the codes along with an example from teacher participant interview responses. The research questions that are driven by behavior are, “How does incorporating SEL strategies within the intervention group impact student behaviors in and out of the classroom,” and “What differences exist in behavior between grade levels?”

Table 23

Behavioral Themes and Codes

Research question	Theme	Code	Definition	Example
1. How does incorporating SEL strategies within the intervention group impact student behaviors in and out of the classroom? 3. What differences exist in behavior between grade levels?	Recognition of feelings	Self-control	Control or constraint of one's own actions	**SEL:** the students were able to use calm down steps when they began to feel themselves begin to get over excited or upset 3rd grade: the student was better able to verbalize their feelings and name them
		Self-regulation	Control by oneself	**2nd**: that the ability to regulate emotions has been very noticeable in the students
		Recognizing emotions	To identify personal feelings	**K-2**: my second-grade student definitely shows they are better able to recognize their emotions than a kindergartener in the class
	Self-control	Self-regulation	Control of oneself	**2nd:** he talks out loud saying got to just persevere to himself and another student. Doesn't do it all the time.
		Recall of strategies	To remember what strategies are and what they are used for	**K-2:** if they are prompted to remember then they recall strategies; calmer in competitive situations, less perfection tendencies
		Patience	Slow to act, steady	**SEL:** I have several that I believe try to think before they jumped off the deep end; they are able to bring themselves back
	Timeline of Behavior Change	2-4 weeks A month 3 months 2-3 weeks 9 weeks 18 weeks 29 weeks	The amount of time it takes to notice changes in behavior after beginning SEL intervention group	**SEL**: some of the kindergartners, the change was pretty fast within a couple of weeks. A couple of K's 3-4 weeks.

(continued)

Research question	Theme	Code	Definition	Example
				2nd: it was maybe the third quarter; I mean it took a while. **K-2:** my second grader 9 weeks; my first grader, maybe 29 weeks. They were able to spend more time focusing on the instruction and less time having some of the behaviors
	Excitement	excited	Emotionally enthusiastic, eager	**2nd:** they're ready to go and they like it so much, I mean they come back with whatever activity been done excited.
		Excited to Answer questions	Ready with an answer, confidence	**3rd**: they were excited, and they always came back excited.
		Do activities	Passionate, enthusiastic	**2nd:** the students said they were ready to go, and could she speed up, because they need to get going

Theme 1: Recognition of Feelings

The first theme that was identified was the recognition of feelings, which was a common theme among the teacher interviewees. Every teacher I interviewed talked about the students and their ability to recognize their feelings. The different words or phrases that were used and related to the theme were words such as recognize feelings, self-control, recognizing emotions, and self-regulation. The preceding words were used throughout the interview process as responses, and when put together, they are related to the theme of recognizing feelings. For example, the SEL teacher shared, "The students were able to use calm down steps when they began to feel themselves begin to get over excited or upset." Teacher 3rd-T1 shared, "The student was better able to verbalize their

feelings and name them." Multi-grade teacher K-2-T1 said, "My second-grade student definitely shows they are better able to recognize their emotions better than a kindergartener in the class." Teacher 3rd-T3 shared, "The student used to not share anything at all, like when something was bothering them, they would just sit there and clam up, but now they are able to speak out." All teachers used words such as recognize their feelings, verbalize, and identify as a response, which indicates students are able to recognize their own feelings. Multi-grade teacher K-2-T2 stated,

> I have seen both of those students really be able to use that with kids that are in our classroom but I have seen them both be able to use that with me as well you know especially my first grader there are oftentimes there were often times at the beginning of the year where he had a lot of emotions going on but he could not tell you what those were and I do feel like now he is really able to say I'm feeling angry because or I'm you know I feel like frustrated because and then he can have let me in on what's going on so I would say for both of them the biggest thing for me has just been able you know for them to identify those emotions.

The qualitative data that were gathered support the teacher survey responses. Question 6 of the survey asked the teachers if they noticed their students being able to name their feelings more easily. With the exception of two, teachers either agreed or strongly agreed that they had noticed their students being able to name their feelings (see Tables 16-20). The parents who participated and responded agreed that they had noticed their students being able to name their feelings.

Theme 2: Self-Control

Self-control is a theme I identified while reviewing the interviews with the

classroom teacher participants and the SEL teacher. The interview transcripts showed that six of eight teachers used the words self-control, self-regulation, recall of strategies, and patience. Teacher 2nd-T shared, "their ability to regulate their emotions, for example, the student will say, 'ok, it's ok to make mistakes, I can do this.'" These words were found throughout the interview responses and are related to the theme of self-control. For example, one of the interview questions was, "What is the greatest change that has been observed in students after beginning the SEL intervention?" Teacher K-2-T2 shared, "The greatest change has been self-regulating their feelings, the big emotions. I would say that since they started this, they are able to rein it back in." The SEL teacher responded that "several of the children have been seen using the calm down strategies from the program." Teacher K-2-T1 shared, "I think they have definitely been introduced to some strategies for coping in the classroom. My second-grade student definitely shows that they are able to better to get themselves under control."

The quantitative data that were gathered support the teacher interviewee responses. Question 7 of the survey asked the teachers if they noticed their students being able to calm down when irritated, angry, or upset. All the teachers with the exception of one agreed that they had noticed their students being able to calm down when irritated, angry, or upset (see Tables 16-20). Of the parents who participated, half of the respondents agreed that their student was able to calm down when irritated, angry, or upset.

Theme 3: Timeline of Behavior Changes

The question I asked the teacher participants was how quickly they were able to notice a change in behavior after beginning the SEL intervention class. Teacher K-2-T1

shared, “I would say maybe 2 or 3 weeks.” Teacher 2nd-T shared, “I would say getting used to her routine so maybe the third quarter, I mean it took a while, so I guess a good 18 weeks.” Multi-grade teacher K-2-T1 shared, “for the second grader that I have in here that attends, maybe about 9 weeks, and I think for the first grader that I have that attends, a little bit longer I would say almost maybe 29-week sessions.” Others took up to 4 months to begin to show changes in their behavior. The multi-grade K-2 teacher shared,

> Maybe 2 or 3 weeks. They at first was just kind of oh we get to go here, not really like it was a learning tool, but then I think once they got into their lessons, I think they started realizing you know what they were doing.

The SEL teacher said, “some of the kindergartners, the change was pretty fast within a couple of weeks.” The second-grade teacher shared, “It was maybe the third quarter, I mean it took a while.” Five of the teacher participants used the words *a month, 2 to 3 weeks, within a month,* which supports the theme of timeline of change of behavior. From the interviews, it is clear that the timeline for behavior change varied among the participating students.

Theme 4: Excitement

Being excited was a common theme among all eight of the teacher participants. They used words such as *excited, excited to answer questions,* and *do activities* throughout the interviews. Multi-grade teacher K-2-T2 said, “Absolutely, every day they would come to me, it’s almost time to go or ask if it was time to go yet.” Teacher 3rd-T1 responded, “They were excited, and they always came back excited.” The interview question the teacher participants were asked was, “Did it appear as if the students enjoyed the small group instruction of the SEL skills and strategies? Why?” The SEL teacher

commented, “It seems the boys more so than the girls enjoyed it." When asked why she thought the boys enjoyed class more than the girls, she shared,

> A certain group of third-grade boys wasn’t sure if they were really into the lesson, or if they were willing to do the work just so that they could move on to something else. Sort of like a reward activity for completing the assignment.

Teacher 2nd-T shared, “The students would say that they were ready to go, and ask if I could speed up, because they needed to get going.” She also commented that the students come back with whatever activity they were working on and that they were really excited about it and would try to share.

The quantitative data support the teacher interviewee responses. Question 1 of the survey asked the teachers if their student enjoys attending Second Step WIN time. All the teachers either agreed or strongly agreed that their student enjoys attending Second Step WIN time (see Tables 16-20). The parents who participated and responded all agreed that their student enjoys attending Second Step WIN time.

Table 24 displays the themes and codes of the qualitative data that answer the research questions that are driven by academic changes in students. The table shows the definition of the codes along with an example from teacher participant interview responses. The research questions that are driven by academic performance are, “How does incorporating SEL strategies within the intervention group impact student academic performance,” and “What differences exist in academic performance between grade levels?”

Table 24

Academic Theme and Codes

Research question	Theme	Code	Definition	Example
2. How does incorporating SEL strategies within the intervention group impact student academic performance? 4. What differences exist in academic performance between grade levels?	Academics	Perseverance	To stay steady and not give up	2nd: he talks out loud saying got to just persevere to himself and another student. Doesn't do it all the time.
		Improvement	To increase in understanding	K-2: the students were spending less time having some of their behaviors and so they were able to spend more time focusing on the instruction
		Grit	To stay on task	3rd: more grit and really being able to stick with assignments
		Stick with it	To keep moving forward and not give up	5th: it was pretty quick with the math and science I saw an improvement

Theme 5: Academics

Academics was a theme that was identified during the analysis of the interviews. The survey results showed that three teachers shared that their students' academics were not an issue, and they were performing at or above grade level. However, four of the interviewed teachers did use words such as perseverance, improvement, grit, and stick with it when discussing academic performance. The teachers were asked if since

beginning the SEL intervention there had been any academic changes. Teacher K-2-T2 shared,

> The students were spending less time having some of their behaviors and so they were able to spend more time focusing on the instruction, and so I have definitely seen an increase, especially I would say in reading because that's kind of the one that they struggled with the most.

Teacher 3rd-T3 shared that the student is an intelligent student and has not really noticed a change in academics so there really has not been any change. Teacher 5th-T responded, "It was pretty quick with the math and science, I saw an improvement." Teacher 3rd-T1 said, "more grit and really being able to stick with assignments."

The quantitative data that were gathered support the teacher interviewee responses. Question 9 of the survey asked the teachers if they noticed their students asking for help when they do not understand. According to the quantitative data, five of the teachers either agreed or strongly agreed that they noticed their students asking for help when they do not understand. However, two of the teachers leaned toward disagreeing that students seek help (see Tables 16-20). Of the parents who participated and responded, two of three agreed that they noticed their students asking for help when they do not understand.

Summary

Chapter 4 shared the findings of this mixed methods case study which include quantitative responses from the teachers and parents who chose to participate and qualitative responses from the participating teachers. The quantitative data demonstrate that some of the students were able to make changes in behaviors once they began the

SEL intervention group. The quantitative data demonstrate that the younger students appeared to improve their behavior over the course of the study, while the older students seemed to demonstrate little-to-no improvement in their behaviors or changes in academics. The qualitative responses that were gleaned from interviews support the quantitative data that were gathered from both parents and teachers that indeed the younger students showed a measurable decrease in their behaviors, although there was no evidence for the younger students that there was a change in academic performance. However, when reviewing the data for the older students, both the quantitative and qualitative data show that they demonstrated little to no change in their behaviors or academic performance.

Chapter 5: Discussion

The purpose of this study was to determine the impact of using SEL strategies that provide maximum impact to the brain with the intent to create resilience within students in terms of behavior, engagement, and academic achievement. The intent of this study was to measure the impact of social-emotional strategies on students who have been identified with behavior and/or trauma and how using SEL strategies that provide maximum impact to the brain can create plasticity within the brain. The impact was evaluated through self-awareness, self-management, social awareness, relationship skills, and how SEL strategies and neuroscience may impact behavior, academic performance, and engagement.

This chapter begins with a short review of neuroscience and the program used as the focus of this study. This discussion of study findings is organized by answering the research questions, including a review of how the data answer the questions the study proposed, followed by implications for practice. Also included are areas for future research followed by the study's limitations. This dissertation ends with study conclusions.

Neuroscience and SEL

The theoretical framework of this study is governed by neuroscience/brain-based learning, and SEL. Neuroscience is identified as "a branch (such as neurophysiology) of the life sciences that deals with the anatomy, physiology, biochemistry, or molecular biology of nerves and nervous tissue and especially with their relation to behavior and learning" (Merriam-Webster, n.d.-c). The theory of neuroscience is closely related to brain-based learning. Jensen and McConchie (2020) defined neuroscience as using the

brain's natural design to learn. All learning is the result of physical changes in the brain. Therefore, when students become stressed, anxious, or confused, their brain reacts in a way that can and does cause fight/flight/freeze within the person. This is when students respond by acting out behaviors, fleeing from the situation, or zoning out (Willis & Willis, 2020).

When a student encounters some type of trauma, the brain makes changes to protect itself. When the trauma is repeated or the brain encounters situations that force it to move into survival mode, the brain will permanently restructure itself. When this happens, strategies and/or skills can change the current patterns within the brain so it responds in a different way. The brain will try to predict what is going to happen when in an environment, then it will respond from memory to any or all threats that may be encountered (Willis & Willis, 2020). This is where social-emotional strategies become important. Through the use of the skills and strategies, a brain can be changed internally to react in a different way.

SEL is the process of acquiring the skills to recognize and manage emotions, develop care and concern for others, establish positive relationships, make responsible decisions, and handle challenging situations effectively. SEL provides schools with an evidence-based framework for preventing problems and promoting student well-being and success (CASEL, 2020). Research through CASEL (2020) has shown that SEL programs can increase academic achievement, create healthier relationships, and improve mental health.

The goal of SEL is to prepare students for making long-lasting connections throughout their lives. SEL supports academic achievement, bringing advancements in

practical skills and enriching experiences, as well as supporting fairness, goodwill, and comfort. SEL is the process in which students and adults achieve the insight, skills, and character needed to perceive and understand emotions, along with showing empathy and sympathy for others, being able to develop positive relationships, learning to make good decisions, and having the ability to self-regulate in challenging situations (Carstarphen, 2020).

Context and Setting

This study sought to determine the impact of the Second Step program on student behaviors and academic performance. The Second Step program is, "a holistic approach to building supportive communities for every child through social-emotional learning" (Committee for Children, n.d.-b, Programs, SEL section). Second Step's guiding theoretical basis is founded on cognitive-behavioral theory, which evolved from Bandura's (McLeod, 2016), social learning theory. The curriculum is designed to teach students skills and strategies that can be used across the whole school and at home. Second Step teaches that SEL and cognitive abilities depend on each other. The students learn skills that include classroom and in-home activities such as brain builder games (to increase decision-making), weekly activities based on the week's theme, activities for reinforcement, and home activities that extend the lessons beyond the classroom.

The school uses the Second Step program as a Tier 2 intervention with students who demonstrate a need for behavior intervention. The Second Step Tier 2 intervention group serves 33 students in kindergarten through fifth grades. There were 11 general education classroom teachers asked to participate: two K-2 multi-grade, two kindergarten, two first grade, one second grade, three third grade, one fourth grade, and

one fifth grade. The 11 general education teachers were asked to participate in both the survey that was distributed three times along with a follow-up interview.

The school employs an SEL teacher who works with the students in 40-minute sessions, five times per week. This is a pull-out program where students come to the SEL classroom during intervention time. The teacher uses the Second Step program with the students in their respective grade levels. The SEL teacher was asked to participate in both the survey that was be distributed three times along with a follow-up interview.

The students have been receiving the intervention for half of the school year. Students are added to the SEL intervention classroom by the principal on an individual basis. Parents/caregivers of the 33 students were asked to participate in a survey that was distributed three times.

Discussion of Results Related to Research Questions

This study was framed around the following research questions:

1. How does incorporating SEL strategies within the intervention group impact student behaviors in and out of the classroom?
2. How does incorporating SEL strategies within the intervention group impact student academic performance?
3. What differences exist in behavior between grade levels?
4. What differences exist in academic performance between grade levels?

Impact of SEL Strategies on Behavior

Research Question 1: How Does Incorporating SEL Strategies Within the Intervention Group Impact Student Behaviors in and Out of the Classroom?

The Second Step program provides strategies for students to learn to identify

anger and compassion, understand their feelings, manage frustration, and use deep belly breathing to calm down and manage anger, disappointment, and being "knocked down" by others or tasks that are difficult (Committee for Children, n.d.-b). According to the teacher and parent quantitative responses, it appears the responses suggested the students' overall problematic behaviors decreased. A question that was asked on both the teacher and parent survey was, "I have noticed my student being able to calm down when irritated, angry, or upset?" The teachers of the K-2 students who completed the surveys show that over the course of the study, students were noticed using calm down strategies within the general education classroom (see Table 17). The change in the baseline to the last survey was an increase of 0.125. The second-grade teacher responses showed that the students were noticed using calm down strategies increased by 0.14 from the baseline to the last survey (see Table 19). The kindergarten parent's responses indicated an increase of 0.67 from the first survey to the second and final survey. The multi-grade K-2 parents showed an increase of improved behavior of almost 50% (see Table 16).

The teachers shared through the interviews that they have noticed students using calm down strategies that they have learned in the intervention pull-out group. For example, the SEL teacher shared, "The students were able to use calm down steps when they began to feel themselves begin to get over excited or upset." Teacher 3rd -T1 shared, "The student was better able to verbalize their feelings and name them." Multi-grade Teacher K-2-T1 said, "My second-grade student definitely shows they are better able to recognize their emotions better than a kindergartener in the class."

The survey results are aligned with previous research findings that "school-based curricula or programs that target reducing students' problem behaviors while increasing

students' prosocial behaviors have often been characterized as SEL or character development programs" (Top et al., 2016, p. 25). According to CASEL (2020), one of the core competencies of the framework is self-awareness. Through the SEL intervention pull-out group, students are learning strategies and skills that allow them to recognize their feelings as well as name them. The classroom teachers reported that students in the intervention group demonstrated an increased ability to apply SEL strategies in behavior responses, or in the ability to calm down. When a teacher models and uses strategies to teach students to reduce stress and help them to build positive confident emotions, it is then that the students can build emotional resilience and learn to access their higher-level thinking (Willis & Willis, 2020).

The parents who participated in the study indicated that their students' behaviors decreased after the onset of the pull-out SEL intervention group. A question that was asked on the parent survey was, "I have noticed my student being able to calm down when irritated, angry, or upset?" The parents that responded did indeed answer that their student was able to calm down when irritated. The K-2 parents responses showed a fifty percent increase of improved behavior of their student from the baseline data. Kindergarten parents who participated indicated through the surveys indicated a sixty-seven percent increase in their student's ability to calm down when irritated, angry, or upset from the baseline data (see Table 16). Another question that was asked of the parents was if parents had observed their student using skills or strategies from Second Step at home. The parent participant responses to the survey for their kindergarten student was that they were able to observe their student using skills or strategies, as there was an increase of 0.50 in their rating from the first survey to the second survey. Social

learning theory takes into account how both environmental and cognitive factors connect and help to alter human learning and behavior (McLeod, 2016).

Research Question 3: What Differences Exist in Behavior Between Grade Levels?

The quantitative data reveal that when comparing the baseline average for Questions 5-10 to Survey 3 Questions 5-10 and taking an average rating, the third-grade students had the greatest overall change in behavior, while the fifth-grade students had no change at all. The grades that fell in behind third grade from greatest to least were K-2, second, kindergarten, first-grade, and fourth grade (see Tables 16-22). The interviews, however, suggest that the K-2 teachers saw the greatest change within the classroom. This may be due to the younger students displaying their excitement more easily. Willis and Willis (2020) suggested that K-2 students tend to speak passionately about what they learn. A multi-grade K-2 teacher participant shared, "The greatest change has been self-regulating their feelings, the big emotions. I would say that since they started this, they are able to rein it back in."

The students in the middle of the kindergarten through fifth-grade continuum, the third grade, seemed to demonstrate a greater change based on teacher and parent responses. These students' teachers, when interviewed, did not directly talk about behavior changes. They shared about verbalizing their feelings, such as a third-grade teacher who shared, "The student used to not share anything at all, like when something was bothering them, they would just sit there and clam up, but now they are able to speak out." Another third-grade teacher shared, "The student was better able to verbalize their feelings and name them." This supports three of the five competencies of CASEL (2020), which include self-awareness, self-management, and relationship skills.

The CASEL framework is tied to Bandura's social learning theory. The social learning theory shares that external stimulation, such as practiced strategies for self-awareness, self-management, and relationship skills, can change the behavior of how a person responds to certain situations. This supports the data from this study and shows that when students are given strategies and/or skills, and if they practice them, they are able to increase their self-awareness, self-management, and relationship skills.

Impact of SEL Strategies on Academics

Research Question 2: How Does Incorporating SEL Strategies Within the Intervention Group Impact Student Academic Performance?

In the interview process and through the survey data with the teacher and parent participants, there was little discussion about how the academics of the students had changed. A third-grade teacher shared that her student is already a high-flyer in the class. Therefore, there was no change noticed. According to Carstarphen (2020), as students learn social-emotional skills and strategies, they are then able to focus on their academic tasks as well as learn to navigate all the other noise around them at the same time. A multi-grade K-2 teacher's comment supports this idea: "The students were spending less time having some of their behaviors and so they were able to spend more time focusing on the instruction." Additionally, a third-grade teacher shared that her student showed "more grit and really being able to stick with assignments."

When student stress levels decrease, they can then get their thinking brain and memory online to learn. Through calming the brain, the student has more control over what parts of the environment or sensory data they allow to either influence or not influence them during instructions, practice, or discussion (Willis & Willis, 2020). The

quantitative data demonstrated that five of the teachers either agreed or strongly agreed that they noticed their students asking for help when they did not understand. However, two teachers leaned towards disagreeing that students seek help (see Tables 16-20). Of the parents who participated and responded, two of three agreed that they noticed their students asking for help when they did not understand. A third-grade teacher when interviewed shared, “In the classroom, I have noticed a change in their effort for sure.”

Willis and Willis (2020) shared that it is the new, unusual, or unexpected that will grab a person’s attention first. They further explained that when or if teachers are able to create a positive emotional learning environment, students are able to develop emotional resilience which in turn allows students to learn at a higher level of intelligible thinking. The second-grade teacher shared that a student in the classroom said, “I want to give up on this [class assignment]. I can't do it.” However, a student who attends the SEL intervention group stated that you have to persevere. This is supported by what a third-grade teacher shared about their students. Their reply in the interview when asked about whether there was a change in academics was,

> I have noticed a change in their effort for sure for all three of them. Although some more than others, but all three of them can be kind of prone to, I don't want to say giving up easily, but having trouble with the perseverance of really working through things.

Students who are given the opportunity to participate in SEL programs demonstrated an academic average that was 13 percentile points higher than their peers who were not given the opportunity to participate in an SEL program (Sousa, 2021).

Research Question 4: What Differences Exist in Academic Performance Between

Grade Levels?

Managing our emotions and obtaining skills and strategies refer to how a person uses emotion to reason along with how this information is used to guide decision-making and strategically takes action that can lead to the best result for all those involved (Brackett, 2018). This is true when comparing the data across the grade levels of the students who attended the SEL intervention group. When comparing quantitative data from the surveys of the teacher ratings for academic performance at the higher grades, four grades showed an increase in their academic performance, while two grades showed a decrease in academic performance (see Table 16-22). The average growth from Survey 2 to Survey 3 was almost a full point. However, teacher ratings showed a decrease in the academic progress. The K-2 parents showed a half-point increase on average of their students increasing their academic performance. Although teacher ratings were 0.5 lower, there was still an increase in the academic performance of the students. These were the only grade levels where parents were consistent in their completion of the survey. SEL competencies should be separated from academic rigor and high standards. SEL should be combined with cognitive rigor and blended into a simple format that strives to develop SEL competencies to their full potential while raising academic performance (Sousa, 2021).

The qualitative data were more conclusive for defining if the students did indeed have a change in academic performance. A multi-grade K-2 teacher shared, “I think once they got into their lessons, I think they started realizing what they were doing could change their classroom performance.” A third-grade and multi-grade K-2 teacher responded that one of their students was highly intelligent, so there was not really a

change in the academics. Elias et al. (2003) shared that by teaching young students how to recognize their strengths and weaknesses, they can then become more confident learners. The CASEL (2020) framework supports the responses of the teachers in that self-awareness and responsible decision-making can impact a student's learning. It creates a way for students to use their higher-level thinking skills to make good decisions.

Implications for Practice

The world has recently experienced a global pandemic. Due to this pandemic, a spotlight has been pointed at SEL and weaving this type of curriculum into our schools to help students cope with and adjust to the world as we move past the pandemic and continue life as normal as possible. Based on this study, the combination of neuroscience and SEL is a relatively new field that demonstrates gaps in the literature. However, in this study, I was looking at how using the Second Step program with students who have been identified with trauma and/or behavior challenges impacted student behaviors and academics. In this study, the students received direct instruction in a small group setting with same-age peers for 40 minutes a day for 5 days. The students in the study ranged from kindergarten to fifth grade.

The data from this study suggest that students need to be identified early in their school careers. Willis and Willis (2020) shared that a student's background, experiences, adaptability, level of stress, or experience can affect how their brain responds to the environment around them. The younger students in this study, multi-grade K-2, demonstrated the greatest decrease in problematic behaviors and being able to manage their emotions within the classroom. For the older students, third grade through fifth grade, the overall change was less than their younger peers as evidenced by the

quantitative and qualitative findings. The classroom teachers shared through the interview process that many of the older students typically do not struggle with academics.

This does not mean that students did not improve their academics. Several of the classroom teachers when they were interviewed did share that some of the students were able to complete tasks without giving up and that they were able to use self-talk to encourage themselves. It was also mentioned that the students were able to encourage peers who were demonstrating frustration while trying to complete classroom tasks independently. Students who have the skills and strategies for self-management and self-awareness demonstrated an increased ability to delay their impulses, manage their stress, and stay motivated to continue the task at hand.

A major factor in this study was that the classroom teachers shared that they do see changes in the student's behaviors. The incidence of behaviors has decreased since the students began the intervention pull-out group. The students have shown after participating in the program that they have developed an increased ability to apply skills and strategies they learned in the program. For example, the teachers who participated in the interviews were able to cite incidences of when their student was able to verbalize their emotions, as well as the students were seen using the strategies within the classroom. Parents through the survey they completed also shared that they had seen their students using strategies and skills that they had learned in the intervention pull-out group at home.

So how does the data from this study become relevant for other public school units, schools, and the existing literature? This study serves to provide schools with a

model that can be used and manipulated for their specific student, faculty, and community needs. Although this study was conducted in a rural school district, other schools, including urban and suburban schools that have students with trauma and/or behavioral issues, may find it beneficial to implement the SEL intervention pull-out group within their school. These same schools may also implement a modified version within the whole school so that all students are able to benefit from the SEL program. Research shows that neuro-based studies such as Second Step can have a beneficial impact on brain development, social-emotional development, and overall learning (Holmes, 2019).

Implementing a school-wide program gives the school, as a whole, the potential to create a culture where students learn to be self-aware; learn self-management, social awareness of others around them, and relationship skills with not only their peers but with the adults and others within the community; and finally, learn how to use higher-order thinking for responsible decision-making. However, in order to implement a program, schools/districts would need to invest in and provide professional development for the SEL program that they choose. Through training of the staff, the classroom teachers, administrators, and counselors will be able to recognize when a student is using the strategies they have learned and/or staff will be able to model a strategy for a student in need of assistance.

School/districts also need to consider training on brain-based learning or neuroscience and how it impacts learning. Bronfenbrenner's Ecological Framework for Human Development (see Figure 6) supports the recommendation for professional development for administrators and staff (Rosa &Tudge, 2013). In his framework, he

puts the child in the center of six systemic levels that will shape an individual's development. School, family, and friends are in the first level of the ring of influence. Therefore, providing the adults with the same tools as the students will give them a greater understanding of the students as well as enable adults to be role models.

The Committee for Children shared that SEL interventions are successful in increasing a student's self-control, interpersonal skills, problem-solving, engagement at school, academic achievement, and the quality of their peer and adult relationships (Taylor et al., 2017). Schools/districts could also offer parent workshops so parents can learn along with their students and have a greater understanding of what their students are learning and/or experiencing. This type of training would be beneficial; what they learn and implement at school can be implemented in the home using the same language, skills, and strategies. This would create consistency from school to home. This is a foundational ring in the CASEL (2020) framework. The wheel CASEL presents shows that the family is in the third ring as an influencer of children. This means that family members are role models and have a significant influence on student behaviors and perceptions of themselves.

The students who participated in the intervention group are learning how the skills and strategies they are taught to use can change the way the brain reacts to stress. This type of knowledge empowers students to understand that although they may have used poor decision-making or acted out in an unsafe way, they are in control and can recognize and change their emotions or actions in any situation. The Second Step program gives the students multiple chances to practice the strategies and skills so they are prepared. Through this active practice, the brain can then create stronger networks that are easily

available to help the student recognize their emotion and choose a strategy or skill in response to it.

Finally, learning is an emotional response. The brain is the epicenter for all our emotions, and emotions are essential to many activities that include but are not limited to planning, monitoring, and making personal decisions. Emotions are a part of the learning continuum; therefore, if students are to be able to recognize their emotions, they need to understand what happens in the brain to make them feel these emotions. Therefore, students require skills and strategies to understand and control their emotions, just like they require skills and strategies to understand and complete academic activities in the classroom. One cannot be taught without the other.

Recommendations for Further Research

Based on this study, there is a gap in literature that centers around neuroscience and SEL and how it impacts student behavior and academics. More research into how using a brain-based SEL program can change the reaction of the brain when confronted with a situation that it sees as a threat should be considered. Further study is also needed regarding how brain changes impact a student's academic ability, and how these impacts students in the learning environment. These studies could use the same program, Second Step*,* or other brain-based programs such as MindUp and Mindfulness.

This particular study was a 10-week study; however, by conducting a similar study that spans over a semester, a year, or even multiple years, the researcher could follow a cohort of students who have been receiving neuroscience-based SEL. A study conducted over a longer period of time would yield findings that could potentially have a significant impact on instruction and the literature gap.

It is recommended that a study be conducted that is similar to this study in a different setting, possibly with a different age level and over a longer period of time. It is also recommended that the SEL program can be implemented across a whole school in order to build school culture, peer relationships, faculty relationships, and familial relationships. A future study similar to this one could be conducted in an urban environment, suburban environment, and rural environment to investigate how a neuro-based SEL program impacts the students in those settings.

This study was conducted with elementary-level students; it could be beneficial to complete a similar study in middle school and/or high school and compare the results for the impact on student behaviors and/or academics. There is also an opportunity to study administrator perceptions regarding the use of SEL programs at the various grade spans. Finally, a study regarding teacher and/or administrator perceptions of neuroscience or brain-based SEL can contribute to the existing body of literature.

Limitations of Study

This study was limited to a single school that only included teachers and parents from seven different grade level classrooms in District X, a small rural county, in the western North Carolina region. This study was a 10-week study that took place in the latter part of the school year. There were 11 teachers who were directly involved with the students in the pull-out intervention program; of those 11, eight teachers willingly participated in the study. In total, 33 parents were asked to participate. Of those 33, 11 parents signed the consent to participate. However, of the 11 who chose to participate, there were on average eight parents who participated fully. It is noted that a potential limitation is the lack of responses from the parents whose student is in the SEL

intervention pull-out group, as well as a lack of teachers who did not participate after learning that the parents were not participating. It is also noted that the demographics of the students and the teachers might not be representative of other schools and other school districts across the country. For these reasons, the findings should only be generalized with appropriate caution.

Conclusion

The purpose of this study was to determine the impact of SEL strategies with the intent to create resilience within students in terms of behavior and academic achievement. Data were collected from participating teachers and parents on what changes they have noticed since their students began attending the SEL pull-out intervention program.

I collected quantitative and qualitative data to explore and understand how learning SEL strategies affect student behaviors and academics. The study sought to understand the impact of the Second Step program on student behaviors and academic performance. The teachers and parents through their responses to the surveys and interviews suggested that the students did show a decrease in inappropriate behaviors in the classroom and at home.

The quantitative data demonstrate that students who are identified early are able to learn the strategies and skills that allow them to make changes even before they are able to name their feelings. The younger students had the greatest change in their behaviors. It is noted that the general education classroom teachers were able to share that the students were able to focus longer on classroom assignments. In addition, even when they were frustrated, they were able to pause, use a learned skill, and continue through the work until they were finished.

The qualitative data were collected following the final survey collection using open-ended interview questions of teacher participants. There were five interview questions the teacher participants were asked. The interview questions were used to explore what changes the teachers were able to observe in their students during and after participation in the SEL intervention pull-out group. The qualitative responses that were gleaned from interviews support the quantitative data gathered from both parents and teachers; that indeed the younger students showed a decrease in inappropriate behaviors. Through the process of analysis of the qualitative data, the eight teachers I interviewed used the same or similar words that addressed the research questions. Common themes among all the interviewees included recognizing feelings, self-control, being able to verbalize their feelings, and using learned strategies for behavior changes. The classroom teachers also noticed that with the onset of the SEL interventions, the student's enjoyment of the SEL pull-out intervention class and changes in classroom academics were also noticed.

Responses from the interviewees support the five core competencies of CASEL (2020). The core competencies are self-awareness, self-management, relationship skills, social awareness, and responsible decision-making. According to CASEL, relationship skills are our ability to engage and connect with others. This is achieved through our ability to communicate with others effectively, to problem solve collectively, manage conflict and disagreements, and have the forethought to stand up for others' rights (CASEL, 2020). Applying SEL in practice may improve the student's competencies. This requires educators and parents to intentionally incorporate it with the student's age and developmental expectations in mind.

Survey and interview data suggested that students overall were able to change their behaviors using the Second Step program skills and strategies within the classroom and at home. Most of the students were excited to attend the class and learn in a collaborative environment. The students were able to build self-awareness by being able to understand their emotions and how they influence their behavior in and out of the classroom. They were able to develop self-management of their emotions and behaviors by applying the skills and strategies they learned in the intervention pull-out group. The students were able to develop social awareness in that they learned how to understand the feelings of other people and were able to demonstrate empathy as well as compassion for their peers within the intervention group and in their classrooms. The students learned relationship skills in that they were able to communicate effectively with others and listen actively to what other students and teachers were sharing. They learned to work collaboratively with other students to problem solve and learned how to offer help when their peers needed it. Finally, based on survey and interview data from teachers, the students demonstrated responsible decision-making in the classroom by being able to change their disruptive behaviors and work through their frustration. They were able to identify solutions to personal, social, and academic problems.

This study suggests that when students are given SEL tools and are able to practice them, they learn to make better decisions that range from personal to collaborative situations. Students with these skills are able to attend to instruction, which in turn could allow them to increase their academic performance. The intentional instruction of SEL skills and strategies can help students better understand their emotions and use the skills and strategies to make changes in how they react. SEL instruction may

help students learn to use higher-order thinking higher-order thinking skills necessary to move successfully through the fight/flight/freeze that comes from trauma or stress. Looking long term, students who develop these skills and strategies may have the opportunity to be more successful in any and all endeavors they tackle.

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A

Teacher Survey of Program Effectiveness

Directions: Circle the number that matches how you feel about each statement. 1 is Strongly Disagree and 4 is Strongly Agree

Strongly Disagree Strongly Agree

1	My student enjoys attending Second Step WIN time.	1	2	3	4
2	My student talks about the skills and strategies that are taught in Second Step?	1	2	3	4
3	My student talks to others about Second Step skills they are learning.	1	2	3	4
4	I have observed my student using skill or strategies from Second Step in the classroom or home?	1	2	3	4
5	I have noticed my student being a better listener and following directions?	1	2	3	4
6	I have noticed my student being able to name their feelings more easily.	1	2	3	4
7	I have noticed my student being able to calm down when irritated, angry or upset?	1	2	3	4
8	I have heard my student using positive self-talk to be patient and wait?	1	2	3	4
9	I have noticed my students asking for help when they do not understand.	1	2	3	4
10	My students show empathy for their fellow students and teachers.	1	2	3	4

Appendix B

Parent Survey of Program Effectiveness

Directions: Circle the number that matches how you feel about each statement. 1 is Strongly Disagree and 4 is Strongly Agree

		Strongly Disagree			**Strongly Agree**
1	My student enjoys attending Second Step WIN time.	1	2	3	4
2	My student talks about the skills and strategies that are taught in Second Step?	1	2	3	4
3	My student talks to others about Second Step skills they are learning.	1	2	3	4
4	I have observed my student using skill or strategies from Second Step in the classroom or home?	1	2	3	4
5	I have noticed my student being a better listener and following directions?	1	2	3	4
6	I have noticed my student being able to name their feelings more easily.	1	2	3	4
7	I have noticed my student being able to calm down when irritated, angry or upset?	1	2	3	4
8	I have heard my student using positive self-talk to be patient and wait?	1	2	3	4
9	I have noticed my students asking for help when they do not understand.	1	2	3	4
10	My students show empathy for their fellow students and teachers.	1	2	3	4

Appendix C

Spanish Version of Parent Survey of Program Effectiveness

Encuesta de maestros/padres sobre la eficacia del programa

Instrucciones: Encierra en un círculo el número que coincida con lo que sientes acerca de cada declaración. 1 es Totalmente en Desacuerdo y 4 es Totalmente de Acuerdo

Muy en desacuerdo Totalmente de acuerdo

1	Mi estudiante disfruta asistir a la hora WIN de Second Step.	1	2	3	4
2	¿Mi estudiante habla sobre las habilidades y estrategias que se enseñan en Second Step?	1	2	3	4
3	Mi estudiante habla con otros sobre las habilidades de Second Step que está aprendiendo.	1	2	3	4
4	¿He observado a mi estudiante usando habilidades o estrategias de Second Step en el salón de clases o en casa?	1	2	3	4
5	He notado que mi estudiante escucha mejor y sigue las instrucciones.	1	2	3	4
6	He notado que mi estudiante puede nombrar sus sentimientos más fácilmente.	1	2	3	4
7	¿He notado que mi estudiante puede calmarse cuando está irritado, enojado o molesto?	1	2	3	4
8	¿He escuchado a mi estudiante usar un diálogo interno positivo para ser paciente y esperar?	1	2	3	4
9	He notado que mis alumnos piden ayuda cuando no entienden.	1	2	3	4
10	Mis alumnos muestran empatía por sus compañeros y profesores.	1	2	3	4

Appendix D

Post-Intervention Teacher Interview Questionnaire

Teachers will be reminded at the onset of the interview to not use student names or any identifiable attributes

6. What is the greatest change that has been observed in students after beginning the SEL intervention?

7. How quickly was a change noticed in the student's behaviors and/or academics after the onset of the SEL intervention?

8. Did it appear as if the students enjoyed the small group instruction of the SEL skills and strategies? Why?

9. Do the students talk about how the SEL skills and strategies help them throughout the day in the classroom or at home?

10. Can you share how the students have responded to the skills and strategies they are learning?

Appendix E

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Appendix F

Second Step Approval to Complete Study

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cc: Mary Brodd, General Counsel

On the unceded traditional lands of the Duwamish and Coast Salish peoples.