



RIPPLE:

Reducing disparities and Implementing strategies to Promote Proactive Learning Environments Impact Evaluation Report

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RIPPLE

Impact Evaluation Report

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ABSTRACT

Iredell-Statesville Schools was awarded an early-phase Education Innovation Research grant. **RIPPLE: Reducing disparities and Implementing strategies to Promote Proactive Learning Environments** was an innovative approach to improving behavioral outcomes for the district's highest risk students by reshaping the schools' culture, staff, and systems through implementation of a trauma-informed systems approach paired with a trauma-specific treatment approach using an existing multi-tiered system of supports (MTSS) framework. RIPPLE targeted 21 high-need schools from the 36 schools in the district that were located across rural, suburban, and city settings.

The impact studies used a comparative short-interrupted time series (CSITS) to measure the impact of three years of intervention on treatment schools compared to comparison schools from across the state that did not receive the intervention. Schools were matched at baseline on each of the three outcomes with separate analytic samples for proficiency in ELA and math and short-term suspensions. A quasi-experimental design (QED) was used for analyzing the North Carolina Teacher Working Condition Survey that comprised two pre-treatment survey years and two outcome surveys. A separate within-district analysis was conducted using a student social-emotional learning survey for treatment and comparison schools following one grade per grade level for three years.

Results of the CSITS analyses found statistically significant differences for English Language Arts in middle school (negatively impacted scores) and in high school English with a small positive effect. The math analysis also found a negative impact for middle school treatment students. No differences were found in either subject for elementary students. The suspension data found no statistical difference between treatment and comparison schools. Results of the quasi-experimental design for the North Carolina Teacher Working Conditions Survey found no statistical difference between teachers in treatment and comparison schools in the percentage of agreement with the survey items across the four measurements. Similarly, there were no significant findings for the district treatment schools in the analysis for the student social-emotional learning survey.

The implementation analysis found that the project was implemented at a high level of fidelity in all three years. There were several strengths in the project pertaining to relationships and data collection. Delays to professional development and the need for final baseline data from spring 2021 limited our implementation study to three years rather than the four years planned.

Overall, the program successfully implemented curricula, developed supportive relationships, and provided mental health specialists to work with Tier 2 and 3 students. The district sustained many of these programs through local funds and continued implementation.

1. BACKGROUND

1.1 The RIPPLE Grant

Iredell-Statesville Schools (I-SS) was awarded an early-phase Education Innovation Research grant. **RIPPLE: Reducing disparities and Implementing strategies to Promote Proactive Learning Environments** was an innovative approach to improving behavioral outcomes for the district's highest risk students by reshaping the schools' culture, staff, and systems through implementation of a trauma-informed systems approach paired with a trauma-specific treatment approach using an existing multi-tiered system of supports (MTSS) framework. RIPPLE was developed using recommendations by the National Child Traumatic Stress Network which identified seven elements for trauma-informed systems: 1) Routine screening for trauma exposure; 2) Culturally appropriate, evidence-based assessments and treatments; 3) Resources for students, families, and staff on trauma, its impact, and treatment; 4) Use of a strengths-based approach for students impacted by trauma; 5) Addressing parent trauma; 6) Collaboration across child-serving systems; and 7) Supporting staff by minimizing secondary traumatic stress, which can lead to burnout. RIPPLE targeted 21 high-need schools from the 36 schools in the district. This included twelve elementary, five middle, and three high schools. These schools were located across rural, suburban, and city settings.

1.2 National Significance

Students with unresolved trauma are negatively impacted, and they continue to suffer as academic achievement declines and even worse, students turn to self-harm when they can no longer cope. As young lives hang in the balance, it is imperative that we develop an evidence-based approach to identifying these students early and providing services to meet their needs. Traumatic events, or adverse childhood experiences (ACEs), can happen to children from all races, ages, and socioeconomic levels and include exposure to physical, psychological, or sexual abuse; physical or emotional neglect; parental separation or divorce; natural disasters; victimization; violence; living with family members who are mentally ill, suicidal, or substance abusers; or a family history of poverty or incarceration (McLaughlin, 2017).

In response to a traumatic event, a child may feel intense fear, horror, isolation, or helplessness (McLaughlin, 2017). Cognitive impacts can be significant, hindering academic success, and carrying the potential for long-term mental and physical health issues (Leenarts, Diehle, Doreleijers, Jansma, & Lindauer, 2013). Repeated exposure overwhelms and alters brain development and functioning and impacts the body's stress-related physiological systems, compromising the stress-response systems (neuroimmune, neuroendocrine, autonomic, and central nervous system networks) and keeping them in a constant state of "high alert" which, long-term, damages mental, physical, social, and emotional well-being (American Institutes of Research, 2015).

Unfortunately, children in the U.S. live in incredibly stressful circumstances where half to two-thirds will experience at least one traumatic event before age 18 (McInerney & McKlindon, 2014). Students currently in grades K-12 cannot recall a time when terrorism, school shootings, economic and national insecurity were not the norm (Schrobsdorff, 2016). A recent study found 70% of teens reported anxiety and depression as the leading problems among their peers (Horowitz & Graff, 2019).

In the hyper-connected 21st Century, it is virtually impossible for students to turn off their connection to social media and give their still-developing brains downtime (Schrobsdorff, 2016). Worse still, social media outlets are often used by fellow students to harass, threaten, or ridicule others (American Psychological Association, 2017). It is not surprising that recent studies have found dramatic increases in stress, depression, sadness, alienation, and anxiety in children (American Psychological Association, 2017). These students often develop chronic coping strategies which manifest as behaviors ranging from hypervigilance, distrust, indifference, eating disorders, self-harm, substance abuse, or violent acts (Blitz & Lee, 2015).

Nationally, the rate of mental illness continues to rise—49.5% of youth will have a diagnosable mental illness before age 18 with 22% suffering from serious mental impairment (Child Mind Institute, 2015). The most common psychiatric disorders ages 18 and under are anxiety (32%), attention-deficit hyperactivity (20%), depression and bipolar (14%) and eating disorders (3%), yet just 7% will receive treatment for their illnesses. The prevalence of major depressive episodes in youth has increased nationally from 8.7% in 2005 to 16.39% in 2023 while suicidal ideation rates (made a plan in the last twelve months) have increased for females to 30% in 2021 compared to 24.1% in 2019 while male rates remained stable at 11.6% compared to 11.3% in 2019 according to the Centers for Disease Control (CDC) and the Youth Risk Behavior Survey (Gaylor, Krause, Welder, et al., 2023; Merikangas, et al., 2010). This sharp rise is greatest in 9th and 10th grade girls. Likewise, in 2021, suicide attempts doubled (13.3%) for females compared to males (6.6%).

According to a recent report, witnessing or experiencing racism, discrimination, or prejudice can be traumatizing, resulting in behaviors such as increased suspicion, sensitivity to threat, and maladaptive responses such as increased aggression or substance-abuse and is especially acute for low-income youth living in urban areas where they are more likely to experience or witness violence (Comas-Diaz, 2016). While school is often a refuge for students from the stresses of their home environment, students who have been exposed to trauma or who suffer with mental illnesses may feel anger, distrust, or fear towards authority figures (McInerney & McKlindon, 2014). For students who are from racial minorities, identifying with their teachers can be problematic as 82% of K-12 teachers are Caucasian (US Department of Education, 2016). When trauma causes emotional or psychological damage to a student, they adopt a set of behaviors or thinking patterns that can lead to re-traumatization in school settings where they act out in ways which violate school rules. In turn, they may receive punitive measures increasing the likelihood the student will suffer re-traumatization (McInerney & McKlindon, 2014).

Trauma-impacted students are more likely to perform below grade level, have lower GPAs, higher rates of discipline, and a greater risk of special education referrals (Blitz & Lee, 2015). As one researcher noted, while not every student in a classroom has a significant trauma history, the needs of those who do can define and limit the academic success of all (McInerney & McKlindon, 2014).

1.3 North Carolina Significance

Suicide is the 4th leading cause of death in NC ages 15-17 and the 3rd leading cause of death among ages 10-14 (NCDPH, 2022). In 2020, 67 NC children died from suicide, and data from 2022 recorded 48 child deaths from suicide. From 2018-2022, 11 children (ages 10-17) in Iredell County died from suicide accounting for 4% of the entire suicide deaths for the state. According to a recent NC Child report, more than 10% of high school students in NC attempted suicide in 2021 and about 20% seriously considered attempting suicide; depression rose 49% from 2016 in children ages 3-17 with 10% having a diagnosis of depression or anxiety (NC Child, 2025). In response to these alarming statistics, I-SS submitted a proposal to address trauma and social-emotional disparities in the highest need schools.

I-SS is among the 20 largest districts in North Carolina serving over 20,872 students in 36 schools in urban, suburban, and rural settings. Student demographics include 66% Caucasian, 14% African American, 13% Hispanic, 4% two or more races, and 3% Asian; 41% eligible for free or reduced lunch; and 11% with disabilities (Iredell-Statesville Schools, 2019). In recent years, the district has seen dramatic increases in serious mental health issues including suicidal ideation, aggressive student behaviors including increases in gang-related school violence, weapons including guns and knives brought to school, and assaults on students and school personnel (Iredell-Statesville Schools, 2019). This has resulted in disruptive school environments leading to a decreased sense of student and teacher safety and declines in student academic achievement (Iredell-Statesville Schools, 2018). Alarmed by these incidents, the district convened a task force to determine the highest need schools and develop a strategy for serving the most at-risk students. The district identified 21 target schools (12 elementary, 5 middle, 3 high, and 1 alternative) from the three highest need feeder patterns, which serve a more diverse student body and experience a higher level of economic disadvantage than the rest of the district.

I-SS integrated a continuum of system-wide resources, strategies, structures, and practices, providing a comprehensive and responsive framework to systematically address the negative impacts and barriers that trauma and toxic stress present to student academic achievement (Averill & Rinaldi, 2017). Layering trauma-informed approaches within the existing MTSS framework allowed school staff to better understand the range of behavioral and academic warning signs that students exposed to trauma may display (Anderson, Blitz, & Saastamoinen, 2015). The district believed that layering socio-emotional and academic support in combination with trauma-informed interventions would produce a greater impact in producing positive academic and behavioral impacts

than either a Trauma-Informed Care or MTSS framework would have individually. RIPPLE was designed to build protective factors in students' lives which have been shown to reduce the impact of prior or continuing trauma (Horner, Sugai, & Lewis, 2015), (Anderson, Blitz, & Saastamoinen, 2015). Prior research shows a reduction of trauma and its impact should lead to positive behaviors and improvements in academic achievement at the individual, classroom, and school levels (Horner, Sugai, & Lewis, 2015).

2. STUDY DESIGN

2.1 Impact Study

Independence of the Impact Evaluation. The Evaluation Group (TEG) conducted the evaluation of RIPPLE in accordance with the guidelines set forth by the U.S. Department of Education. TEG collected teacher and student survey data biannually in Year 3 and annually in Years 4 and 5 through an online survey system. TEG downloaded the data directly from the site. TEG collected all school level data (office discipline referrals, school climate survey) and student growth measures (end-of-grade and end-of-course assessments) achievement data directly from Iredell-Statesville Schools. Additional comparison school data was downloaded from the North Carolina Department of Public Instruction website. TEG independently conducted all analyses, and all findings are reported by TEG without being subject to the approval of the RIPPLE project director or staff who were involved in conceptualizing and implementing the program. TEG evaluations adhere to the Program Evaluation Standards of the Joint Committee on Standards for Educational Evaluation and to American Evaluation Association's Guiding Principles.

Pre-registration of the Study Design. The design was registered with the Registry of Efficacy and Effectiveness Studies on 5/13/20 #6060 V1.1 and #6200 V1.1. Both studies were updated on 9/6/23 to version #6060 V1.3 and 6200 V1.2.

Research Questions. The **impact study** included five studies submitted to the Registry of Efficacy and Effectiveness Studies (REES) in 2021 and updated in 2023. The first three studies utilized a comparative short- interrupted time series (CSITS) using five years of pre-implementation data (2016-2021; no data for 2020) and using the 2021 data to establish baseline equivalence. Studies #1 and #2 assessed the impact of RIPPLE on the percentage of students proficient in ELA and math (grades 3-8 and grade 11). Study #3 assessed the impact of RIPPLE on the rate of suspensions per 1,000 students. Study #4 used a quasi-experimental (QED) design to analyze the percentage of satisfactory ratings on the NC Teacher Working Conditions (TWC) survey. The TWC is used to measure school climate and teacher beliefs about school safety, facilities, school leadership, and equity. Changes in ratings from target schools were compared to changes in ratings from a matched set of comparison schools. The data for the confirmatory analyses included ratings from 2018, 2020, 2022, and 2024 (the TWC survey is only given every other year). The four research questions were:

1. What is the impact of RIPPLE on the school-level percent proficient in ELA academic achievement (i.e., ELA end-of-grade and ACT English and reading subscales) of 3rd-8th grade and 11th grade students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of I-SS?
2. What is the impact of RIPPLE on the school-level percent proficient math academic achievement (i.e., math end-of-grade and ACT math subscale) of 3rd-8th grade and 11th grade students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of I-SS?
3. What is the impact of RIPPLE on the count of school-level suspension rates per 1,000 students (i.e., overall school total and total referrals for minority subpopulations) of K-12 students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of I-SS?
4. What is the impact of RIPPLE on school climate using the North Carolina Teacher Working Conditions (TWC) survey after three years of programming compared to “business-as-usual” non-treatment district schools and other NC schools outside of I-SS?

Study #5 was a within-district quasi-experimental design that addressed the improvement of students’ social-emotional well-being using an average score from four scales (emotion regulation, social awareness, teacher relationships, and sense of belonging). Scales were scored on a 4-point Likert from 4 = almost always to 1 = almost never. The research question was: What is the impact of RIPPLE on the student-level composite measure of social-emotional development of 5th, 8th, 11th grade students after three years of programming compared to students at “business-as-usual”, non-treatment district schools?

Intervention Condition. I-SS identified the following barriers to care: 1) extended wait time for mental health counseling; 2) lack of socio-emotional support to meet students’ needs; 3) increased use of alcohol and drugs; and 4) infrastructure gaps that included a) increased aggressive behaviors and criminal incidents; b) increased mental health concerns; and c) decreased scores in school climate. RIPPLE focused on: 1) using the MTSS structure to implement a trauma-informed intervention approach to improve educational outcomes for high-need K-12 students, and 2) providing professional learning for educators to develop an awareness and understanding of the impact trauma has on student achievement and behaviors by building the educators’ capacity to recognize and implement a trauma-informed intervention approach for high-need students. Key RIPPLE activities that were new or expanded are listed in Table 1.

Table 1. New and Expanded Tiered Activities to Build Capacity

Tier	Activities
Tier 1	<p>New Activities</p> <ul style="list-style-type: none"> ▪ Evidence-based Too Good for Drugs and Violence curriculum (secondary students) ▪ Evidence-based Restorative Justice practices (all students) ▪ Morning Meetings across all schools (all students) ▪ Hire three social workers (all identified students) ▪ Train staff in Youth Mental Health First Aid (all secondary students) <p>Expanded Activities</p> <ul style="list-style-type: none"> ▪ Evidence-based Second Step (elementary students) ▪ Safe Schools Ambassadors (secondary students) ▪ Drug prevention presentations by the Iredell Drug-Alcohol Coalition ▪ Expanded contract with Children’s Hope Alliance for crisis response from three therapists, to reduce response time, provide student monitoring, and conduct substance abuse assessments
Tier 2	<p>New Activities</p> <ul style="list-style-type: none"> ▪ Evidence-based Strengthening Families Program (all at-risk students) ▪ Hire three behavioral technicians (all at-risk students) <p>Expanded Activities</p> <ul style="list-style-type: none"> ▪ Enhanced Teen Court and Mediation (all at-risk students) ▪ Crosby Scholars Mentoring (secondary students) ▪ Evidence-based Second Step group sessions (elementary) ▪ Evidence-based Check and Connect (secondary) ▪ Check-in/Check-out (elementary)
Tier 3	<p>Expanded Activities</p> <ul style="list-style-type: none"> ▪ Evidence-based Trauma-Focused CBT (all identified students) ▪ Behavior Intervention Plans (all identified students) ▪ Expanded contract for three dedicated CHA therapists (all identified students)

Intervention services were delivered across MTSS Tiers 1-3 for three academic school years in all grades. Teachers received professional development in Trauma-Informed Care, Restorative Justice, and other relevant training per grade band (elementary or secondary). Tier 2 services were delivered by counselors and Student Assistance Program Coordinators while services at Tier 3 were delivered by behavioral specialists and clinicians. Treatment interventions differed in duration based on student need and parent permission.

For Tier 1, RIPPLE refined and expanded the current Behavior Education Program to add a full-time behavioral specialist to work with social workers, counselors, and teachers in each school to assess student behavior, develop or identify existing functional behavior assessments, and create Behavior Intervention Plans for identified at-risk students.

RIPPLE expanded students’ access to licensed, clinical social workers. The addition of two full-time positions provided students with wraparound coordination that targeted the

students' out-of-school needs. School social work services should be provided at a ratio of 1:250 students while the district ratio was 1:6,755. When a school social worker provides services to students with intensive needs, a lower ratio, such as 1:50, is suggested (National Association of Social Workers, 2012).

In coordination with local law enforcement and the school resource officers, schools implemented the evidence-based G.R.E.A.T. program (Office of Justice Programs, 2012) and the evidence-based Too Good for Drugs and Violence (TGFD&V) program (Office of Juvenile Justice and Delinquency Prevention, 2019), (U.S. Department of Education, 2006). G.R.E.A.T. aims to prevent violence, teach students how to avoid joining a gang, and develop better relationships with law enforcement officers (Office of Justice Programs, 2012). The TGFD&V program is a school-based substance abuse and violence prevention program that includes a character education component (U.S. Department of Education, 2006).

Morning Meetings: Recent focus groups on the topic of suicide with elementary, middle, and high school students across the district found an overwhelming interest and need to talk in small groups about how they feel and what they see. Through RIPPLE, students participated in Morning Meetings where they received SEL group support in their homeroom for approximately 15 minutes prior to starting class at least weekly.

Second Step is a universal, classroom-based program for K-5 students designed to increase school success and decrease problem behaviors by promoting social-emotional competence and self-regulation. The Second Step social-emotional learning curriculum emphasized skills to strengthen students' ability to learn, manage emotions, develop empathy and caring, and problem-solve (Rosen, Glennie, Dalton, Lennon, & Bozick, 2010). There were separate curricula for each grade so that instruction was developmentally appropriate and relevant for K-5 students with lessons across four units: 1) skills for learning, 2) empathy, 3) emotion management, and 4) problem solving. Second Step has been identified as an effective, evidenced based program by SAMHSA with promising results in reducing disruptive behavior, internalizing problems, and attention disorders, and increasing self-regulation, social connectedness, and competence (SAMHSA, 2016).

Safe School Ambassadors is a field-tested, evidence-based program that engages bystander students to prevent and stop bullying. Staff and student surveys are used to identify student leaders who have a history of standing up for other students (SSA, 2019). An evaluation of SSA found: 1) an increase in male ambassador bystanders' intervention in school bullying, 2) improved school climate, and 3) a 33% decrease in schools pre-SSA suspension rates, while comparison schools saw a 10% increase (White, Raczynski, Pack, & Wang, 2011).

Group Noticing Routines (GNR) is a process by which student teams are formed, students exchange contact information and are then responsible for contacting absent students to relay important information and encourage attendance (Pathways, 2018). GNRs were

used in grades 7-12 to promote supportive, emotionally positive classrooms to reduce displays of problem behaviors. A positive classroom environment creates a safe space for students, creating more high-quality teacher–student and student–student interactions and provides a scaffolding for higher-intensity SEL and trauma-informed interventions (O’Conner, et al., 2017). Clear expectations and predictable routines support self-regulation and encouraged students to exhibit self-control (O’Conner, et al., 2017). GNRs drew on research showing the importance of developing social ties, and that early engagement with informal student networks is highly predictive of student learning (Lachman & Morrison, 2016).

Capturing Kids Hearts (CKH) is a National Registry of Evidence-based Programs and Practices recognized program that trains educators to create high-achieving centers of learning by strengthening students’ connectedness to others by enhancing bonds with their teachers and establishing collaborative agreements of acceptable behavior (Flippen Group, 2017). Through RIPPLE, we scaled to six secondary schools. A recent study found that CKH produced a 41% increase in students’ acquisition of pro-social skills and a 33% decrease in discipline referrals than control schools (Holtzapple, et al., 2016). CKH provided teachers with professional learning (PL) on teaching relational and problem-solving skills, promoting engagement, and setting expectations (Flippen Group, 2017).

Middle and high schools participated in a restorative justice (RJ) school climate change process that refocused disciplinary measures away from a punitive approach and towards prevention of misbehavior (Garcia, 2014). Designed to transform school environments through peer mediation, group responsibility, and counseling, RJ used a school-wide assessment and PL for faculty on restorative practices to build a community of trust (Watchel, 2015). This process supported elements such as increasing interactions with students, using affective statements or expressions of feeling in response to behaviors, and implementing fair processes (Garcia, 2014). Findings from high-poverty, high-minority secondary schools applying RJ showed significant declines in violent acts, referrals, and suspensions, with improvements in school climate (Gregory, Clawson, Davis, & Gerewitz, 2016).

For Tier 2 students, student assistance program coordinators (SAPs) facilitated small group sessions for students exhibiting difficulties in conjunction with mental health specialists from the partner, Children’s Hope Alliance, a non-profit that provides outpatient therapeutic services including evaluations, individual, group, and family therapy, and trauma-focused cognitive behavioral therapy. At the elementary level this includes use of Second Step small-group sessions, and at the middle and high schools, SSET-Trauma approaches. The behavioral specialists supported implementation by coaching, modeling, training, and conducting fidelity checks. At the secondary level, RIPPLE expanded the SAP to provide quality services to enhance students’ social, emotional, and physical well-being. SAP coordinators in each school trained staff to recognize problems, plan interventions, and work with providers to coordinate services.

At the secondary level, RIPPLE implemented Support for Students Exposed to Trauma Cognitive Behavioral Therapy (SSET) small-group sessions for trauma-impacted students suffering from symptoms of post-traumatic stress disorder. SSET was designed for use by teachers and counselors and is a non-clinical adaptation of the Cognitive Behavioral Intervention for Trauma in Schools (CBITS) Program and uses many of the same cognitive and behavioral skills as CBITS, such as problem solving, psychoeducation, and relaxation (Jaycox, et al., 2009). SSET consisted of 10 lessons designed to reduce post-traumatic and depressive symptoms and improve functioning in trauma-exposed secondary school students (Jaycox, et al., 2009). One study found reductions in trauma symptoms, with those having a high level of symptoms before taking SSET benefiting the most (Jaycox, et al., 2009).

The Crosby Scholars mentoring and college access program, which focuses on preparing students academically, financially, and personally for college enrollment and post-secondary employment, was provided to the target middle and high school students. Crosby Scholars advisors met with students and provided strategies on life skills and behavioral expectations to help students achieve their post-secondary goals. A study of a similar model, implementing college access and readiness workshops coupled with individualized support of an adult advocate, found a 20-percentage point difference in college enrollment immediately after graduation than non-intervention students (The Evaluation Group, 2014).

Finally, Check and Connect meets What Works Clearinghouse (WWC) standards without reservations, having been found to have a statistically significant positive effect on students remaining in school and potentially positive effects on student progression (U.S. Department of Education, IES, WWC, 2015). Check-in and Check-out is an elementary based program like Check and Connect that paired a student with an adult mentor for a visit morning and afternoon.

Tier 3 services provided Trauma-Focused Cognitive Behavioral Therapy (TF-CBT). Behavioral specialists received training from the National Child Traumatic Stress Network in implementing trauma-sensitive interventions evidence-based model for adolescents experiencing trauma (National Child Traumatic Stress Network, 2019). TF-CBT is a components-based treatment model that incorporates trauma-sensitive interventions with cognitive behavioral, family, and humanistic principles and techniques. Evidence for TF-CBT has proven successful with children who exhibit significant emotional problems (e.g., post-traumatic stress, anxiety, depression) related to traumatic life events. It can be used with children who have experienced one or multiple traumas (National Child Traumatic Stress Network, 2017).

I-SS utilized the ongoing partnership with Children's Hope Alliance to provide trauma-informed CBT counseling for high-risk students. Additional need-based services for students included: 1) emergency services; 2) in-kind daytime treatment at schools by mental health professionals; 3) in-home family therapy; 4) residential services; and 5) therapeutic foster care.

The final Tier 3 intervention was Functional Behavior Support Planning (F-BSP). After completing a functional behavior assessment to determine the “why” behind negative behaviors, the behavioral therapists developed plans to provide social and academic interventions to meet the assessed need (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2017). Evidence contained in seven single-case design studies on Functional Behavior Assessment-based Interventions in functional behavior support plans were found to meet WWC standards without reservations, with potentially positive effects on school engagement and problem behavior for children identified with or at risk for emotional disturbance (U.S. Department of Education, Institute of Education Sciences, 2016). Behavioral specialists assisted with behavior plans and behavior management strategies.

2.2 Implementation Study

Implementation Measures. Online social-emotional learning surveys were collected from staff and students biannually in Year 3 and then annually in the fourth and fifth year. The staff survey included questions about the professional learning opportunities and the staff’s belief and confidence in responding to violence and trauma. District administered school climate surveys annually from staff, parents, and students were provided to the external evaluator as well as office discipline referrals and EOG and EOC data. Program implementation for curricula programs was provided by school administrators. The Crosby Scholar coordinator provided student activity attendance. Results for these measures are included in the final section addressing implementation questions.

Implementation study measures. The implementation study addressed three formative questions and utilized the following quantitative measures: Social-emotional learning (SEL) and professional learning survey, school climate survey, program implementation of curricula and activities, and fidelity index scores.

Four years of professional learning, curriculum implementation and other programmatic components were implemented in the 21 schools. A fidelity index is an additional requirement of all Education Innovation Research grants. Fidelity measures the extent to which the program implemented the components using a threshold rating system established a priori with input from program staff and relevant baselines. Each year of the grant, the fidelity index was scored for each school and for the project.

Implementation questions. The project proposed three process questions:

1. To what extent was *RIPPLE* implemented with fidelity?
2. What components are most suitable for replication in other settings?
3. What are the strengths of and barriers to implementation?

The RIPPLE logic model is shown on the next page.

Theory of Change: Iredell-Statesville Schools (NC) will infuse trauma-informed care practices to reshape the schools’ culture, staff, and systems, positively impacting student academic achievement through implementation of: ❶ a trauma-informed systems approach paired with ❷ a trauma-specific treatment interventional approach in the district’s highest need schools to improve the academic outcomes for high-need students.

Figure 1. RIPPLE Logic Model

Inputs	Core Strategies and Activities	Outputs (Objectives)	Intermediate Outcomes	Long-Term Impact
<p>Multi-Tiered System Supports (MTSS)</p> <p>Personnel: Project Advisor, Project Director, Project Coordinator, Student Assistance Program Coordinators (SAPs), Instructional Facilitators (IFs), Behavioral Specialists (BSs), Social Workers (SWs), Management Team</p> <p>Partners: Goodwill Industries of NW NC, Crosby Scholars, Boys & Girls Club of the Piedmont, Children’s Hope Alliance (CHA)</p>	<p>Goal 1. Use the MTSS structure to implement a trauma-informed interventional approach to improve educational outcomes for high-need K-12 students.</p> <ul style="list-style-type: none"> ▪ Convene the Management Team (quarterly) and School-based MTSS Teams (monthly) to assess and enhance MTSS implementation; review, discuss, and disseminate student indicators (Data Days) <p>Tier 1:</p> <ul style="list-style-type: none"> ▪ Use Adverse Childhood Experiences (ACES) Assessment ▪ Implement Second Step (anti-bullying) for elementary <p>Tier 2:</p> <ul style="list-style-type: none"> ▪ Implement Second Step group sessions at elementary ▪ Use SSET-Trauma focused CBT at middle ▪ Provide SAP counseling, student PDSA plans, and life-skills -college prep workshops via Crosby Scholars at secondary <p>Tier 3:</p> <ul style="list-style-type: none"> ▪ Provide CHA trained Trauma Focused-CBT through National Child Traumatic Stress Network provider ▪ Implement trauma focused cognitive behavior therapy 	<ul style="list-style-type: none"> ▪ Implement functional behavior assessments and planning ▪ # of Management Team meetings ▪ # of school-based MTSS Team meetings ▪ # of Data Days ▪ # of revised MTSS manuals and handbooks ▪ # of assessments given ▪ # of student GNR groups formed ▪ % of students receiving SAP counseling ▪ % of students receiving trauma-focused CBT 	<ul style="list-style-type: none"> ▪ # of PDSA plans developed ▪ # of students in Crosby Scholars ▪ Reduced ODRs and OSS for overall and for subgroups ▪ Reduced days lost for ISS/OSS ▪ Increased students SEL ▪ Increased teachers, students, and parents’ perceptions of school climate ▪ Reduced # of students moving to Tier 3 ▪ Stronger relationships between adults and students ▪ Increased follow-through for case management 	<p>Improved Student Academic Achievement</p>
<p>Curricula: Second Step; Support for Students Exposed to Trauma (SSET); Group Noticing Routine (GNR); Capturing Kids Hearts (CKH); Safe School Ambassadors (SSA); Restorative Justice (RJ)</p> <p>Funding/Resources: US ED, Crosby Scholars, I-SS in-kind</p>	<p>Goal 2. Provide professional learning for educators to develop awareness and understanding of the impact trauma has on student achievement and behaviors, building educators’ capacity to recognize and implement TIC.</p> <ul style="list-style-type: none"> ▪ Provide professional learning (PL) to enhance educators’ understanding and use of trauma-informed care (TIC) and culturally responsive (CR) practices including implementation of CKH, SSA, and RJ ▪ Provide PLC coaching and mentoring by IFs and BSs ▪ Use the tell-show-practice coaching method to build sustainability with school level experts and benchmarks 	<ul style="list-style-type: none"> ▪ #, % of teachers coached ▪ # of CR PLs ▪ # of TIC PLs ▪ # of staff and providers who receive PL and training ▪ #, % of teachers who report on the use of CR practices 	<ul style="list-style-type: none"> ▪ Increased educator understanding of student needs ▪ Increased educator knowledge and ability to meet student needs ▪ Increased educator belief that all students can learn 	<p>Replication and Scaling by building a sustainable and replicable model that capitalizes on existing assets and thrives in a multitude of settings</p>

Setting. The program was implemented in 21 schools (12 elementary, 5 middle, 3 high, and 1 alternative) from the three highest need feeder patterns that serve a more diverse student body and experience a higher level of economic disadvantage than the rest of the district (Table 2). Treatment schools were in suburban and rural settings.

Table 2. School Demographics

Target School Name	Enrollment	F/R Lunch	% Black	% White	% Hispanic	% Other
Celeste Henkel Elementary	501	68%	17%	66%	9%	8%
Central Elementary	381	37%	2%	90%	6%	2%
Cloverleaf Elementary	580	68%	35%	41%	17%	7%
Cool Springs Elementary	363	48%	7%	72%	12%	9%
East Iredell Elementary	850	68%	33%	31%	27%	9%
Harmony Elementary	433	66%	9%	67%	21%	3%
NB Mills Elementary	346	100%	51%	14%	27%	8%
Scotts Elementary	322	71%	14%	51%	24%	11%
Sharon Elementary	266	49%	4%	80%	9%	7%
Third Creek Elementary	432	90%	28%	32%	31%	9%
Troutman Elementary	646	46%	15%	64%	16%	5%
Union Grove Elementary	234	54%	0%	79%	18%	3%
East Iredell Middle	524	78%	38%	28%	24%	10%
North Iredell Middle	614	50%	5%	73%	17%	5%
Third Creek Middle	383	84%	45%	21%	28%	6%

Target School Name	Enrollment	F/R Lunch	% Black	% White	% Hispanic	% Other
Troutman Middle	414	53%	18%	62%	13%	7%
West Iredell Middle	670	64%	16%	59%	16%	9%
North Iredell High	852	44%	6%	72%	18%	4%
Statesville High	862	66%	46%	23%	24%	7%
West Iredell High	802	52%	14%	64%	14%	8%
Northview Academy (alternative)	147	86%	30%	49%	7%	14%
Total/Average	10,622	64%	21%	54%	18%	7%
District non-participating school average	9,732	22%	6%	74%	10%	10%

*Data from 2019 at the start of grant funding.

Comparison condition. Comparison schools with similar baseline data for each of the four outcomes in Studies #1-#4 were chosen from within and outside I-SS. Comparison schools were not supported by the RIPPLE program and received business-as-usual school programming. For Study #5, comparison schools were within I-SS, and the same grade levels completed the survey in the comparison schools during each year’s administration. Comparison schools did not receive the compilation of social-emotional interventions. We assume most North Carolina schools utilize multi-tiered systems of support in some capacity. Appendix A lists the comparison schools for each analysis.

Study samples. For Studies #1-#4, the treatment schools participated in a longitudinal, three-year study with four outcomes. Twenty-one treatment schools were selected from the 36 district schools based on academic, behavior, and trauma-related needs. The 21 schools are in the highest-need feeder patterns. Students in grades three through eight for the end-of-grade assessments in ELA and math, and grade eleven for the ACT subscales for math, reading, and English were eligible for inclusion in Studies 1 and 2. All students were eligible for inclusion in the study for suspension data (Study 3). Teachers from all North Carolina districts complete the North Carolina Teacher Working Conditions Survey every “even” year (Study 4). For Study #5, a single grade of students was administered the baseline and first annual survey while in grades three, six, and nine. The same students completed an annual survey the next year (grades four, seven, and ten), and a final annual survey given when students were completing grades five, eight, and eleven.

Sample alignment between treatment and control groups. Treatment and comparison schools in Studies #1-#3 were matched at a 1:4 ratio through nearest neighbor propensity score matching without replacement based on each baseline measure for the three outcomes. Separate analytic samples were selected for each outcome using only the baseline measure since the closeness of matches was compromised when other covariates were used in the baseline equivalence models (see Appendix A for a list of the comparison schools used in each analysis). All data was pulled from the North Carolina Department of Public Instruction website. When final datasets were being compiled, additional schools had to be selected to meet the matching ratio as some schools did not have data for all the years in the CSITS design. Additionally, 2021 was used as the baseline for matching, but this year was not a good baseline for the academic data since it was immediately following school closures due to COVID. Therefore, we averaged data from 2016-2021 and used this average as the baseline for matching. Scores from 2021 were still used as the baseline in the analyses. We did not include the alternative school in the analysis. The final samples used for analysis in each study included only treatment and comparison schools that had full data on baselines and the covariates including suspensions, economic disadvantage percentages, minority percentages, rural status, and pupil-teacher ratio.

Design. Table 3 shows the comparative short-interrupted time-series design (CSITS) which establishes trends based on outcome measures five years prior to the implementation of the intervention. The design uses three years of post-intervention data to assess deviations from the predicted trajectories for both treatment and comparison groups. The pre-intervention years have missing data for 2020 for the academic outcomes due to COVID-19 school closures; however, short-term suspension data was still collected for the 2019-20 school year. Given the school closures and the hybrid start to school year 2020-21, 2020-21 data was used as the baseline year for Studies #1-#3. Pre-treatment years for the academic outcomes spans 2015-16 through 2020-21 (minus 2019-20), while suspension data uses 2016-17 through 2020-21 for five consecutive pre-intervention years.

Table 3. Pre-treatment Years and Treatment Years for RIPPLE and Comparison Schools

	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20*	2020 -21**	2021 -22	2022 -23	2023 -24
RIPPLE Schools (N=20)	x	x	x	x	x	x	T	T	T
Comparison Schools (N=80)	x	x	x	x	x	x	t	t	t

*There is no outcome data for academic outcomes in SY2019-20 due to the COVID-19 pandemic;

**Baseline year for Studies 1-3 and Study 5. Baseline year for Study 4 was 2020.

Note: X represents a pre-treatment year; T represents a treatment year for RIPPLE schools while t represents a treatment year in the comparison schools.

Covariates were included in the analytic models to control confounding factors that could affect the outcome measures. Covariates included school-level variables for percent economic disadvantage, percent minority, rural status (rural, town, suburb, city), and pupil-teacher ratio. The CSITS model could not be used with the Teacher Working Condition (TWC) survey (Study #4) as there were only two pre-intervention years (2018 and 2020) and two post-intervention years (2022 and 2024). Therefore, in the QED, a linear mixed-effects model was used to analyze the TWC data. A QED was also used with Study #5 for the student social-emotional learning (SEL) survey. This analysis was a within-district comparison following a single-grade-level for three consecutive years within elementary, middle, and high schools and used the linear mixed-effects model.

Outcome Measures. Outcome measures were end-of-grade ELA test results for grades 3-8 and ACT subscales for English and reading for grade 11 (Study #1); end-of-grade math test results for grades 3-8 and ACT math for eleventh graders (Study #2); suspensions per 1,000 students (Study #3); the composite score of TWC items from six subscales (Study #4), and students' composite score from four subscales from the SEL survey (Study #5).

For Study #4, the Teacher Working Conditions Survey was reduced from 199 questions to 100 questions in 2024. The three years of administration (2018, 2020, and 2022) were compared to match selected questions from the reduced 2024 survey administration. We had previously selected 43 items from the 2020 survey (baseline year) with only 24 of those items remaining in the final survey year (2024). In 2018, we found 19 items that aligned with the same items from 2020, 2022, and 2024. We have calculated an alpha score for each scale and for the total items for the four years of administration. Cronbach's alpha for each individual subscale was 0.93 or above for all scales in all years and was completed in R using "alpha" for individual scales and "omega" for the entire scale which allows for items that are not Tau equivalent. Comparison of the total scale rating produced from using "alpha" and "omega" in R, found that the alpha output was approximately 0.02 points lower than omega. The alpha score for internal consistency reliability could not be assessed in 2018 with a single item.

Table 4 includes the alpha reliability for each scale for each year of the TWC survey. All scales and the composite score had high reliability indicating that items measured the same construct in each scale and the high alphas increase validity of the measurement while minimizing the impact of random error.

Table 4. Reliability for the Teacher Working Condition Survey

Scale Name	2018	Alpha	2020	Alpha	2022	Alpha	2024	Alpha
Time	5	0.93	5	0.95	5	0.96	5	0.95
Equity	1	NA	5	0.95	5	0.96	5	0.95
Retention	3	0.93	3	0.95	3	0.96	3	0.94
School Leadership	3	0.93	4	0.95	4	0.96	4	0.94
Student Conduct	4	0.93	4	0.95	4	0.96	4	0.95
Facilities and Resources	3	0.94	3	0.95	3	0.96	3	0.95
Total Items/ Total Omega	19	0.96	24	0.97	24	0.98	24	0.97

The student survey for Study #5 contained four scales, each meeting acceptable alpha thresholds demonstrating that the items are reliable and have internal consistency in their measurement of the construct represented within each scale. Table 5 includes the individual scales and the total scale with the number of items and the Cronbach's alpha.

Table 5. Cronbach's Alpha for Social-emotional Survey

Scale	Number of Items	Alpha
Sense of Belonging	5	0.84
Teacher Relationships	3	0.70
Emotion Regulation	6	0.76
Social Awareness	8	0.80
Total Scale	22	0.89

Table 6 includes the outcome measures, covariates, and CSITS design variables used in the models for Studies #1-#3.

Table 6. CSITS Impact Studies 1-3 Outcome Variables and Covariates

Study	Variable	Description	Type of Measure	Data Source
1	English Language Arts (ELA)	Proficient percentage per grade within school (grades 3-5, 6-8)	Continuous	State published EOG ELA Grades 3-8
1	ACT English and Reading	Proficient percentage averaged for two subscales (% scoring at least 18 and 22, respectively)	Continuous	State published ACT subscales Grade 11
2	Math	Proficient percentage per grade within school (grades 3-5, 6-8)	Continuous	State published EOG Math Grades 3-8
2	ACT Math	Proficient percentage for math scale (% scoring at least 22)	Continuous	State published ACT subscale Grade 11
3	Suspensions	Rates per 1,000 students	Continuous	State published suspension data each school year
1-3	Treatment	Identified whether a school was a RIPPLE school or a comparison school	Binary 0 = Comparison 1 = RIPPLE	RIPPLE program records

Study	Variable	Description	Type of Measure	Data Source
1-3	Treatment Year	Identified each year as a treatment year or a pre-treatment year	Nominal, coded 0 for years 2014-15, 2016-17, 2017-18, 2018-19, 2020-21 Coded 1 for years, 2021-22, 2022-23, 2023-24. There were no data from 2019-20 because of school closures due to COVID.	RIPPLE CSITS design files
1-3	Time	Identifies the pre-treatment and post-treatment years	Ordinal, coded -5, -4, -3, -2, -1, 0, 1, 2, 3	RIPPLE CSITS design files
1-3	Treatment by Treatment Year Interaction	Difference in Difference Estimator between treatment and comparison schools	Binary	RIPPLE CSITS design files
1-3	Treatment by Time Interaction	Difference in pre-treatment slopes by treatment status	Ordinal	RIPPLE CSITS design files
1-3	Economic disadvantage (ED)	Percentage of school population reported as economically disadvantaged	Continuous	State published ED data by school

Study	Variable	Description	Type of Measure	Data Source
1-3	Minority	Percentage of school population that is <u>minority</u>	Continuous	State published race/ethnicity data by school
1-3	Pupil-Teacher Ratio	Total enrollment of students per teacher	Continuous	State published enrollment and teacher data by school
1-3	Rural	Coded as rural, town, suburb, or city	Nominal	NCES geographic data
1-3	School Level	The grade level span for the school	Factor	District grade span designation

Table 7 summarizes the design of the three CSITS studies.

Table 7. Impact Study Design Components for the CSITS Studies

Component	Explanation
School Level	Elementary – High (Grades K - 12)
Unit of Analysis	Grade-within School for Studies 1 and 2, school summary for Study 3 (treatment and comparison)
Sample Size	20 treatment schools, 80 comparison schools
Confirmatory Outcome(s)	North Carolina Department of Public Instruction ELA and math EOG, 11 th grade ACT English, reading, and math subscales, school suspension data
Propensity Score Matching Variables	Each outcome using the average data across 2016-2021 as the baseline for matching EOG/ACT in ELA and math, and suspension rate per 1,000 students.
Statistical Analyses	Time series regression with level blocking variable
MDES	0.07 at alpha level .05, power .80

Component	Explanation
Impact Model	$Y_{ij} = (\beta_0 + \alpha_{0j}^{Schs}) + (\beta_1 + \alpha_{1j}^{Schs})(Time_{ij}) + \beta_2(TSch_j) + \beta_3TreatYr_{ij} + \beta_4(TSch_j * Time_{ij}) + \beta_5(TSch_j * TreatYr_{ij}) + \beta_6ED_j + \beta_7MinorityStatus_j + \beta_8RuralStatus_j + \beta_9PupilTeacherRatio_j + \beta_{10}Level_j + \varepsilon_{ij}^{Years}$

Table 8 provides an explanation of the variables included in the Greek analytic model.

Table 8. Explanation of Greek Model for CSITS designs

Variable	Description
Y_{ij}	Is the percentage of students proficient in ELA or math from the i^{th} time point in the j^{th} school, or the suspension rate per 1,000 students from the i^{th} time point in the j^{th} school
α_{0j}^{Schs}	Is a random intercept term for schools. It is the deviation of school j 's intercept from the mean intercept, conditional on model covariates, assumed distributed with mean 0 and variance τ_{00}^2 and covariance with α_{1j}^{Schs} of τ_{01} .
$Time_{ij}$	Is coded -5, -4, -3, -2, 0, 1, 2, 3, as indicated in Table 5. (Note, there will not be a score from $Time_{ij} = -1$ (SY 2019-20)).
α_{1j}^{Schs}	Is a random time slope term for schools. It is the deviation of school j 's pre-intervention slope from the mean pre-intervention slope, conditional on model covariates, assumed distributed with mean 0 and variance τ_{11}^2 and covariance with α_{0j}^{Schs} of τ_{01} .
$TSch_i$	1 if school j is an intervention (treatment) school, and = 0 if school j is a comparison school.
$TreatYr$	Identifies each year as a treatment year or a pre-treatment year
$TSch*Time$	Interaction term that is multiplying the treatment school by the time codes.
$TSch*TreatYr$	Interaction term that is multiplying the treatment school by the pre and post intervention years.
ED	Percent of students in the school that meets economic disadvantaged status for the baseline year
$MinorityStatus$	Percent of students in the school that are minority for the baseline year
$RuralStatus$	Nominal variable coded as rural, town, suburb, or city
$PupilTeacherRatio$	Calculated as school enrollment divided by the number of teachers for the baseline year

Variable	Description
<i>Level</i>	Three factors correspond to elementary, middle, and high schools.
ε_{ij}^{Years}	the random error effect represents the difference between score at year <i>i</i> for school <i>j</i> and the predicted mean score for school <i>j</i> . These residual effects are assumed normally distributed with mean 0 and variance σ_{Years}^2 , and are assumed to have 1 st order autoregressive correlation. They are assumed independent from μ_j^{Schs}

Table 9 contains the outcome measures, covariates, and QED design variables used in the model for Study #4.

Table 9. Impact Study Design Components for the QED for TWC Survey (Study #4)

Variable	Description	Type of Measure	Data Source
North Carolina Teacher Working Conditions Survey	Percent of teachers responding favorably to items in the following subscales: Time, Facilities and Resources, School Leadership, Managing Student Conduct, Equity, and Retention	Continuous	State published NC TWC Survey every <u>even</u> year
Pupil-Teacher Ratio	Total enrollment of students per teacher	Continuous	State published enrollment and teacher data by school
Rural	Coded as rural, town, suburb, or city	Nominal	NCES geographic data
Economic disadvantage (ED)	Percentage of school population reported as economically disadvantaged	Continuous	State published ED data by school
Gender	Percentage of school population that is <u>male</u>	Continuous	State published gender data by school

Variable	Description	Type of Measure	Data Source
Minority	Percentage of school population that is <u>minority</u>	Continuous	State published race/ethnicity data by school
Treatment	Identified whether a school was a RIPPLE school or a comparison school	Binary 0 = Comparison 1 = RIPPLE	RIPPLE program records
School Level	The grade level span for the school	Factor	District grade span designations

Table 10 contains the outcome measures, covariates, and QED variables used in the model for Study #5.

Table 10. Impact Study Design Components for the QED for Student SEL Survey (Study #5)

Variable	Description	Type of Measure	Data Source
Student SEL Survey	Averaged score across four scales (emotion regulation, social awareness, teacher relationships, and sense of belonging). Scales were scored on a 4-point Likert from 4 = Almost always to 1 = Almost never.	Continuous	District level SEL survey
Gender	1 if student is <u>male</u> , 0 if <u>student is female</u>	Continuous	Self-reported on survey by student
Minority	1 if student is <u>minority</u> , 0 if <u>student is nonminority</u>	Continuous	Self-reported on survey by student
SWD	School percentage of students with disabilities	Continuous	State published SWD data by school
Treatment	Identified whether a school was a RIPPLE school or a comparison school	Binary 0 = Comparison 1 = RIPPLE	RIPPLE program records

Variable	Description	Type of Measure	Data Source
School Level*	The grade level span for the school	Factor	District grade span designations

Table 11 summarizes the design of the two QED studies.

Table 11. Impact Study Design Components for the QEDs (Studies #4 and #5)

Component	Explanation
School Level	Elementary – High (Grades K - 12)
Unit of Analysis	School summaries (treatment and comparison)
Sample Size TWC (Study 4)	20 treatment schools, 80 comparison schools
Sample Size SEL (Study 5)	20 treatment schools, 11 district comparison schools
Confirmatory Outcome(s)	North Carolina Teacher Working Conditions Survey (every even year) and student social-emotional learning survey (grade 5, 8, 11)
Propensity Score Matching Variables	NC TWC survey 2020; SEL survey fall 2021 (grade 3, 6, 9)
Statistical Analyses	Ordinary least squares regression
MDES	0.094 at alpha level .05, power .80 (Study #4) 0.058 at alpha level .05, power .80 (Study #5)

Impact Greek Model for TWC (Study #4)

$$\begin{aligned}
 Y_{ij} = & (\beta_0 + \alpha_j^{Schs}) + \beta_1(TSch_j) + \beta_2(PreTest1_j) \\
 & + \beta_3(PreTest2_j) + \beta_4(ED_j) + \beta_5Minority_j + \beta_6Gender_j + \beta_7Rural_j \\
 & + \beta_8PupilTeacherRatio_j + \beta_9Level_m + \varepsilon_j^{Schs}
 \end{aligned}$$

Table 12 provides an explanation of the variables included in the Greek analytic model.

Table 12. Explanation of TWC Greek Model

Variable	Description
Y_{ij}	Is the percentage of teachers responding favorably to items across six TWC scales from the j^{th} school.
α_{0j}^{Schs}	Is a random intercept term for schools. It is the deviation of school j 's intercept from the mean intercept, conditional on model covariates, assumed distributed with mean 0 and variance σ_{Schs}^2
$TSch_j$	1 if school j is an intervention (treatment) school, and = 0 if school j is a comparison school.
PreTest1	Pretest measure for the j^{th} school from 2018.
PreTest2	Pretest measure for the j^{th} school from 2020.
ED	Percent of students in the j^{th} school that meet economic disadvantaged status for the 2019-20 school year.
$Minority$	Percent of students in j^{th} the school that are minority for the 2019-20 school year.
$Gender$	Percent of students in the j^{th} school that are female for the 2019-20 school year.
$RuralStatus$	Nominal variable coded as rural, town, suburb, or city for the j^{th} school location.
$PupilTeacherRatio$	Calculated as school enrollment for the j^{th} school divided by the number of teachers for the 2019-20 school year.
$Level$	Three factors correspond to elementary, middle, and high schools.
ε_j^{Schs}	the random error effect represents the difference between the percentage rate for school j and the predicted percentage rate for school j . These residual effects are assumed normally distributed with mean 0 and variance =1. They are assumed independent from μ_j^{Schs}

Impact Model for Student SEL Analysis (Study #5)

$$Y_{ij} = (\beta_0 + \alpha_j^{Schs}) + \beta_1(TSch_j) + \beta_2(PreTest_j) + \beta_3MinorityStatus_{ij} + \beta_4Gender_{ij} + \beta_5SWD_{ij} + \beta_6Level_m + \varepsilon_{ij}^{Students}$$

Table 13 provides an explanation of the variables included in the Greek analytic model.

Table 13. Explanation of Student SEL Greek Model

Variable	Description
Y_{ij}	Is the mean composite SEL rating from the 2024 administration for the i^{th} student in the j^{th} school.
β_0	Is the intercept, which is the comparison school mean score in the pre-treatment year, Fall of 2021.
α_{0j}^{Schs}	Is a random intercept term for schools. It is the deviation of school j 's intercept from the mean intercept, conditional on model covariates, assumed distributed with mean 0 and variance τ_{00}^2 .
$TSch_i$	1 if school j is an intervention (treatment) school, and 0 if school j is a comparison school.
Pretest $_j$	Is the mean composite SEL rating from the j^{th} school disaggregated by minority and gender groupings.
MinorityStatus	1 if the student identifies as being a minority and = 0 if the student does not identify as being a minority.
Gender	1 if the student identifies as being male and = 0 if the student identifies as being female.
SWD	1 if the student is identified as having a disability and = 0 if the student is not identified as having a disability.
Level	Three factors correspond to elementary, middle, and high schools.
ε_{ij}^{Years}	the random error effect representing the difference between mean score for student i from school j and the predicted mean score for school j . These residual effects are assumed normally distributed with mean 0 and variance $\sigma_{student}^2$. They are assumed independent from μ^{Schs}

Baseline equivalence testing for each outcome measure. Table 14 shows the results of the baseline equivalence testing for the four outcomes in Studies #1-#4 and for the single outcome in Study #5. Both ELA and math proficiency standardized differences were calculated using Cox's Index since the measures were dichotomous (proficient, non-proficient). The resulting standardized differences were less than 0.05 thereby satisfying baseline equivalence standards from the WWC. The teacher working condition survey standardized differences were calculated using Hedge's g since the outcome measure is continuous. Hedge's g was also less than 0.05 thereby satisfying baseline equivalence for WWC. The standardized difference in baseline means for suspensions and the student SEL survey results were calculated with Hedge's g and were below 0.05.

Table 14. Baseline Equivalence for Outcome Measures

Measure	Control Sample Size	Control Mean	Control Standard Deviation	Treatment Sample Size	Treatment Mean	Treatment Standard Deviation	Treatment-Control Difference	Standardized Difference
ELA proficiency	80	0.3904	0.1537	20	0.3930	.1492	0.0026	0.0076**
Math proficiency	80	0.3770	0.2168	20	0.3856	0.2242	0.0086	0.0219*
Suspension rate	80	42.048	39.293	20	50.871	50.731	8.823	0.0391*
Teacher Working Condition (TWC) Survey*	80	81.0	0.09	20	81.0	1.00	0.000	0.000***
SEL survey	1,432	3.07	0.540	1,795	2.93	0.58	-0.14	-0.006**

***p < .001; **p < 0.1; *p < .05

Note: Baseline year for TWC was 2020; all other baselines were 2021

3. STUDY FINDINGS

3.1 Impact Studies

Study #1: What is the impact of RIPPLE on the school-level percent proficient in ELA academic achievement (i.e., ELA EOG and ACT English and Reading subscales) of 3rd-8th grade and 11th grade students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of Iredell-Statesville School District?

Figure 2 shows the trajectory of the five pre-treatment years and the three intervention years. School year 2020 is missing end-of-grade testing due to the COVID-19 pandemic that resulted in school closures nationwide. During the three intervention years, the comparison schools had slightly more students proficient in ELA. In the years prior to the intervention, treatment schools had slightly higher proficiency levels when compared to the comparison schools; however, this gain was lost in the three years after the intervention.

Figure 2. Comparison schools exceeded the percentage proficient over treatment schools in ELA each year after 2021 by small and non-significant margins.

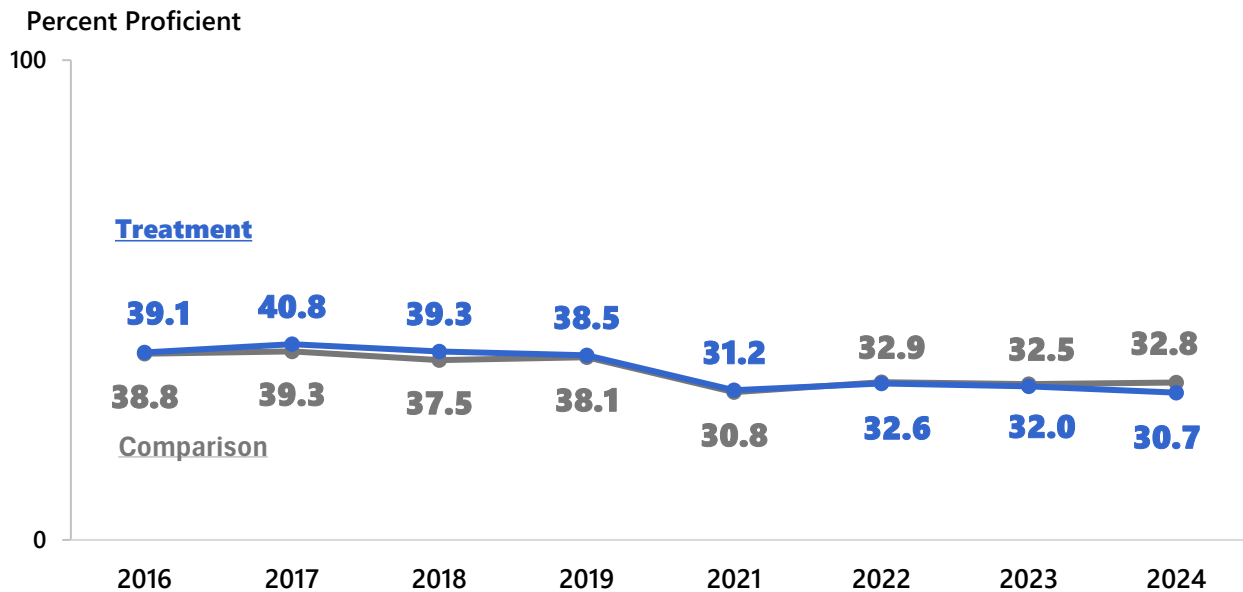


Table 15 shows the analysis results for all schools. The coefficient for “treatment year by treatment school” is the impact estimate. This estimate reflects the difference between treatment and control groups’ projected trends from their pretreatment slopes. Post intervention, both groups have projected trend lines based on their pretreatment slopes. If this treatment year by treatment school measure were significant it would mean that the treatment group slope post treatment was significantly different from what was

predicted. In the overall ELA analysis, the impact estimate was not significant. Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant, which indicates a slope significantly different from zero over the pretreatment years. Economic disadvantage (ED) was significant showing that schools with more ED students had slightly higher proficiency rates than comparison schools. Minority status was significant and negative, meaning that schools with more minority students had lower proficiency rates. Students living in towns scored slightly lower in proficiency than students in other locales. School level was significant for both middle and high school, indicating that fewer students in these schools met proficiency in ELA when compared to elementary school students.

Table 15. ELA Results for All Schools

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.6635	0.0319	20.7764	0.0000***
Treatment school	-0.0378	0.0236	-1.6019	0.1125
Treatment year	0.0230	0.0078	2.9570	0.0032**
Time	-0.0125	0.0013	-9.3549	0.0000***
Treatment year by treatment school	-0.0089	0.0167	-0.5313	0.5954
Time by treatment status	0.0009	0.0030	0.3075	0.7586
Economic disadvantage	0.0681	0.0206	3.3094	0.0010***
Minority percent	-0.3363	0.0323	-10.3982	0.0000***
Rural	-0.0440	0.0228	-1.9266	0.0544
Suburb	-0.0193	0.0300	-0.6426	0.5207
Town	-0.0700	0.0323	-2.151	0.0340*

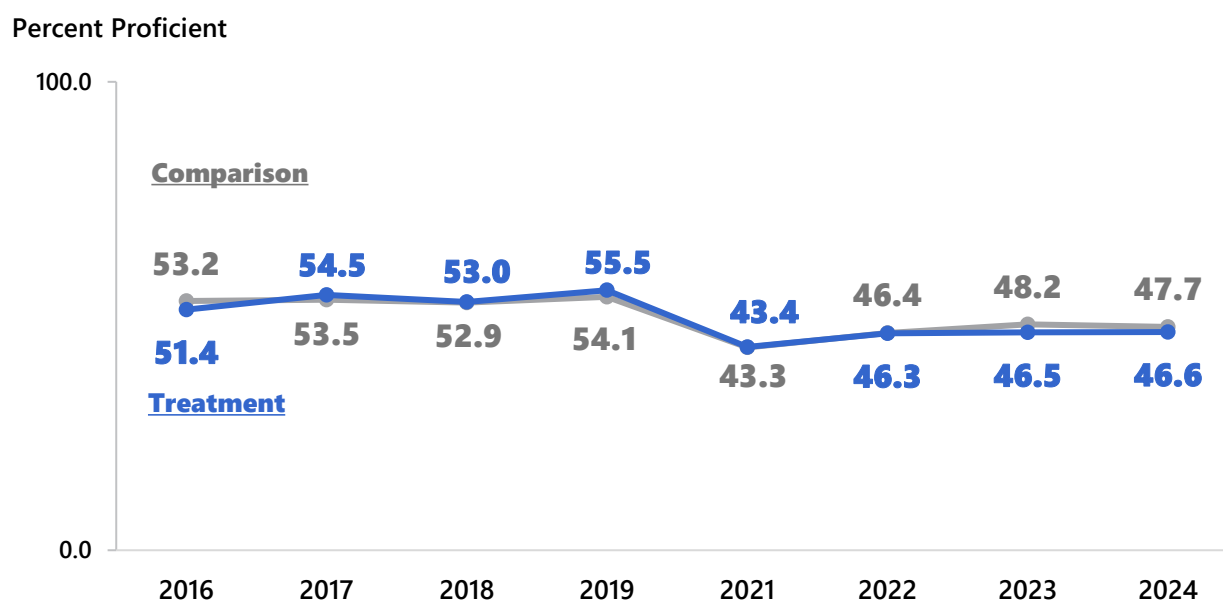
Variable	Beta Value	Standard Error	t-value	p-value
Pupil-teacher ratio	0.0003	0.0010	0.3095	0.7570
Level HS	-0.2999	0.0253	-11.8591	0.0000***
Level MS	-0.0897	0.0200	-4.4813	0.0000***

***p < .001; **p < .01; *p < .05

An analysis for each grade band was conducted to examine differential results for students in elementary, middle, and high school. The elementary and middle school graphs reflect the end of grade percent proficient while the high school graph reflects the percent meeting the ACT threshold for the English and reading subscales averaged together.

Figure 3 shows elementary treatment schools with a slightly higher percentage proficient from 2017-2021 with a slightly lower percentage in the intervention years. The gap of 1.8 points in performance between treatment and comparison schools from 2016 was reduced to 1.1 points by 2024. At both times, comparison schools had slightly more students scoring proficient in ELA. The treatment group did gain three percentage points after the baseline year. Given Title 1, highest need status, for the treatment schools, these results are encouraging as the students are trending closely with comparison schools.

Figure 3. Elementary School ELA Percent Proficient Was Not Statistically Different Between Treatment and Comparison Schools



The CSITS analysis results for the elementary grades are shown in Table 16. The coefficient for “treatment year by treatment school” is the impact estimate. This estimate reflects the difference between treatment and control groups projected trends from their pretreatment slopes. Post intervention, both groups have projected trend lines based on their pretreatment slopes. If the treatment year by treatment school measure was significant it would mean that the treatment groups slope post treatment is significantly different from what was predicted. The negative beta reflects the lower scores of the treatment students. Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant, which indicates a slope significantly different from zero over the pre-treatment years for the comparison group. Economic disadvantage was significant and positive, indicating that schools with greater percentages of students with economic disadvantage had higher percentages of students proficient in ELA. Minority status was significant but negative, indicating that schools with more minority students had fewer students proficient in ELA. Students living in rural areas had slightly fewer students scoring proficiently.

Table 16. ELA Results for Elementary Schools

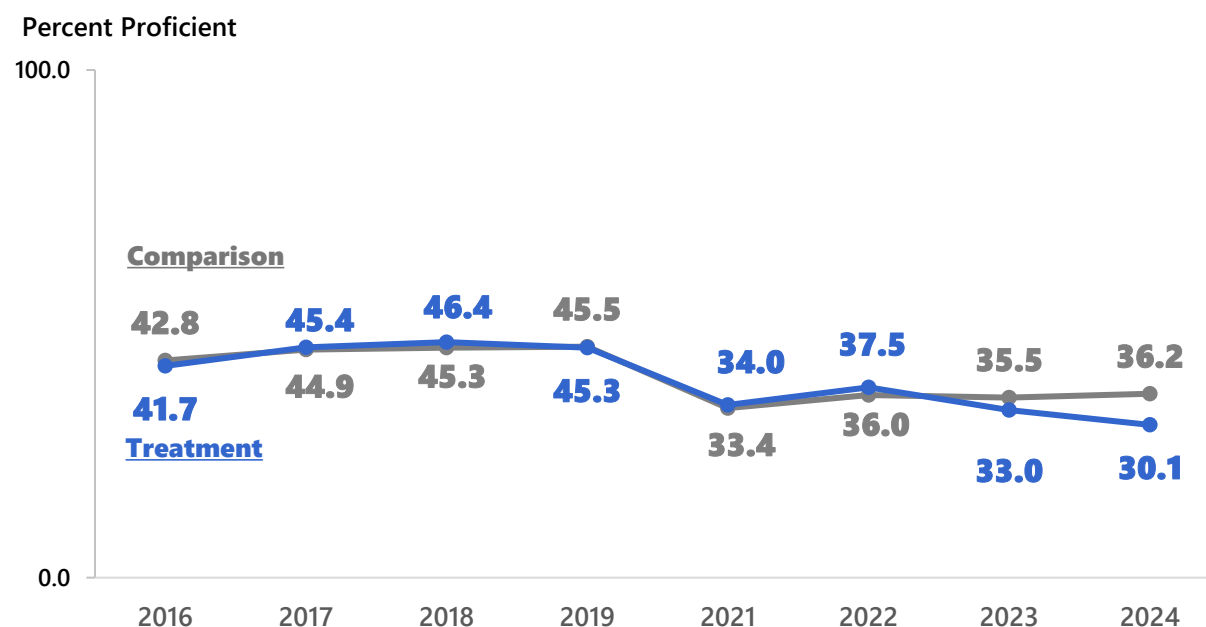
Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.6913	0.0421	16.4283	0.0000***
Treatment school	-0.0357	0.0356	-1.004	0.3198
Treatment year	0.0325	0.0087	3.7234	0.0002***
Time	-0.0142	0.0018	-7.7754	0.0000***
Treatment year by treatment school	-0.0119	0.0186	-0.6408	0.5218
Time by treatment status	0.0029	0.0040	0.7293	0.4660
Economic disadvantage	0.1152	0.0253	4.559	0.0000***
Minority percent	-0.4067	0.0457	-8.906	0.0000***
Rural	-0.0686	0.0317	-2.162	0.0350*

Variable	Beta Value	Standard Error	t-value	p-value
Suburb	-0.0115	0.0467	-0.2453	0.8071
Town	-0.0674	0.0444	-1.5200	0.1810
Pupil-teacher ratio	-0.0002	0.0013	-0.1603	0.8727

***p < .001; **p < .01; *p < .05

ELA proficiency for middle school for treatment and comparison schools began close together, but in the three intervention years, the treatment schools initially had a higher percentage of students proficient but then lost proficiency ending with a 6-point gap below comparison schools and a 7-percentage point drop from 2022. The percentage proficiency for both groups was lower post-COVID, never regaining the proficiency scores prior to the COVID-19 pandemic. Cohen’s d calculated in the final year of the intervention yielded a medium effect size (-0.548) difference in the percentage proficient between treatment and comparison schools. The negative sign indicates that treatment schools had fewer students proficient and while not statistically significant it was meaningful.

Figure 4. Middle School ELA Percent Proficient



At the middle school level, treatment year by treatment school was the impact estimate, and the result was not significant (see Table 17). Time was significant, which indicates a slope significantly different from zero over the pretreatment years. Economic disadvantage was significant and positive, indicating that schools with greater percentages of students with economic disadvantage had higher percentages of students

proficient in ELA. Minority status was also significant but negative, indicating that schools with more minority students had fewer students proficient in ELA. Pupil-teacher ratio was also significant and negative, meaning schools with larger classes had fewer students proficient in ELA.

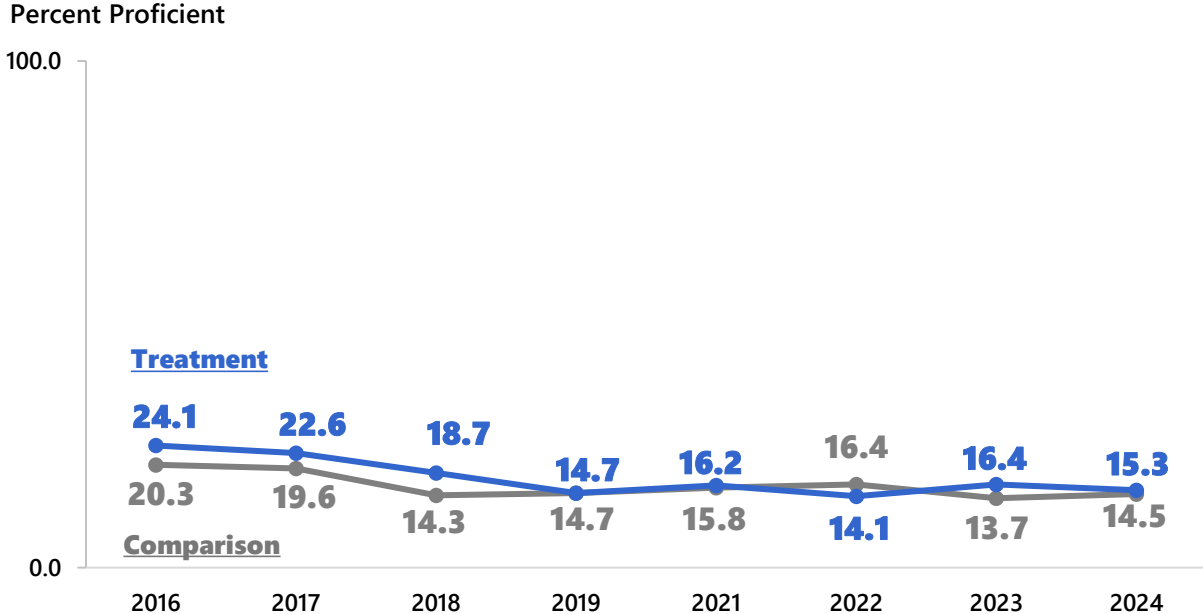
Table 17. ELA Results for Middle Schools

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.5956	0.0700	8.500	0.0000***
Treatment school	-0.0612	0.0455	-1.346	0.1934
Treatment year	0.0106	0.0114	0.9273	0.3542
Time	-0.0116	0.0024	-4.7943	0.0000***
Treatment year by treatment school	-0.0083	0.02470	-0.3371	0.7361
Time by treatment status	-0.0009	0.0052	-0.1680	0.8667
Economic disadvantage	0.1012	0.0336	3.0014	0.0027***
Minority percent	-0.3150	0.0589	-5.349	0.0000***
Rural	-0.0169	0.0439	-0.3854	0.7040
Suburb	0.0530	0.0439	0.5562	0.5842
Town	-0.0861	0.0614	-1.4018	0.1763
Pupil-teacher ratio	-0.0036	0.0018	-2.011	0.0449**

***p < .001; **p < .01; *p < .05

The high school ACT subscales for English and reading were averaged together. The percent proficient for each school is based on the percent of students that met the subscale threshold of 18 (out of 36) for English and 22 (out of 36) for reading. Results from the pre-intervention years show treatment schools with a higher percent proficiency for the ELA ACT scores in all years except for the first intervention year (2022). Interestingly, treatment schools showed the largest drop from 24.1% proficiency in 2016 to 15.3% in 2024 (a decline of 8.8 percentage points), while comparison schools lost just less than 6 percentage points across the same time period. As a note, college admissions waived ACT and SAT test scores following the COVID-19 pandemic for at least three to four years, perhaps attributing to the small growth after testing resumed.

Figure 5. High School ELA Proficiency Rates



While the results did not show treatment schools statistically outperforming the comparison schools, we do believe that the interventions made improvements given the high need status of the selected treatment schools. The COVID-19 pandemic resulted in all schools dropping significantly in the year testing resumed, with treatment schools showing slightly greater growth than the comparison schools only at the high school level. Improvements in academic growth can take years to see, and with just three years post-COVID, we were hard-pressed to make up for learning loss.

The results of the CSITS analysis at the high school level in ELA are shown in Table 18. At the high school level, treatment year by treatment school was the impact estimate, and the result was not significant. Time was significant and negative, which indicates a slope significantly different from zero for the comparison group over the pretreatment years. Minority percentage and pupil-teacher ratio were significant with schools with more minorities having a lower percentage proficient while schools with more students per classroom had a higher percentage of students proficient in ELA.

Table 18. ELA Results for High School

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.1056	0.0714	1.4785	0.1426
Treatment school	-0.0263	0.0327	-0.8024	0.4379
Treatment year	0.0171	0.0157	1.0884	0.2791
Time	-0.0097	0.0029	-3.3460	0.0012***
Treatment year by treatment school	0.0036	0.0341	0.1050	0.9165
Time by treatment status	-0.0033	0.0060	-0.5445	0.5874
Economic disadvantage	-0.0106	0.0396	-0.2670	0.7904
Minority percent	-0.1242	0.0555	-2.2367	0.0276*
Rural	0.0302	0.0436	0.6912	0.4911
Suburb	0.0443	0.0449	0.9885	0.3254
Town	-0.0195	0.0555	-0.3512	0.7315
Pupil-teacher ratio	0.0066	0.0023	2.9005	0.0046**

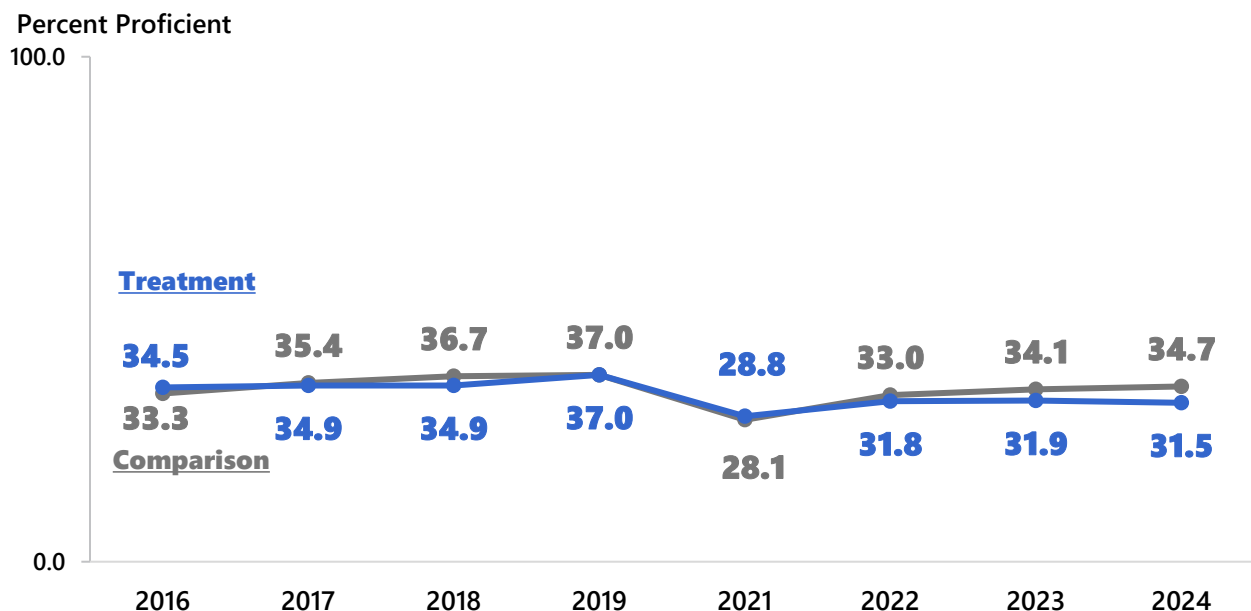
***p < .001; **p < .01; *p < .05

Study #2. What is the impact of RIPPLE on the school-level percent proficient math academic achievement (i.e., Math EOG and ACT Math subscale) of 3rd-8th grade and 11th grade students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of Iredell-Statesville School District?

Figure 6 shows the trajectory of the five pre-treatment years and the three intervention years for all grades combined. The treatment and comparison schools were essentially equal at baseline (2021) for math proficiency. During the three intervention years, the comparison schools had a slightly greater gain in proficiency after the baseline year with only slight improvements in the last two years. The treatment schools experienced a three-point gain in the first intervention year ending slightly below the initial gain in the final year. Both groups decreased by 9 points post-COVID-19 (2021) and subsequently did not gain back to this pre-intervention level. Cohen’s d calculated in the final year of the intervention yielded a small effect size (-0.169) difference in the percentage proficiency between treatment and comparison schools. The negative sign indicates that treatment schools had fewer students proficient and while it was statistically significant it was not very meaningful.

Additional graphs are provided for each grade band to further explore trends in the data. Both elementary and middle schools use the end-of-grade test data while high school uses the percentage of 11th grade students meeting the threshold of 22 for the ACT math subscale.

Figure 6. Comparison schools maintained slightly higher but non-significant math proficiency in the intervention years above the treatment schools.



Overall math CSITS results across grade levels is shown in Table 19. The coefficient for “treatment year by treatment school” is the impact estimate. This estimate reflects the difference between treatment and control groups projected trends from their pretreatment slopes. This treatment year by treatment school measure was significant and negative, indicating that the treatment group slope post treatment is significantly different from what was predicted. Time by treatment status was significant, indicating that difference in pretreatment slopes for the treatment and comparison groups was significant. Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant, which indicates a slope significantly different from zero across the pretreatment years. Minority percentage and school level were significant. Schools with more minorities had a lower percentage proficient and middle and high schools had lower percentage proficient in math when compared to elementary schools which served as the reference group in the analysis. Given the variation of percent proficiency across the three grade bands, the CSITS analysis was conducted by grade band. Results of these analyses are included in Tables 20-22.

Table 19. Math Results for All Schools

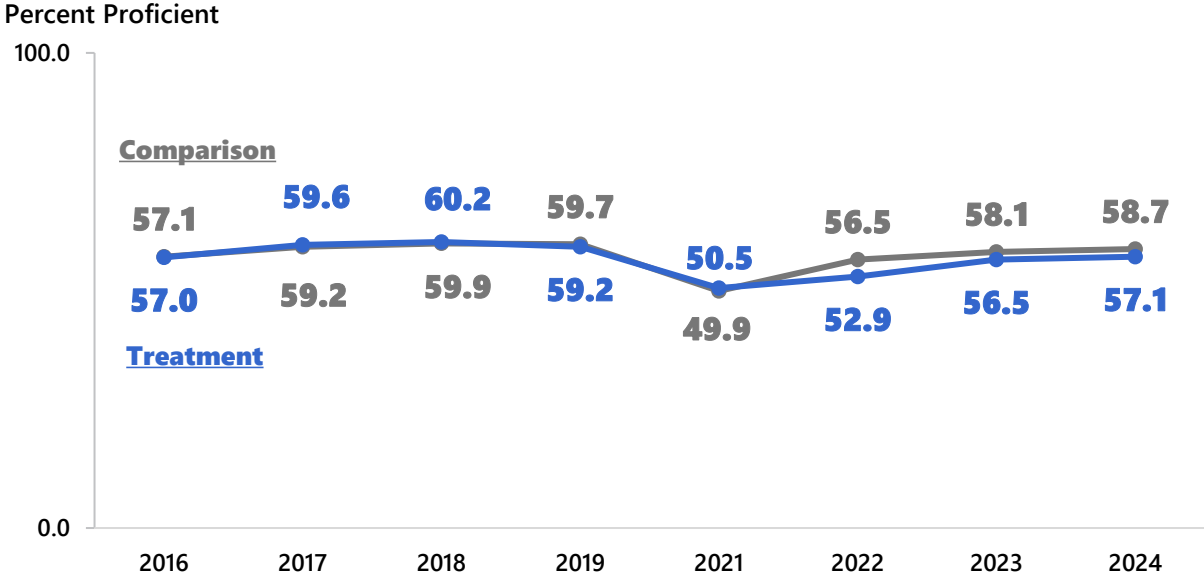
Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.8337	0.0370	22.5890	0.0000***
Treatment school	0.0072	0.0250	0.2893	0.7730
Treatment year	0.0569	0.0079	7.1801	0.0000***
Time	-0.0068	0.0014	-4.8332	0.0000***
Treatment year by treatment school	-0.0706	0.0223	-3.1706	0.0015**
Time by treatment status	0.0085	0.0043	1.9640	0.0474*
Economic disadvantage	0.0005	0.0011	0.4785	0.6323
Minority percent	-0.3798	0.0377	-10.0683	0.0000***
Rural	-0.0475	0.0262	-1.8134	0.0730
Suburb	-0.0381	0.0307	-1.2430	0.2170
Town	-0.0191	0.0382	-0.5004	0.6180
Level High	-0.4865	.0332	-14.6614	0.0000***

Variable	Beta Value	Standard Error	t-value	p-value
Level Middle	-0.2147	0.0290	-7.4068	0.0000***
Pupil-teacher ratio	-0.0015	0.0012	-1.2400	0.2153

***p < .001; **p < .01; *p < .05

Figure 7 shows elementary treatment schools scoring below comparison schools for all but three years. Given Title 1, highest-need status for the treatment schools, these results in the mid-to-upper 50% are encouraging as the students are trending closely with comparison schools working to regain proficiency lost after the COVID-19 school closures. While the results only reached 2016 levels, the positive gains show promise towards regaining and maintaining greater proficiency.

Figure 7. Elementary school math proficiency found similar percent proficient between treatment and comparison students.



At the elementary school level, treatment year by treatment school was the impact estimate, and the result was negative and not significant (see Table 20). Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant, which indicates a slope significantly different from zero over the pre-treatment years. Economic disadvantage, minority percentage, and rural status were significant with schools with greater economic disadvantage having more students meeting math proficiency, while schools with more minorities or in a rural locale having fewer students meeting math proficiency.

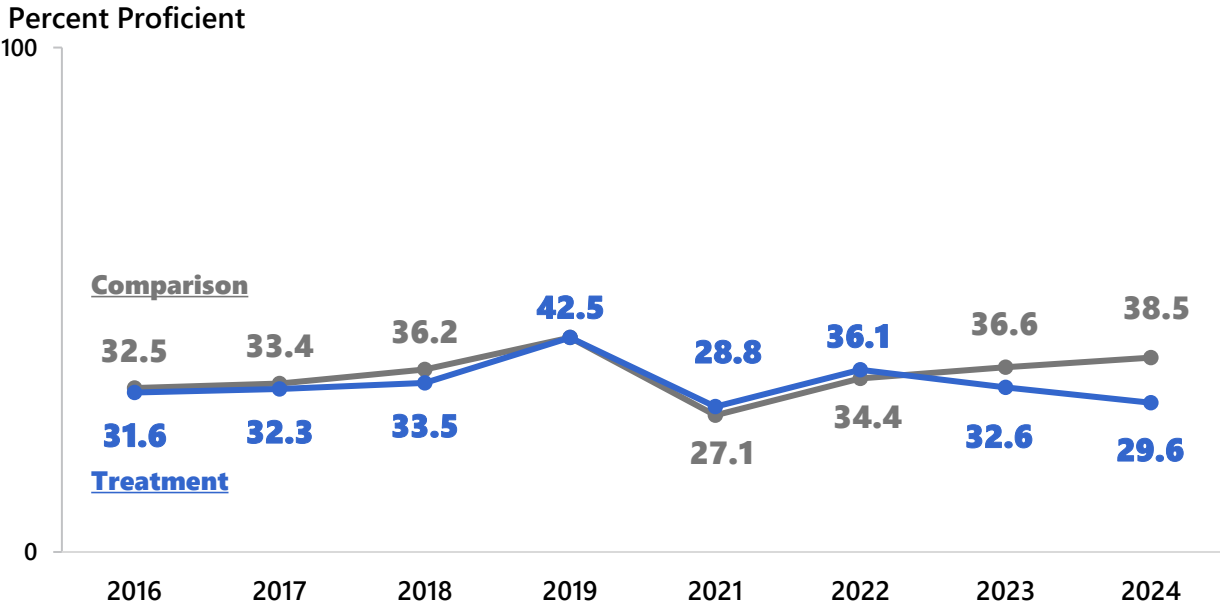
Table 20. Math Results for Elementary School

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.7903	0.0513	15.4040	0.0000***
Treatment school	0.0493	0.0441	1.1191	0.2680
Treatment year	0.0666	0.0103	6.4844	0.0000***
Time	-0.0087	0.0024	-3.7445	0.0002***
Treatment year by treatment school	-0.0341	0.0224	-1.529	0.1281
Time by treatment status	0.0024	0.0051	0.4710	0.6377
Economic disadvantage	0.0801	0.0356	2.2532	0.0244*
Minority percentage	-0.4900	0.0587	-8.350	0.0000***
Rural	-0.1044	0.0423	-2.4678	0.0167*
Suburb	-0.0713	0.0473	-1.5064	0.1377
Town	-0.0798	0.0680	-1.1742	0.2454
Pupil-teacher ratio	-0.0001	0.0017	-0.0687	0.9453

***p < .001; **p < .01; *p < .05

Middle school math proficiency showed improvement initially for the treatment schools but subsequently ended lower than all years except the baseline year. The comparison schools gained proficiency every year after baseline but failed to achieve 2019 scores. In the final year (2024), there was a gap of 9 percentage points between the treatment and the comparison schools. Treatment schools in 2024 scored below the 2016 preintervention percentage while comparison schools scored 6 points higher than the 2016 percentage. Cohen’s d analysis at the final year of the intervention resulted in a medium to large effect size (-0.723) The negative sign indicates that treatment schools had fewer students proficient in math than comparison schools, and while the results were not statistically significant, they were meaningful.

Figure 8. Middle school math proficiency was statistically higher for comparison students in the two final intervention years.



At the middle school level, treatment year by treatment school was the impact estimate, and the result was not significant (see Table 21). Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant and positive, which indicates a slope significantly different from zero over the pretreatment years. Schools with higher percentage of students with economic disadvantage had more students proficient in math, while schools with higher percentages of minorities and students in larger class sizes had lower percentages of students proficient in math.

Table 21. Math Results for Middle School

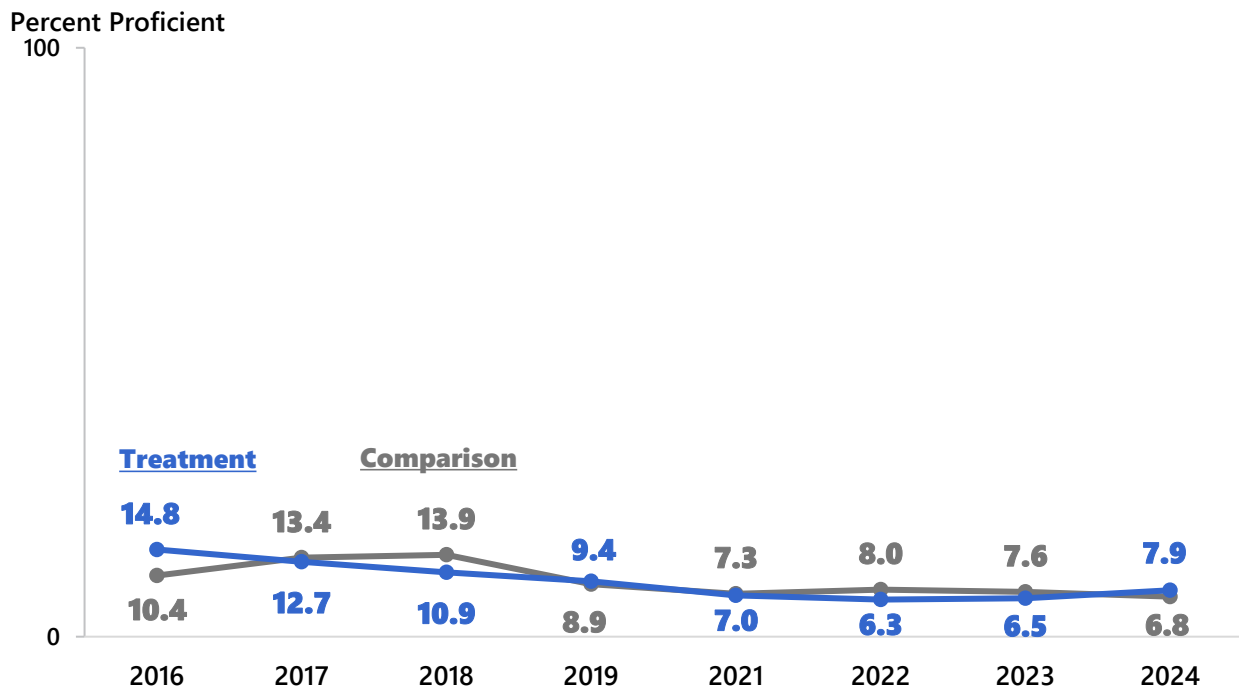
Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.7385	0.0689	10.7122	0.0000***
Treatment school	-0.0840	0.0414	-2.026	0.0563
Treatment year	0.0354	0.0136	2.6065	0.0094**
Time	0.0061	0.0030	-2.0154	0.0444*
Treatment year by treatment school	-0.0078	0.0304	-0.2571	0.7972
Time by treatment status	0.0004	0.0064	0.0677	0.9460
Economic disadvantage	0.1448	0.0450	3.2162	0.0014**
Minority percentage	-0.4546	0.0680	-6.800	0.0000***
Rural	0.0039	1.0350	0.1108	0.9129
Suburb	0.0020	0.0475	0.0424	0.9666
Town	0.0414	0.0446	0.9280	0.3645
Pupil-teacher ratio	-0.0118	0.0021	-5.5774	0.0000***

***p < .001; **p < .01; *p < .05

High school ACT math proficiency scores showed small fluctuations for the comparison group compared to the treatment group (see Figure 9). The treatment group had a steady decline from 2016 to a low in 2022 with slight improvements in the final two years, scoring slightly higher than the comparison schools in the final year. In total, treatment schools lost over eight percentage points with a low in 2022 and ended the grant period with a 7-percentage point loss in 2024. Comparison schools lost just under four percentage points from the earliest 2016 score to the final score in 2024 with a seven-point loss from a high in 2018 to the lowest score in 2024. Post-COVID, college

admissions did not require ACT or SAT test scores, thus perhaps contributing to the lack of growth in proficiency.

Figure 9. High school math proficiency had small effect size differences in the proficiency scores at baseline and the final year with treatment schools outperforming comparison schools.



The high school model showed the fewest significant findings (see Table 22). The treatment year by treatment school variable was the impact estimate and the result was not significant. Only Time was significant, which indicates a slope significantly different from zero over the pretreatment years.

Table 22. Math Results for High School

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	0.099	0.051	1.926	0.0570
Treatment school	-0.014	0.024	-0.588	0.5695
Treatment year	0.006	0.013	0.450	0.6540

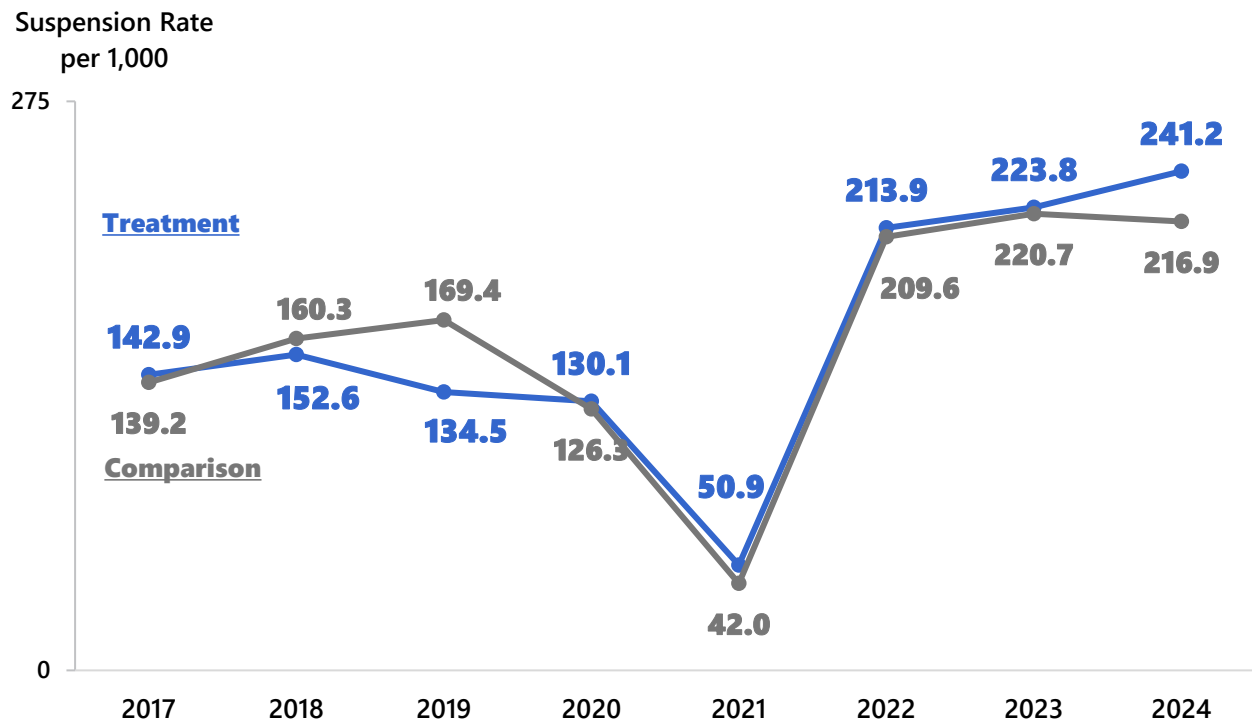
Variable	Beta Value	Standard Error	t-value	p-value
Time	-0.009	0.002	-3.601	0.0005***
Treatment year by treatment school	0.008	.030	0.283	0.7774
Time by treatment status	-0.003	0.005	-0.546	0.5865
Economic disadvantage	-0.000	0.000	-0.148	0.8829
Minority percentage	-0.075	0.043	-1.716	0.0893
Rural	-0.016	0.021	-0.766	0.4616
Suburb	-0.036	0.023	-1.559	0.1500
Town	-0.039	0.030	-1.313	0.2184
Pupil-teacher ratio	0.003	0.002	1.646	0.1030

***p < .001; **p < .01; *p < .05

Study #3. What is the impact of RIPPLE on the count of school-level suspension rates per 1000 students (i.e., overall school total and total referrals for minority subpopulations) of K-12 students after three years of programming compared to “business-as-usual” non-treatment district schools or other NC schools outside of Iredell-Statesville School District?

As seen in Figure 10, the intervention did not have an impact on treatment schools as planned, and suspensions increased substantially over pre-COVID rates.

Figure 10. Treatment schools had greater suspension counts above comparison schools from 2020 through 2024.



The analysis results are presented in Table 23. Treatment year by treatment schools was the impact estimate, and the result was not significant. Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant and negative, which indicates a slope significantly different from zero over the pre-treatment years. Additionally, schools with greater economic disadvantage and greater percentages of minority students had higher suspension rates, as did middle and high schools. Elementary was the reference group for the grade band variable.

Table 23. Short-term Suspension Results

Variable	Beta Value	Standard Error	t-value	p-value
Intercept	-191.359	61.985	-3.087	0.0021**
Treatment school	1.425	35.659	0.040	0.9682
Treatment year	156.381	15.361	10.180	0.0000***

Variable	Beta Value	Standard Error	t-value	p-value
Time	-20.692	3.943	-5.248	0.0000***
Treatment year by treatment school	7.187	33.996	0.211	0.8326
Time by treatment status	3.758	8.613	0.436	0.6627
Economic disadvantage	112.599	46.500	2.421	0.0157*
Minority percentage	270.398	54.954	4.920	0.0000***
Rural	8.581	38.176	0.225	0.8227
Suburb	-3.590	43.143	-0.083	0.9339
Town	13.778	44.795	0.308	0.7591
Pupil-teacher ratio	1.674	2.454	0.682	0.4955
Middle school	174.469	26.863	6.495	0.0000***
High school	95.240	34.342	2.773	0.0067**

***p<.001; **p<.01; *p<.05

To address the exploratory analysis differential numbers of referrals for minority subpopulations the CSITS analysis was conducted with only minority status in the model. The results are shown in Table 24 below. Treatment year by treatment schools was the impact estimate, and the result was not significant. Treatment year was significant, indicating that slope for the comparison group did not stay the same across the pre- and post-intervention years but varied significantly across time. Time was significant and negative, which indicates a slope significantly different from zero across the pretreatment years. Schools with greater percentages of minority students had more suspensions than schools with fewer minorities. The analysis controlled for the influence of school level on the number of suspensions so that minority percentages accounted for a significant amount of school differences in suspension incidents.

Table 24. Short-term Suspension Results by Minority Status

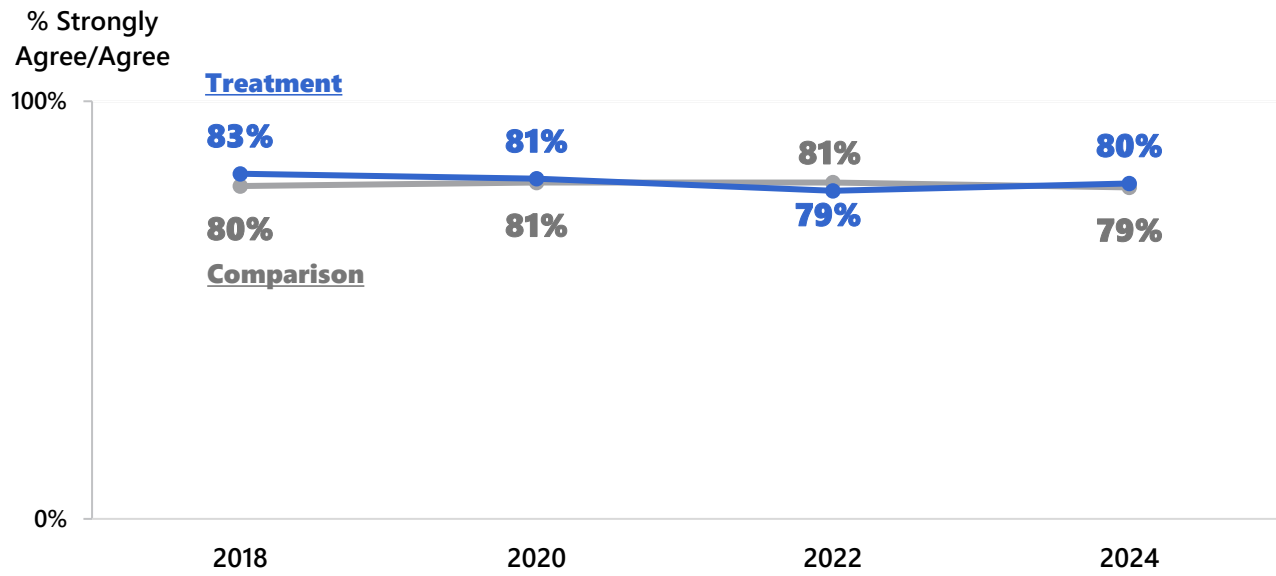
Variable	Beta Value	Standard Error	t-value	p-value
Intercept	-121.44211	29.0587	-4.1792	0.0000***
Treatment school	12.0204	34.8502	0.3449	0.7309
Treatment year	162.8915	15.2132	10.7072	0.0000***
Time	-21.2627	3.8861	-5.4714	0.0000***
Treatment year by treatment school	2.0074	34.0165	0.0590	0.9530
Time by treatment status	3.0215	8.6531	0.3492	0.7271
Minority percentage	309.0000	44.3641	6.9660	0.0000***
Middle school	174.1672	25.8503	6.7375	0.0000***
High school	91.3714	33.2661	2.7467	0.0072**

***p<.001; **p<.01; *p<.05

Study #4. What is the impact of RIPPLE on school climate using the North Carolina Teacher Working Conditions survey after three years of programming compared to “business-as-usual” non-treatment district schools and other NC schools outside of Iredell-Statesville School District?

Figure 11 shows the percentage of teachers who strongly agreed or agreed with each item on the survey, averaging across the entire set of items for each year. As a result of the PSM process, **treatment** teachers TWC composite scores were equal to **comparison** teachers at baseline (2020). Both groups had similar percentages of agreement on the Teacher Working Condition Survey in all years. Teachers in **treatment schools** started and ended with a greater percentage of teachers agreeing or strongly agreeing to the survey items than the **comparison schools**, though this difference was not statistically significant.

Figure 11. Four-year comparison of the Teacher Working Conditions Survey remained higher for teachers in **treatment schools in the first and last years.**



For the analysis of the Teacher Working Conditions Survey, the two intervention surveys from 2022 and 2024 were averaged to serve as the outcome variable. Both 2018 and 2020 were included in the analysis as baseline and pre-intervention measures, along with other covariates to account for any confounding differences in treatment and comparison schools. As noted in Table 25, the 2020 survey was significant, indicating that these survey responses are highly correlated with the outcome measure. Schools with a greater percentage of female students in the school reported more positive responses to the TWC composite score. Both schools located in cities and schools with higher enrollment resulted in small decreases in the outcome score. Overall, there was no statistical difference between teacher survey responses between treatment and comparison schools.

Table 25. Teacher Working Conditions Results

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	0.2679	0.1342	1.9960	0.0487*
Treatment school	-0.0060	0.0204	-0.2928	0.7704
Year 2020	0.3960	0.1024	3.8669	0.0002***
Year2018	0.1813	0.0963	1.8821	0.0632

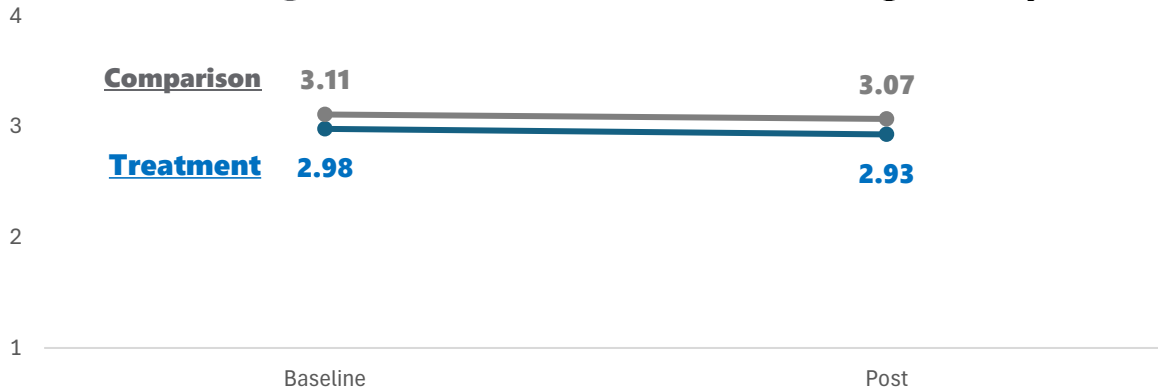
Variable	Impact Estimate	Standard Error	t-value	p-value
Economic disadvantage	-0.0084	0.0007	-1.2717	0.2069
Minority percentage	-0.0084	0.0431	-0.1957	0.8453
Gender female percentage	0.4503	0.2173	2.0726	0.0412*
City	-0.2220	0.0829	-2.6769	0.0087**
Rural	-0.0277	0.0290	-0.9546	0.3425
Suburb	-0.0483	0.0300	-1.6083	0.1114
Town	-0.0527	0.0319	-1.6533	0.1019
Pupil-teacher ratio	-0.0018	0.0045	-0.3984	0.6914
Enrollment	-0.001	0.000	-2.2053	0.0301*
Level2-MS	0.0100	0.0182	0.5488	0.5846
Level3-HS	0.0136	0.0263	0.5178	0.6059

***p<.001; **p<.01; *p<.05

Study #5: What is the impact of RIPPLE on the student-level social-emotional development of 5th, 8th, 11th grade students after three years of programming compared to students at “business-as-usual”, non-treatment district schools?

Students in treatment and comparison district schools completed a social-emotional learning (SEL) survey beginning in 3rd, 6th, and 9th grades with post-assessment occurring when students were ending 5th, 8th, and 11th grades. Figure 12 reports the overall composite mean score of the four scales of items.

Figure 12. Comparison students reported higher SEL scores; however, both treatment and comparison students decreased their responses by the end.



In our QED analysis, gender and minority were both significant for the SEL composite scale across all grade levels combined (see Table 26). Males had slightly higher self-reported SEL scores than females. Racial non-minorities had slightly higher self-reported SEL scores when compared to minorities.

Table 26. Model Results for SEL Scales Across All Grades

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	2.8846	1.0264	2.8103	0.0050**
Treatment school	0.02146	0.2572	0.0834	0.9342
Pretest	0.1327	0.2562	0.5181	0.6044
Level high	-0.2155	0.5177	-0.4163	0.6806
Level middle	-0.3077	0.1672	-1.8407	0.0771
Gender male	0.0654	0.0235	2.7835	0.0054**

Race non-minority	0.0976	0.0413	2.3643	0.0181*
Students with a disability	-0.0154	0.0284	-0.5425	0.5921

***p<.001; **p<.01; *p<.05

Table 27 compares the means and standard deviations for the elementary school students survey responses from the baseline survey in fall 2021. Students were in 3rd grade in the fall at the time of the first administration and in 5th grade for the final survey given spring 2024. Means from the comparison group were higher than those of the treatment group. This indicates that the comparison group had higher self-reported SEL across the four scales.

Table 27. Elementary Mean Scores and Standard Deviations of SEL Scales

Scale	Treatment Mean (Standard Deviation)	Sample Size	Comparison Mean (Standard Deviation)	Sample Size
Emotion Regulation	2.71 (0.70)	656	3.02 (0.61)	416
Social Awareness	2.97 (0.61)	656	3.17 (0.53)	416
Teacher Relationships	3.30 (0.78)	656	3.49 (0.65)	416
Sense of Belonging	2.79 (0.82)	656	3.05 (0.71)	416

Separate analyses by grade band and by each of the four scales found differences in the scales of the SEL survey. Cohen’s d effect size is also provided to highlight the difference between treatment and comparison students.

Treatment condition and all covariates were not significant for Emotion Regulation at the elementary level (see Table 28). While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.46 which is almost a medium effect size.

Table 28. Results of SEL Elementary Emotion Regulation

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	6.9369	7.7327	0.8971	0.3699
Treatment school	-0.4276	0.3694	-1.1574	0.2652
Pretest	-1.2884	2.4853	-0.5184	0.6043
Male	0.0390	0.0528	0.7394	0.4598
Race non-minority	0.1993	0.2686	0.7421	0.4582

***p < .001; **p < .01; *p < .05

Treatment condition and all covariates were not significant for Social Awareness at the elementary level (see Table 29). While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen's d effect size for the differences between treatment and comparison is 0.34 which is a small effect.

Table 29. Results of Elementary Social Awareness

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	0.5233	6.6510	0.0787	0.9373
Treatment school	0.0041	0.3218	0.0129	0.9899
Pretest	0.8382	2.1376	0.3921	0.6950
Gender Male	-0.0867	0.0454	-1.9089	0.0565
Race non-minority	-0.0078	0.2311	-0.0337	0.9731

***p < .001; **p < .01; *p < .05

Treatment condition and all covariates were not significant for Teacher Relationships at the elementary level (see Table 30). While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey.

Cohen’s d effect size for the differences between treatment and comparison is 0.26 which is a small effect.

Table 30. Results of Elementary Teacher Relationships

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	15.0138	8.3392	1.8004	0.0721
Treatment school	-0.6269	0.4067	-1.5412	0.1441
Pretest	-3.7392	2.6802	-1.3951	0.1633
Gender male	-0.1196	0.0569	-2.1007	0.0359
Race non-minority	0.5612	0.2898	1.9366	0.0531

Treatment condition and all covariates were not significant for Sense of Belonging at the elementary level (see Table 31). While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.35 which is a small effect.

Table 31. Results of Elementary Sense of Belonging

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	0.0457	8.7725	0.0052	0.9958
Treatment school	0.0012	0.4352	0.0028	0.9978
Pretest	0.9112	2.8193	0.3232	0.7466
Gender male	0.1236	0.0599	2.0650	0.0392*
Race non-minority	-0.0102	0.3049	-0.0335	0.9733

***p < .001; **p < .01; *p < .05

Table 32 compares the means and standard deviations for the middle school students survey responses from the baseline survey in fall 2021. Students were in 6th grade in the fall at the time of the first administration and in 8th grade for the final survey given spring 2024. Means from the comparison group were higher than those of the treatment group. This indicates that the comparison group had higher self-reported SEL across the four scales.

Table 32. Middle School Means and Standard Deviations for Subscales

Scale	Treatment Mean (Standard Deviation)	Sample Size	Comparison Mean (Standard Deviation)	Sample Size
Emotion Regulation	2.83 (0.63)	516	2.99 (0.61)	555
Social Awareness	2.87 (0.63)	516	3.11 (0.61)	555
Teacher Relationships	2.87 (0.79)	516	2.93 (0.79)	555
Sense of Belonging	2.47 (0.81)	516	2.78 (0.77)	555

Treatment condition was not significant for the Emotion Regulation at the middle school level. Gender was significant with a positive beta coefficient. This means that males had more positive survey responses on the Emotional Regulation scale than females did. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.25 which is a small effect.

Table 33. Results of Middle Emotion Regulation

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	-0.9353	2.5715	-0.3637	0.7161
Treatment school	0.0112	0.1633	0.0686	0.9472
Pretest	1.2501	0.8487	1.4730	0.1411
Gender male	0.2090	0.0367	5.6982	0.0000***

Race non-minority	-0.1458	0.1539	-0.9469	0.3439
Intercept	-0.9353	2.5715	-0.3637	0.7161

***p < .001; **p < .01; *p < .05

Treatment condition was not significant for Social Awareness at the middle school level. Gender was significant with a negative beta coefficient. This means that males had fewer positive survey responses on the Social Awareness scale than females did. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen's d effect size for the differences between treatment and comparison is 0.39 which is a small to medium effect.

Table 34. Results of Middle Social Awareness

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	-1.4880	2.5841	-0.5758	0.5649
Treatment school	0.0101	0.1477	0.0686	0.9473
Pretest	1.5147	0.8531	1.7756	0.0761
Gender male	-0.1954	0.0369	-5.2941	0.0000***
Race non-minority	-0.1061	0.1549	-0.6850	0.4935

***p < .001; **p < .01; *p < .05

Treatment condition was not significant for Teacher Relationships at the middle school level. Gender was significant with a positive beta coefficient. This means that males had more positive survey responses on the Teacher Relationships scale than females did. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen's d effect size for the differences between treatment and comparison is 0.08 which was negligible.

Table 35. Results of Middle School Teacher Relationships

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	5.7292	3.3612	1.7045	0.0886

Variable	Impact Estimate	Standard Error	t-value	p-value
Treatment school	-0.1932	0.1826	-1.0577	0.3253
Pretest	-0.9795	1.1098	-0.8826	0.3777
Gender male	0.1109	0.0481	2.3075	0.0212*
Race non-minority	0.3570	0.2018	1.7689	0.0772

Treatment condition was not significant for Sense of Belonging at the middle school level. Gender was significant with a positive beta coefficient. This means that males had more positive survey responses on the Sense of Belonging scale than females did. Cohen's d effect size for the differences between treatment and comparison is 0.38 which is a small to medium effect. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey.

Table 36. Results of Middle Sense of Belonging

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	1.0673	3.2710	0.3263	0.7443
Treatment school	-0.2738	0.2153	-1.2714	0.2442
Pretest	0.5002	1.0794	0.4633	0.6432
Gender male	0.2745	0.0466	5.8206	0.0000***
Race non-minority	0.0546	0.1958	0.2791	0.7802

***p < .001; **p < .01; *p < .05

Table 37 compares the means and standard deviations for the high school students survey responses from the baseline survey in fall 2021. Students were in 9th grade in the fall at the time of the first administration and in 11th grade for the final survey given spring 2024. Means from the comparison group were higher than those of the treatment group. This indicates that the comparison group had higher self-reported SEL across the four scales.

Table 37. High School Means and Standard Deviations for SEL Scales

Scale	Treatment Mean (Standard Deviation)	n-size	Comparison Mean (Standard Deviation)	n-size
Emotion Regulation	3.12 (0.64)	623	3.14 (0.61)	461
Social Awareness	3.16 (0.61)	623	3.26 (0.58)	461
Teacher Relationships	3.19 (0.77)	623	3.26 (0.77)	461
Sense of Belonging	2.81 (0.85)	623	2.84 (0.81)	461

Treatment condition and all covariates were not significant for Emotion Regulation at the high school level. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.03 which was negligible.

Table 38. Results of High School Emotion Regulation

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	3.1947	2.3927	1.3352	0.1821
Treatment school	0.0033	1.1054	0.0317	0.9767
Pretest	-0.0758	0.8316	-0.0912	0.9274
Gender male	0.1971	0.1181	1.6687	0.0955
Race non-minority	0.1126	0.1045	1.0775	0.2815

***p < .001; **p < .01; *p < .05

Treatment condition was not significant for Social Awareness at the high school level. Race was significant with a positive beta coefficient. This means that non-minorities had more positive survey responses on the Social Awareness scale than minorities did. While the treatment effect was not significant, this was likely due to the lack of variability

inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.18 which is a small effect.

Table 39. Results of High School Social Awareness

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	3.8204	2.2540	1.6949	0.0904
Treatment school	-0.0725	0.0878	-0.8258	0.4695
Pretest	-0.2067	0.7835	-0.2638	0.7920
Gender male	-0.1506	0.1113	-1.3534	0.1762
Race non-minority	0.2019	0.0983	2.0533	0.0403*

***p < .001; **p < .01; *p < .05

Treatment condition and all covariates were not significant for Teacher Relationships at the high school level. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.09 which was negligible.

Table 40. Results of High School Teacher Relationships

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	4.6557	2.9636	1.5710	0.1165
Treatment school	-0.0454	0.0761	-0.5972	0.5925
Pretest	-0.5286	1.0301	-0.5132	0.6079
Gender male	0.1442	0.1464	0.9848	0.3249
Race non-minority	0.1689	0.1281	1.3189	0.1875

***p < .001; **p < .01; *p < .05

Treatment condition was not significant for Sense of Belonging at the high school level. Gender was significant with a positive beta coefficient. This means that males had more positive survey responses on the Sense of Belonging scale than females did. While the treatment effect was not significant, this was likely due to the lack of variability inherent in the 4-pt Likert scale of the survey. Cohen’s d effect size for the differences between treatment and comparison is 0.04 which was negligible.

Table 41. Results of High School Sense of Belonging

Variable	Impact Estimate	Standard Error	t-value	p-value
Intercept	2.4894	3.1832	0.7820	0.4344
Treatment school	0.0127	0.1132	0.1123	0.9177
Pretest	0.0644	1.1065	0.0582	0.9536
Gender male	0.1332	0.1572	0.8476	0.3968
Race non-minority	0.1293	0.1387	0.9326	0.3513

***p < .001; **p < .01; *p < .05

3.2 Implementation Study Findings

Implementation question 1. To what extent was RIPPLE implemented with fidelity? The fidelity index had three components: 1) MTSS and Project Team consisting of meetings, 2) MTSS Services consisting of Tier 2 or 3 services, and 3) Teacher Services consisting of coaching sessions. Table 42 shows the three years of implementation and whether the program met fidelity for each component. Each component contained multiple indicators with minimum thresholds for determining “adequate” fidelity. For each program component, fidelity scores were computed to provide a comprehensive assessment of the implementation. Adequate fidelity was achieved in all years on all components. Detailed fidelity scoring is shown in Appendix B.

Table 42. Fidelity Index Scores During Treatment Years

Component	Year 3 Fidelity Threshold	Year 4 Fidelity Threshold	Year 5 Fidelity Threshold
MTSS and Project Team	100% High	100% High	100% High
MTSS Tier 2 or 3 Services	100% High	92% High	92% High
Teacher Services	100% High	100% High	100% High
Overall	100% High	97% High	97% High

Implementation question 2. What program components are most suitable for replication in other settings? Most districts utilize a Multi-tiered System of Support (MTSS), thus student programs such as Check-in, Check-out, Check and Connect, and Behavior Intervention Plans are readily used as in RIPPLE. Programs such as Second Step, Too Good for Drugs and Violence, Morning Meetings, Restorative Justice, Strengthening Families, and professional development for Youth Mental Health First Aid and Trauma-Informed Care can all be purchased and replicated in other settings. Finally, the use of behavioral specialists, social workers, and clinicians can be replicated to provide individual counseling and support to students.

Google sheets can be developed by other districts to track student interventions and outcomes. Using data to inform decisions is a hallmark of MTSS, so using tools that reflect district priorities and services can be informative and provide data to secure funding from federal, state, local, nonprofit, or foundation agencies.

Implementation question 3. What are the strengths of and barriers to implementation? Strengths. The project director and evaluator completed the six years together increasing the ability to collect and analyze data without restarting relationships and gaining buy-in.

The district used Google for Education, thus data collection tools created by the project director were shared to the evaluator ensuring data privacy, protection, and allowing the district to maintain ownership of the data collection tools. This data arrangement benefited both district staff for data entry and the evaluator to access data for reporting and analyses.

Barriers. During the first two years of the grant, the COVID-19 pandemic prevented in-person professional development and Safe School Ambassador training for students resulting in a delayed start to the program. Additionally, the missing end-of-grade test data in spring 2020 meant that the spring 2021 data needed to be used as the final

baseline year for the CSITS analysis, thus full implementation could not start until the 2021-22 school year.

Resignations of behavioral specialists, clinicians, or social workers resulted in changes for the Tier 2 and Tier 3 students assigned clinician, wait lists when available clinician workloads were at capacity, and the need to repeat professional development for new staff.

4. DISCUSSION

Through RIPPLE, program staff provided curricula support, one-on-one relationships, and school-based behavioral staff to meet the needs of Tier 2 and Tier 3 students. While many of these programs and behavioral staff have been embedded in the district after the conclusion of the grant, the grant fell short in the expected outcome changes. While the COVID-19 pandemic affected professional development training and delayed the start of the grant an additional year to allow for baseline data for the academic outcomes, the changes to student behaviors and academic outcomes were notably worse than in the years prior to the pandemic. However, even when grant programming goes as planned, changes to academic achievement and discipline can require multiple years of intensive interventions to observe positive improvements.

The overall math outcome was statistically significant; however, the result was in a negative direction from the expected outcome with the treatment group having fewer students proficient in math. Statistical significance of individual covariates identified in each analysis for all students and by each grade band confirm trends found in the literature pertaining to, minority percentage (higher percentage minority schools had lower proficiency percentages), rural or town locales (lower proficiency percentages), pupil-teacher ratios (schools with larger classes had lower proficiency levels), and grade bands (elementary schools had the highest proficiency percentages). Interestingly for both ELA and math schools with more economically disadvantaged students had higher percent proficient.

For short-term suspension rates schools with more economically disadvantaged students had higher suspension rates, as did schools with more minority students. Middle and high schools also had a higher number of suspension incidents. The separate analysis examining just minority percentages at the schools had highly significant results for more suspension incidents.

Results of the analysis of the North Carolina Teacher Working Conditions Survey found no statistically significant difference between teachers in treatment and comparison schools. The percentage of agreement with the survey items remained stable for the four measurement periods. Regression analyses found that survey results were more positive when there was a higher percentage of girls in the school. Survey results were less positive when teachers were in cities and when they had higher class sizes.

There were no statistically significant differences between treatment and comparison schools in the analysis for the student social-emotional learning survey. At the elementary school level, males had lower SEL scores on the Teacher Relationships scale and higher SEL scores on the Sense of Belonging scale. At the middle school level, males had higher SEL scores on the Emotional Regulation, Teacher Relationships, and Sense of Belonging scales. Males had lower SEL scores on the Social Awareness scale. Finally, at the high school level, non-minorities had higher SEL scores on the Social Awareness scale and males had higher SEL scores on the Sense of Belonging scale.

The implementation analysis found that the project was implemented with a high degree of fidelity in all three years. There were several strengths in the project pertaining to a sustained relationship between the project director and evaluator through all years and data collection tools owned and understood by the district clinicians thus allowing for sustainability. Challenges include delays to professional development and the need for final baseline data from spring 2021 limiting our implementation to three years rather than the four years planned.

Even in the best educational experiences, improvements to academic achievement and improved behavior take considerable time to occur after an intervention. As all schools noticed significant impacts after the pandemic, delays in training and implementation of programs, resignations of mental health specialists, program staff worked hard to make lasting changes in school climate, social-emotional skills, and academic achievement for all students. Elementary students scored closer to pre-pandemic proficiency while middle school and high school students struggled to regain proficiency levels. As noted in the analysis, colleges and universities waived standardized test scores as testing sites closed, and study programs were unavailable during this time. The waiver of test scores for college applications likely reduced the motivation of high school students to perform to their highest capability on the ACT as noted by the low proficiency.

Overall, the program successfully implemented curricula, supportive relationships, and provided mental health specialists to work with Tier 2 and 3 students. The district sustained many of these programs through local funds and continued implementation.

REFERENCES

- American Institutes for Research. (2015). *Implementing a Trauma-Informed Approach for Youth Across Service Sectors*. Retrieved from American Institutes for Research: <https://www.air.org/sites/default/files/downloads/report/Trauma-Informed-Approach-for-Youth-Across-Service-Sectors-May-2015.pdf>
- American Psychological Association. (2017). *Stress in America: The State of our Nation*. Retrieved from American Psychological Association: <http://www.apa.org/news/press/releases/stress/2017/state-nation.pdf>
- Anderson, E. M., Blitz, L. V., & Saastamoinen, M. (2015). Exploring a school-university model for professional development with classroom staff: Teaching trauma-informed approaches. *School Community Journal*, 25(2), 113-134. Retrieved from <http://www.schoolcommunitynetwork.org/SCJ.aspx>
- Averill, O. H., & Rinaldi, C. (2017). *Research Brief: Multi-Tiered System of Supports (MTSS)*. Waltham, MA: Urban Collective.
- Blitz, L. V., & Lee, Y. (2015). Trauma-informed methods to enhance school-based bullying prevention initiatives: An emerging model. *Journal of Aggression, Maltreatment & Trauma*, 24(1), 20-40. <https://doi.org/10.1080/10926771.2015.982238>
- Child Mind Institute. (2015). *Mental health disorders are the most common disease of childhood*. New York, NY: Child Mind Institute.
- Comas-Diaz, L. (2016). Racial trauma recovery: A race-informed therapeutic approach to racial wounds. In American Psychological Association, *The cost of racism for people of color: Contextualizing experiences of discrimination* (pp. 249-272). Washington, DC: American Psychological Association.
- Flippen Group. (2017). *Solutions for Educators: Capturing Kids' Hearts*. Retrieved from Flippen Group: <http://flippengroup.com/education/capturing-kids-hearts-1/>
- Garcia, E. (2014, December 2). The need to address noncognitive skills in the education policy agenda. *EPI Briefing Paper* (386). Retrieved from <http://s3.epi.org/files/2014/the-need-to-address-noncognitive-skills-12-02-2014.pdf>
- Gaylor, E. M., Krause, K. H., Welder, L. E., Cooper, A. C., Ashley, C., Mack, K. A., Crosby, A. E., Trinh, E., Ivey-Stephenson, A. Z., & Whittle, L. (2023). Suicidal Thoughts and Behaviors Among High School Students - Youth Risk Behavior Survey, United States, 2021. *MMWR supplements*, 72(1), 45-54. <https://doi.org/10.15585/mmwr.su7201a6>
- Gregory, A., Clawson, K., Davis, A., & Gerewitz, J. (2016). The Promise of Restorative Practices to Transform Teacher-Student Relationships and Achieve Equity in School Discipline.

Journal of Educational and Psychological Consultation, 26(4), pp. 325-353.
<http://dx.doi.org/10.1080/10474412.2014.929950>

Holtzapple, Grizwold, Cirillo, Rosebrock, Nouza, & Berry. (2016). *Effectiveness of Capturing Kids' Hearts Process. Research Summary of the 2008-2009 Randomized Controlled Trial*. College Station, TX: Flippen Education Research.

Horner, R. H., Sugai, G., & Lewis, T. (2015). *Is School-wide Positive Behavior Support An Evidenced-Based Practice?* Retrieved from Positive Behavioral Interventions & Supports OSEP Technical Assistance Center: <https://www.pbis.org/research>

Horowitz, J. M., & Graff, N. (2019, February 20). *Most U.S. Teens See Anxiety and Depression as a Major Problem Among Their Peers*. Retrieved from Pew Research Center Social & Demographic Trends: <http://www.pewsocialtrends.org/2019/02/20/most-u-s-teens-see-anxiety-and-depression-as-a-major-problem-among-their-peers/>

Iredell-Statesville Schools. (2019a). *Administrative Records*. Statesville, NC: Iredell-Statesville Schools.

Iredell-Statesville Schools. (2019b). *2017-2018 ISS and OSS Incidents and Days Mid-Year Report*. Statesville, NC: Iredell-Statesville Schools.

Iredell-Statesville Schools. (2018). *Statistical data: Administrative records*. Statesville, NC: Iredell-Statesville Schools.

Iredell-Statesville Schools. (2019c). *Free- and reduced-lunch rates: Administrative records*. Statesville, NC: Iredell-Statesville Schools.

Jaycox, L. H., Langley, A. K., Stein, B. D., Wong, M., Sharma, P., Scott, M., & Schonlau, M. (2009). Support for students exposed to trauma: A pilot study. *School Mental Health*, 1(2), 49-60. <https://doi.org/10.1007/s12310-009-9007-8>

Leenarts, L. W., Diehle, J., Doreleijers, T. H., Jansma, E. P., & Lindauer, R. J. (2013). Evidence-based treatments for children with trauma-related psychopathology as a result of childhood maltreatment: a systematic review. *European Child & Adolescent Psychiatry*, 22(5), 269-283.

McInerney, M., & McKlindon, A. (2014). *Unlocking the Door to Learning: Trauma-Informed Classrooms & Transformational Schools*. Washington, DC: Education Law Center.

McLaughlin, K. (2017, April). The long shadow of adverse childhood experiences. *Psychological Science Agenda*. Retrieved from American Psychological Association: <http://www.apa.org/science/about/psa/2017/04/adverse-childhood.aspx>

Merikangas, K., He, J., Burstein, M., Swanson, S., Avenevoli, S., Cui, L., . . . Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: results from the National

- Cormobidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of American Academy of Child and Adolescent Psychiatry*, 49(10), 980-989.
<https://doi.org/10.1016/j.jaac.2010.05.017>
- National Association of Social Workers. (2012). *NASW Standards for School Social Work Services*. Retrieved from National Association of Social Workers:
<https://www.socialworkers.org/LinkClick.aspx?fileticket=1Ze4-9-Os7E%3d&portalid=0>
- National Child Traumatic Stress Network. (2017). *Addressing Race and Trauma in the Classroom: A Resource for Educators*. Los Angeles, CA and Durham, NC: National Center for Child Traumatic Stress.
- National Child Traumatic Stress Network. (2019). *Trauma-Focused Cognitive Behavioral Therapy*. Retrieved from National Child Traumatic Stress Network:
<https://www.nctsn.org/interventions/trauma-focused-cognitive-behavioral-therapy>
- NC Child. (2025). <https://ncchild.org/wp-content/uploads/2025/04/16-pg-2025-Child-Health-Report-Card-1.pdf>
- North Carolina Department of Public Health. (2022). Prepared by NC DHHS/Division of Public Health/State Center for Health Statistics. Retrieved from
<https://schs.dph.ncdhhs.gov/data/vital.cfm>
- O’Conner, R., De Feyter, J., Carr, A., Luo, J. L., Romm, H., & International, I. (2017). *A review of the literature on social and emotional learning for students ages 3–8: Characteristics of effective social and emotional learning programs*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic.
- OSEP. (2017). *Functional Behavior Support Plan (F-BSP)*. Retrieved from Positive Behavioral Interventions & Supports OSEP Technical Assistance Center:
<https://www.pbis.org/resource/247/functional-behavior-support-plan-f-bsp>
- Pathways. (2018). *Group Noticing Routines*. Retrieved from Pathways: <https://cssp.org/wp-content/uploads/2018/08/Carnegie-Math-Pathways.pdf>
- Rosen, J. A., Glennie, E. J., Dalton, B., Lennon, J. M., & Bozick, R. N. (2010). *Noncognitive Skills in the Classroom: New Perspectives on Educational Research*. Research Triangle Park, NC: RTI Press. Retrieved from
http://www.rti.org/pubs/rtipress/rosen/chapter4_self-regulated_learning.pdf
- SAMHSA. (2016). *National Registry of Evidenced-Based Programs and Practices*. Washington, DC: Substance Abuse and Mental Health Services Administration.

- Schrobsdorff, S. (2016, Oct 27). Teen depression and anxiety: Why the kids are not alright. *Time*. Retrieved from <http://time.com/4547322/american-teens-anxious-depressed-overwhelmed/>
- The Evaluation Group. (2014). *FLIGHT: Report on i3 Implementation and Impact in Year 3*. Retrieved from The Evaluation Group: <http://www.grant-documents.com/year-3-flight-i3>
- U.S. Department of Education, Institute of Education Sciences. (2016, December). *Children Identified With or At Risk for an Emotional Disturbance topic area intervention report: Functional Behavioral Assessment-based Interventions*. Retrieved from What Works Clearinghouse: https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_fba_011017.pdf
- U.S. Department of Education. (2016). *The State of Racial Diversity in the Educator Workforce*. Retrieved from US Department of Education: <https://www2.ed.gov/rschstat/eval/highered/racial-diversity/state-racial-diversity-workforce.pdf>
- Watchel, T. (2015, July 29). *What is restorative practices?* Retrieved from International Institute for Restorative Practices: <http://www.iirp.edu/what-is-restorative-practices.php>
- What Works Clearinghouse. (2022). *What Works Clearinghouse procedures and standards handbook, version 5.0*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. Retrieved from <https://ies.ed.gov/ncee/wwc/Handbooks>
- White, A., Raczynski, K., Pack, C., & Wang, A. (2011). *The Safe School Ambassadors® Program: A Student Led Approach to Reducing Mistreatment and Bullying in Schools*. Retrieved from Community Matters: <http://community-matters.org/downloads/EvaluationReportSSA2011ExSum.pdf>

Appendix A

Treatment and Comparison School Lists

Outcome	RIPPLE Schools	Comparison Schools
Elementary Level ELA Grades 3-5	(N=12): Celeste Henkel, Central, Cloverleaf, Cool Spring, East, Harmony, N. B. Mills, Scotts, Sharon, Third Creek, Troutman, Union Grove	(N=48): Scroggs (Chapel Hill City); Virginia Cross (Chatham); Chadbourne (Columbus); E. E. Miller (Cumberland); Central (Currituck); Hasty (Davidson); Shady Grove (Davie); Easley, R. N. Harris, Spring Valley (Durham); Konnoak (Winston-Salem/Forsyth); Franklinton (Franklin); Edward D. Sadler Jr., W. A. Bess (Gaston); Alamance, Jamestown, Northwood, Parkview Village, Pilot, Rankin, Shadybrook, Southwest, Sternberger, (Guilford); Clyde (Haywood); Upchurch (Hoke); Pleasant Gardens (McDowell); Lake Wylie, Lawrence Orr (Charlotte-Mecklenberg); Benevenue, M. B. Hubbard (Nash); Edwin A. Alderman, Edwin A. Anderson, Winter Park Model (New Hanover); Northwoods, Queens Creek, Richlands (Onslow); Belvoir (Pitt); L. J. Bell, Mineral Springs (Richmond); Plain View (Sampson); East Albermarle (Stanly); Poplar Springs (Stokes); Fairview, Sardis (Union); Brentwood, Wakefield (Wake); New Hope (Wilson); Burnsville (Yancey)
Elementary Level Math Grades 3-5	(N=12): Celeste Henkel, Central, Cloverleaf, Cool Spring, East, Harmony, N. B. Mills, Scotts, Sharon, Third Creek, Troutman, Union Grove	(N=48): Scroggs (Chapel Hill City); Murphy (Cherokee); Township Three (Cleveland); Davis-Townsend, Southwood (Davidson); George Watts (Durham); Bolton, Griffith (Winston-Salem/Forsyth); Belmont Central, Costner, Edward D. Sadler Jr., Ida Rankin, Pinewood (Gaston); West Oxford (Granville); George C. Simkins Jr., Irving Park, James Y. Joyner, Julius I. Foust, Kirkman Park, Rankin (Guilford); Bethel (Haywood); Bruce Drysdale (Henderson); Oakwood (Hickory City); Southwest (Lexington City); Beverly Woods, Hawk Ridge, Selwyn (Charlotte-Mecklenberg); Pinehurst, Vass-Lakeview (Moore); Heyward C. Bellamy (New Hanover); Blue Creek, Summersill (Onslow); Rocky Point (Pender); Liberty (Randolph); Bostian, China Grove, Knollwood (Rowan-

Outcome	RIPPLE Schools	Comparison Schools
		Salisbury); Harris (Rutherford); Franklin, Shoals (Surry); Indian Trail (Union); Baileywick, (Wake); Fremont STARS (Wayne); C. B. Eller, Millers Creek, Mount Pleasant, Ronda-Clingman (Wilkes); New Hope (Wilson)
Middle Level ELA Grades 6-8	(N=5): East, North, Third Creek, Troutman, West	(N=20): Luther Nick Jeralds (Cumberland); Tyro (Davidson); Mineral Springs (Winston-Salem/Forsyth); Northeast (Guilford); Overhills, Western Overhills (Harnett); Sandy Grove (Hoke); Rochelle (Lenoir); East McDowell (McDowell); Kennedy, Martin Luther King Jr., Thomasboro Academy (Charlotte-Mecklenberg); Cape Fear (Pender); Northeastern Randolph, Randleman, Southwestern, Uwharrie (Randolph); Saint Pauls (Robeson); Swain County (Swain); Warren County (Warren)
Middle Level Math Grades 6-8	(N=5): East, North, Third Creek, Troutman, West	(N=20): Phillips (Edgecombe); Franklinton (Franklin); Bessemer City (Gaston); Mendenhall (Guilford); Highland, Western Harnett (Harnett); East Hoke (Hoke); Four Oaks (Johnston); Rochelle, Woodington (Lenoir); East (Montgomery); J. W. Parker, Rocky Mount (Nash); Northwoods Park (Onslow); C. M. Eppes, E. B. Aycock (Pitt); Northeastern Randolph, Randleman (Randolph); Carroll, Zebulon (Wake)
High Level ACT English and Reading Grade 11	(N=3): North, Statesville, West	(N=12): Hugh M. Cummings (Alamance); Anson (Anson); Bartlett Yancey (Caswell); Greene Central (Greene); Lexington Senior (Lexington City); Heide Trask (Pender); South Rowan (Rowan-Salisbury); Columbia (Tyrrell); Vance County (Vance); Knightdale (Wake); Eastern Wayne, Southern Wayne (Wayne)
High Level ACT Math Grade 11	(N=3): North, Statesville, West	(N=12): Anson (Anson); Southside (Beaufort); South Columbus (Columbus); West Craven (Craven); Southwest Edgecombe (Edgecombe); J. F. Kennedy, Robert B. Glenn, Walkertown (Winston-Salem/Forsyth); Bessemer City (Gaston); Overhills (Harnett); Montgomery Central (Montgomery) Eastern Wayne (Wayne)
Short-term suspensions	(N=12): Celeste Henkel, Central, Cloverleaf, Cool	Elementary (N=48): Forest Hill, Hillcrest (Burke); South (Caswell); Perry W. Harrison (Chatham); Township Three, Union

Outcome	RIPPLE Schools	Comparison Schools
	<p>Spring, East, Harmony, N. B. Mills, Scotts, Sharon, Third Creek, Troutman, Union Grove</p> <p>(N=5): East, North, Third Creek, Troutman, West</p> <p>(N=3): North, Statesville, West</p>	<p>(Cleveland); Chadbourn, Hallsboro-Artesia (Columbus), Roger Bell New Tech Academy (Craven); Alma O. Easom (Cumberland); Central, Shawboro (Currituck); Brier Creek (Davidson); Pinebrook (Davie); G. W. Bullock (Edgecombe); Edward D. Sadler Jr., W. A. Bess (Gaston); Bessemer, Fairview, John Van Lindley (Guilford); Lillington-Shawtown (Harnett); Sugarloaf (Henderson); East Clayton (Johnston); Forest Park (Kannapolis City); Iron Station, Union (Lincoln); Central (Northampton); Bell Fork (Onslow); Central (Orange); Penderlea (Pender); South (Person); Sunny View (Polk); Mineral Springs (Richmond); Central, Monroeton (Rockingham); Dole, Granite Quarry (Rowan-Salisbury); Aquadale, Endy (Stanly); Rosman (Transylvania); Benton Heights, Fairview, Stallings, Union, Western Union (Union); Clarke (Vance); Brier Creek (Wake); Brunson (Winston-Salem/Forysth)</p> <p>Middle (N=20): Table Rock, Walter R. Johnson (Burke); Burns, Shelby (Cleveland); Grover C. Fields (Craven); Ledford (Davidson); Chowan (Edenton-Chowan); Holbrook (Gaston); Apple Valley, Hendersonville (Henderson); Woodland Heights (Iredell-Statesville); Lincolnton (Lincoln); Southern (Moore); Southern (Person); Central (Surry); East Union, Monroe (Union); Dillard (Wayne); Central (Whiteville City); Haynes Magnet (Winston-Salem/Forsyth)</p> <p>High (N=12): Hibriten (Caldwell); Bandys (Catawba); South Columbus (Columbus); Madison (Madison); McDowell (McDowell); Mount Airy (Mount Airy City); Polk County (Polk); South Rowan (Rowan-Salisbury); Rosman (Transylvania); Monroe, Sun Valley (Union); Spring Creek (Wayne)</p>
Teacher Working Conditions Survey	(N=12): Celeste Henkel, Central, Cloverleaf, Cool Spring, East, Harmony, N. B.	Alexander Wilson, Elon (Alamance-Burlington); Hiddenite, Taylorsville (Alexander); Newland (Avery); Union (Brunswick); Fairview (Buncombe); Beverly Hills, Carl A. Furr (Cabarrus); Harkers Island

Outcome	RIPPLE Schools	Comparison Schools
	<p>Mills, Scotts, Sharon, Third Creek, Troutman, Union Grove</p> <p>(N=5): East, North, Third Creek, Troutman, West</p> <p>(N=3): North, Statesville, West</p>	<p>(Carteret); Balls Creek, Blackburn, Webb A. Murray (Catawba); Township Three, Union (Cleveland); Chadbourn, Hallsboro-Artesia, Tabor City (Columbus); Brinson Memorial (Craven); Central, Jarvisburg, Shawboro (Currituck); Brier Creek (Davidson); Pinebrook (Davie); Catawba Heights, Cherryville (Gaston); Bessemer, Fairview (Guilford); Lillington-Shawtown (Harnett); Sugarloaf (Henderson); East Clayton, Princeton (Johnston); North Brook, S. Ray Lowder, Union (Lincoln); Bell Fork (Onslow); South (Person); Deep Branch (Robeson); Central, Monroeton (Rockingham); Granite Quarry (Rowan-Salisbury); Endy (Stanly); Rosman (Transylvania); Benton Heights, Fairview, Stallings, Western Union (Union); Brier Creek (Wake)</p> <p>(N=20): Table Rock, Walter R. Johnson (Burke); Maiden (Catawba); Burns, Shelby (Cleveland); South View, Spring Lake (Cumberland); Ledford (Davidson); South Edgecombe (Edgecombe); Coats-Erwin, Harnett Central, Highland (Harnett); Woodland Heights (Iredell-Statesville); North Johnston (Johnston); West Lincoln (Lincoln); Orrum (Robeson); East Union (Union); Dillard, Mount Olive, Roesewood (Wayne)</p> <p>(N=12): Southern Alamance, Western Alamance (Alamance-Burlington); East Bladen (Bladen); Julius L. Chambers (Charlotte-Mecklenberg); South Columbus (Columbus); SouthWest Edgecombe (Edgecombe); Western Guilford (Guilford); South (Iredell-Statesville); Mount Airy (Mount Airy City); Red Springs (Robeson); Henderson (Rowan-Salisbury); Monroe (Union)</p>
Social-Emotional Learning Survey	(N=12): Celeste Henkel, Central, Cloverleaf, Cool Spring, East, Harmony, N. B. Mills, Northview Alternative,	(N=5): Coddle Creek, Lake Norman, Lakeshore, Shepherd, Woodland Heights

Outcome	RIPPLE Schools	Comparison Schools
	<p>Scotts, Sharon, Third Creek, Troutman, Union Grove</p> <p>(N=5): East, North, Northview Alternative, Third Creek, Troutman, West</p> <p>(N=3): North, Northview Alternative, Statesville, West</p>	<p>(N=4): Lakeshore, Oakwood IB, Brawley IB, Woodland Heights</p> <p>(N=2): Lake Norman, South</p>

Appendix B

Fidelity Index

Elementary School Index

Key Component	Fidelity Indicator	Scoring System / Scoring Criteria	Total Number of Meetings	Indicator Score
MTSS and Project Team	Adherence: Number of MTSS school-based monthly team meetings	2 = 7-9 meetings 1 = 4-6 meetings 0 = 0-3 meetings	690	2
	Quality: Number of meetings spent reviewing, discussing, and disseminating student data indicators	2 = 7-9 meetings 1 = 4-6 meetings 0 = 0-3 meetings	798	2
Key Component	Fidelity Indicator	Scoring System / Scoring Criteria	Total Number of Students	Indicator Score
MTSS Services	Adherence: Number of students screened for additional interventions using Child Rating Scale, PANAS, or ACES	1 = School capable of conducting screening for required students 0 = School could not screen students	20	1
	Quality: Tier 2 students meet with mental health specialist(s): SAP, behavior specialist, or social worker	1 = School offered MH specialists to required students 0 = School could not offer MH specialists to students	65	1
	Quality: Tier 2 students receive other group or individual sessions with a counselor or SAP	1 = Students participated in Second Step Group sessions for required students 0 = School could not offer group sessions to students	261	1

	Responsiveness: Tier 2 Students participate in Strengthening Families program	1 = School offered SF to required families 0 = School could not offer SF to families	6	1
	Exposure: ELEMENTARY Tier 3 students with a completed FBA/BIP	1 = School completed BIP for required students 0 = Schools could not complete BIP for required students	77	1
	Quality: ELEMENTARY Tier 3 students started with Trauma Focused - CBT	1 = School completed TF-CBT for required students 0 = Schools could not complete TF-CBT for required students	1	1
	Quality: ELEMENTARY Tier 3 students started CHA School Based Therapy	1 = School offered CHA SBT to required students 0 = Schools could not offer CHA SBT to students	106	1
Key Component	Fidelity Indicator	Number of teachers who received coaching	Average Percent of Total Teachers	Total number of hours coached (sum of hours listed)
Teacher Services	Teacher Services	143	29%	1,898

Secondary School Index

Key Component	Fidelity Indicator	Scoring System / Scoring Criteria	Total Number of Meetings	Indicator Score
MTSS and Project Team	Adherence: Number of MTSS school-based monthly team meetings	2 = 7-9 meetings 1 = 4-6 meetings 0 = 0-3 meetings	47	2
	Quality: Number of meetings spent reviewing, discussing, and disseminating student data indicators	2 = 7-9 meetings 1 = 4-6 meetings 0 = 0-3 meetings	83	2
Key Component	Fidelity Indicator	Scoring System / Scoring Criteria	Total Number of Students	Indicator Score
MTSS Services	Adherence: Number of students screened for additional interventions using Child Rating Scale, PANAS, or ACES	1 = School capable of conducting screening for required students 0 = School could not screen students	18	1
	Quality: Tier 2 students meet with mental health specialist(s): SAP, behavior specialist, or social worker	1 = School offered MH specialists to required students 0 = School could not offer MH specialists to students	476	1
	Quality: Tier 2 students receive other group or individual sessions with a counselor or SAP	1 = Students participated in Second Step Group sessions for required students 0 = School could not offer group sessions to students	230	1
	Responsiveness: Tier 2 Students participate in Strengthening Families program	1 = School offered SF to required families 0 = School could	0	0

		not offer SF to families		
	Exposure: SECONDARY Tier 3 students with a completed FBA/BIP	1 = School completed BIP for required students 0 = Schools could not complete BIP for required students	63	1
	Quality: SECONDARY Tier 3 students started with Trauma Focused - CBT	1 = School completed TF-CBT for required students 0 = Schools could not complete TF-CBT for required students	2	1
	Quality: SECONDARY Tier 3 students started CHA School Based Therapy	1 = School offered CHA SBT to required students 0 = Schools could not offer CHA SBT to students	182	1
Key Component	Fidelity Indicator	Number of teachers who received coaching	Average Percent of Total Teachers	Total number of hours coached (sum of hours listed)
Teacher Services	Teacher Services	58	21%	578

Appendix C

RIPPLE Teacher Survey

1) Please select your school.

2) In my school, teachers believe that almost every student has the potential to do well on assignments. *

Strongly agree

Agree

Disagree

Strongly disagree

3) Culturally Responsive Teaching*

	Never	Rarely	Sometimes	Usually	Always
I examine my class materials for culturally appropriate images and themes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make an effort to get to know my students' families and backgrounds.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use mixed-language and mixed-cultural pairings in group work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use peer tutors or student-led discussions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I elicit students' experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I supplement the curriculum with lessons about international events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask for student input when planning lessons and activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I encourage students to use cross-cultural comparisons when analyzing material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4) How likely are you to...*

	Not at all likely	Slightly likely	Somewhat likely	Quite likely	Extremely likely
Recognize signs of violence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respond to school violence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5) In your opinion, have you noticed improvements in the overall school climate?*

- Not at all
- Slight improvements
- Moderate improvements
- Significant improvements

SEL

6) To what extent has the school supported you in implementing the district-adopted social-emotional learning (SEL) curriculum?*

- Not at all supportive
- Slightly supportive
- Somewhat supportive
- Quite supportive
- Extremely supportive

7) I participated in SEL training embedded in the curriculum.*

- Yes
- No
- I am not sure

8) How competent do you feel to teach the SEL content in your classroom?*

- Not at all confident
- Slightly confident

- Somewhat confident
- Quite confident
- Extremely confident

9) Overall, how much do you learn about supporting your students' social-emotional learning from the leaders at your school?*

- Learn almost nothing
- Learn a little bit
- Learn some
- Learn quite a bit
- Learn a tremendous amount

10) When students need help from an adult, how often do they have to wait to get that help?*

- Almost never
- Once in a while
- Sometimes
- Frequently
- Almost all the time

11) For students who need extra support, how difficult is it for them to get the support that they need?*

- Not at all difficult
- Slightly difficult
- Somewhat difficult
- Quite difficult
- Extremely difficult

Trainings and Curricula

12) Did you participate in Trauma-Informed Educator In-Service?*

- Yes
- No

13) Please respond to each item about Trauma-Informed Educator In-Service*

	Strongly disagree	Disagree	Agree	Strongly Agree
After the training, I can identify students who may have or are currently experiencing trauma in their life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to respond to a student experiencing trauma?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who to contact to refer students for additional support?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14) How confident do you feel to link support to students with mental health needs?*

- Not at all confident
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident

15) Did you participate in the Culturally Responsive Training with Dream Builders?

- Yes
- No

16) Are you utilizing Restorative Practices proactive circles in your classroom?*

- Yes
- No

17) Are your building administrators using Restorative Justice (Responsive Questions, Responsive Circles, RJ Conferences) when responding to negative behaviors and discipline issues?*

- Yes
- No

18) How many days per week do you have Morning Meetings in your classroom?*

- None
- 1
- 2
- 3
- 4
- 5

19) Do you utilize Second Step SEL Curriculum in your school/classroom?*

- Yes
- No

20) Are students getting Second Step SEL lessons at least once a week?*

- Yes
- No

21) Are students receiving Too Good for Drugs and Violence curriculum?*

- Yes
- No

22) How many class periods per day are you using Group Noticing Routines?

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7