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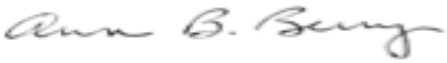

Ann Berry, Ph.D., Dissertation Committee Chair

The purpose of this study was to determine if, at rural elementary schools in New Hampshire, there was a significant difference between participants' beliefs about school climate and collective teacher efficacy (CTE) during in-person and remote instruction in order to determine best practices to support teacher retention, and ultimately, increase student achievement. Participants' perceived beliefs of school climate and CTE were reported for both in-person and remote instruction, due to the Coronavirus pandemic, using the Revised School Level Environment Questionnaire (RSLEQ) and the Collective Teacher Efficacy Belief Scale (CTEBS). Responses were paired to test for significance using the paired samples *t*-test and means were examined for areas of strength and weaknesses between the two sampling sessions. There were four variables that had significant differences: school resources and instructional innovation from the RSLEQ survey, and both variables from the CTEBS survey, instructional strategies and student discipline. In all areas that had a significant difference, rural remote teachers reported that they felt more effective teaching in-

person. Implications, based on these results, including recommendations for rural school administrators, are discussed in depth.

Keywords: rural elementary schools, school climate, collective teacher efficacy, federal accountability, in-person and remote instruction, Coronavirus pandemic

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School Climate and Collective Teacher Efficacy in Rural Elementary Schools During In-Person and Remote Instruction

By

Kelly E. Marcotte

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SCHOOL CLIMATE AND CTE IN RURAL ELEMENTARY SCHOOLS

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I understand that my dissertation will become part of the permanent collection of Plymouth State University, Lamson Learning Commons. My signature below authorizes release of my desertion to any reader upon request.

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TABLE OF CONTENTS

ACKNOWLEDGMENTS iii

TABLE OF CONTENTS iv

LIST OF TABLES ix

LIST OF FIGURES x

EXECUTIVE SUMMARY xi

DEDICATION xii

Chapter 1 1

Historical Perspectives on the Problem 4

Social and Cultural Perspectives on the Problem 5

Leadership Perspectives on the Problem 8

Specific Problem of Practice 11

Central Research Questions 13

Chapter 2 14

Literature Review: Knowledge for Action 14

Review of Educational Research Literature: Theoretical Sources 14

Ecological Systems Theory 14

Social Cognitive Theory 16

Empirical Sources in Research Literature 17

Rural Elementary Schools 19

School Climate 21

Self-Efficacy and Collective Teacher Efficacy 22

Self-Efficacy 22

Collective Teacher Efficacy 23

Impacts from Natural Disasters/Pandemics 25

Leadership & Collective Teacher Efficacy 27

Benefits of Remote Learning 29

Data from Relevant Stakeholders 30

Summary 31

Chapter 3 32

Methods: Design for Action 32

Study Purpose and Design 32

Participants and Data Sources 33

Data Collection Instruments 35

Revised School-Level Environment Questionnaire 35

Collective Teacher Efficacy Belief Scale 36

Specific Practices 37

Data Analysis 38

Chapter 4 40

Results and Discussion: Data Analysis and Recommended Action 40

Teacher Demographic Data 41

Teacher Perception of School Climate and Collective Teacher Efficacy in Rural 43

Elementary Schools 43

During In-Person Teaching 45

School Climate. 45

Collective Teacher Efficacy. 46

During Remote Teaching 47

School Climate. 47

Collective Teacher Efficacy. 48

Discussion of Findings for Research Question 1 48

Mean Comparison of School Climate and CTE During In-person and Remote Teaching 50

School Climate 50

Student Relations. 50

Collaboration 51

Instructional Innovation. 51

Resources. 51

Decision-making. 51

Collective Teacher Efficacy 51

Instructional Strategies 51

Student Discipline. 51

Discussion of Findings for Research Question 2 52

Significant Differences Between In-person and Remote Teaching 55

Discussion of Findings for Research Question 3 57

Paired Samples Correlations 58

Implications and Recommendations That Contribute to the Field of Educational 59

Leadership 59

Recommendations and Implications for Educational Leadership for Social Justice 66

Limitations 67

Implications for Leadership Agenda and Growth 68

Future Directions 70

References 71

APPENDICES 84

Appendix A 85

Appendix B 89

Appendix C 91

Appendix D 93

Appendix E 94

LIST OF TABLES

4.1.....41

4.2.....42

4.3.....44

4.4.....56

LIST OF FIGURES

Figure 1 Bronfenbrenner's Ecological Systems Theory.....15

Doctor of Education: Leadership, Learning and Community Executive Summary

School Climate and Collective Teacher Efficacy in Rural Elementary Schools During In-Person and Remote Instruction

Kelly Marcotte, Plymouth State University
Dissertation Defense: April 26, 2020
Executive Summary: April 29, 2020

Introduction: This research investigated which areas of school climate and collective teacher efficacy (CTE) were present during in-person learning and then compared them to the areas that were present during remote learning, due to the Coronavirus. In this way, it can be determined what rural elementary schools could focus on while in-person learning in order to support and retain teachers and then determine what areas of school climate and CTE showed significant differences when teachers shifted to remote learning.

Problem of Practice: School climate and CTE are overlooked areas when looking at improving teacher retention and student achievement in rural elementary schools.

Research Method: This was a quantitative study that measured school climate, using the Revised School Level Environment questionnaire (RSLEQ) and CTE, using the Collective Teacher Efficacy Belief Scale (CTEBS). A paired samples *t*-test was used to determine if there was a significant difference between the two sampling events in May, teaching in-person, and June, teaching remotely. Participants for the study were 135 rural elementary school teachers in May 2020 and 119 rural elementary school teachers in June 2020.

Summary of Findings: Statistically significant differences from the RSLEQ were reported for the following elements of school climate: school resources and instructional innovation. Statistically significant differences from the CTEBS were reported for the only two elements of CTE: student discipline and instructional strategies. Participants reported more success with in-person instruction in these areas.

Limitation(s) of Study: The study focused on rural elementary teachers in New Hampshire. Implications of the study may not be generally applied to other regions in the country or outside of the United States.

Implications/Significance of Study: In order to help enhance areas of school climate and CTE, during in-person and remote instruction, elementary school administrators should look at assessing and improving all elements of school climate, paying specific attention to the elements of decision making and school resources. Administrators should also focus on both areas of CTE: instructional strategies and student discipline.

DEDICATION

This dissertation is dedicated to my family for their unconditional love and support not only through this process, but throughout my life. To my parents, who instilled my quest for knowledge and who have been there for me through all the ups and down in life. To my four-legged companion, Daisy, whose walks gave me much needed breaks from writing and whose shenanigans always make me smile, especially during stressful times. To my supportive husband, Chris, who I think is happier than I am to complete this dissertation so we can have more time together and to move on to new adventures.

Chapter 1

Public school teachers are impacted by accountability requirements mandated by federal law (American Institutes for Research, 2018; Ruff, 2019). Low-performing public schools, targeted by legislation as turnaround schools, are constantly trying to reform and engage in new initiatives to meet these accountability requirements in order to improve student achievement (Welsh et al., 2014). There is a social and moral imperative to study and help turnaround schools (VanGronigen & Meyers, 2019). Teachers in low-performing schools, often rural schools, focus on a myriad of potential solutions, such as evidence-based teaching practices and new curricula materials to encourage teacher satisfaction and retention in order to improve student achievement. However, several factors that have been shown to have a positive effect on teacher retention and student achievement have received less attention.

Federal mandates, such as No Child Left Behind (NCLB) and the Every Student Succeeds Act (ESSA), moved public schools into an era of accountability, which identified many schools as a turnaround school in need of reform (VanGronigen & Meyers, 2019). Low-performing schools are often found in urban core or rural areas and often serve low-income populations, have attendance concerns, low engagement from parents, high staff turnover, and tend to be less connected to their, and surrounding, communities (Trujillo, 2015; VanGronigen & Meyers, 2019). Within a given school year, approximately 2.5 million American students attend priority schools, therefore there is a social and moral imperative for school districts to reform turnaround schools (VanGronigen & Meyers, 2019).

Along with the stress of meeting federal accountability requirements, the

Coronavirus (COVID-19) pandemic impacted schools starting in March 2020 which drastically changed the landscape of the public education system. The shift from in-person instruction to remote instruction for multiple months created an unanticipated disruption for many rural elementary schools.

School climate represents the school experience, such as the quality of teaching and learning, relationships within the building, and the overall organizational structural of the school (Wang & Degol, 2016). School climate is multifaceted concept which can influence student achievement (Chirkina & Khavenson, 2018). Wang and Degol (2016) clearly stated that teachers are shaped by school climate and that teachers' emotional well-being and coping abilities contribute to student outcomes therefore there is a need to conduct additional research on the impact of school climate on teachers. School climate research is not a new concept to educational literature and since it is a multidimensional concept, it allows for multiple pathways to be examined for school reform which then can be targeted for intervention (Wang & Degol, 2016). There are many varying definitions of school climate so for the purpose of this research, the term school climate is based on the seminal work by Tye (1974) as the set of factors which "gives each school a personality, a spirit, a culture." For the purposes of this research, school climate is many components that makes up a school's physical environment, the well-being of all staff and students that enter to building, and the interconnectedness of instructional practices and procedures.

Collective teacher efficacy (CTE) been shown to positively influence student achievement (Bandura, 1993; Berebitsky & Salloum, 2017; Goddard et al., 2000; Tschannen-Moran & Gareis, 2015). Tschannen-Moran and Gareis (2015) define CTE as

"a motivational construct based on the shared perceptions of teachers in a school that the efforts of the faculty as a whole will have positive effects on students" (p. 265). These positive influences on students then have a positive impact on teachers which leads to less burnout, stress, and more satisfaction with their career in teaching (Donohoo, 2018). Donohoo (2018) also stated that new teachers are less likely to leave a school that had a sense of CTE.

Despite the abundance of research that has been done around school climate and CTE, little is known about the connection between a school's climate and CTE in the rural elementary school setting. A rural distant area is a Census-defined area that is more than five miles, but less or equal to 25 miles from an urban area and a rural remote area is more than 25 miles from an urban area (Rural Education in America, n.d.). If rural administrators and teachers are trying to improve low-performing schools, teacher retention, and ultimately student achievement gaps, then perhaps they should invest their time and resources on practices that are based on research, such as school climate and CTE, while attending to new pedagogical approaches and curricula materials.

The Coronavirus outbreak, which was classified as a global pandemic in March 2020 (Bozburt & Sharma, 2020), impacted this research in profound ways. Around the world, due to lockdowns, many schools were forced into emergency remote learning. This rapid shift to remote learning impacted teachers with wide disparities of experience with the use of technology as the primary method of instruction. Since this research occurred in April, May, and June of 2020, the researcher has a unique opportunity to investigate the elements of school climate and CTE for regular in person instruction as well as during remote teaching in rural elementary schools.

Historical Perspectives on the Problem

During the era of accountability, federal legislation drove the needs for schools to work on reform efforts. The demand placed on public schools to perform well on standardized tests created problems that were likely unforeseen through the legislative process, such as teaching to the test and cheating, by both staff and students, due to the pressure to do well since students' scores were being reflected in the teacher evaluations. These accountability factors ultimately increased teacher's stress and affected school climate (Saeki et al., 2018).

In December 2015, the federal education law, the Every Student Succeeds Act (ESSA), passed governing kindergarten through grade 12 public education policy (United States Department of Education, n.d.). This law replaced the No Child Left Behind (NCLB) Act which was a reauthorization of the 1965 Elementary and Secondary Education Act (ESEA; New Hampshire Department of Education, n.d.). Although the ESSA allows states more control of how schools evaluate their effectiveness, beyond standardized assessment scores, schools are still required to meet accountability standards. The ESSA mandates that states focus on achievement gaps and the performance of the following key groups; economically disadvantaged, racial/ethnic students, students with disabilities, and English learners (New Hampshire Department of Education, n.d.).

Along with those key groups of students, accountability indicators also focus on student learning, growth, and attainment that align with the ESSA accountability requirements (Consolidated State Plan: The Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act, 2019, January 18). Based on these

ESSA requirements, the New Hampshire Department of Education (NHDOE) defined what is expected for New Hampshire in the New Hampshire ESSA Consolidated State Plan. In this plan, indicators are used to determine how schools are identified for Comprehensive Support and Improvement (CSI) as well as Targeted Support and Improvement (TSI) (Consolidated State Plan: The Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act, 2019, January 18). A CSI school is identified as the lowest performing five percent of Title I schools or a school with a graduation rate at or below 67% (Consolidated State Plan: The Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act, 2019, January 18).

Due to these legislative decisions, which continue to focus on student scores on standardized tests, rural administrators are tasked with making improvements in their schools, and in many cases, with a lack the guidance, resources, and personnel in order to improve student achievement, retain qualified teachers, improve school climate, and foster CTE. Along with these legislative factors impacting rural elementary schools, the COVID-19 pandemic forced more than 1.5 billion leaners of all ages to go to remote learning (Bozburt & Sharma, 2020).

Social and Cultural Perspectives on the Problem

Teacher morale is impacted from top-down initiatives on standardized testing leading to schools being identified as in need of improvement. The implementation of new initiatives, from program developments to shifts in pedagogical perspectives, all claiming to be the end-all, cure-all in education, continue to leave school leaders and teachers without the confidence to teach the content they need in order to teach to

improve students' skills and knowledge. Administration tries to implement the new best curriculum or pedagogical practices while teachers are still trying to learn the last new initiative.

The result of a focus on meeting accountability requirements, with an emphasis on reducing achievement gaps, large components of school improvement that have been documented to improve these areas, have been largely ignored. School climate and CTE are two areas that demand more attention to address these areas of concern. A school's climate influences student achievement (Wang & Degol, 2016) and it "is based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (National School Climate Council, 2007, p. 20). A school's climate can influence teacher's morale, which impacts teacher retention, which in turn impacts school districts.

Although the NCLB legislation was put in place to reduce the achievement gaps in education between rural and urban schools, the impact of this law was detrimental to many school climates. The law did not, however, take into consideration community factors such as low income, free and reduced lunch programs, poverty, minorities or neighborhood social structures (Emory et al., 2008). Many of these community factors are prevalent in rural areas and create additional challenges for rural school districts seeking to meet the needs of their students.

The COVID-19 pandemic also brought to light increased disparaging concerns for teachers and students in rural areas with the lack of internet access during remote learning. This impacts students' ability to access the curriculum and with also a steep

learning curve for teachers to learn how to teach remotely. Social emotional concerns such as burnout and isolation are factors that can affect school climate.

Collective teacher efficacy is based on Bandura's social cognitive theory (1997). Social cognitive theory focuses on human development as ones' behaviors, their cognition, and the personal relationships with one's environment. This theory also focuses on the importance of observational learning and modeling, which is a foundational component of CTE, teachers learning, working, trusting, and collaborating with each other. Tschannen-Moran and Gareis (2015) state that "Collective teacher efficacy is a motivational construct based on the shared perceptions of teachers in a school that the efforts of the faculty as a whole will have positive effects on students" (p. 265). Teachers who work in schools with high collective efficacy more often than not set high standards for their students, consistently improve their pedagogy, and believe in their students' abilities (Tschannen-Moran et al., 2014).

Collective teacher efficacy has been shown to positively influence student achievement (Berebitsky & Salloum, 2017; Goddard et al., 2000; Tschannen-Moran & Gareis, 2015). Eells (2011) recommended that schools work to build CTE by determining how to create mastery experiences so teachers can have success (Donohoo & Katz, 2019). Research conducted by Goddard et al., (2000) found that the influence of CTE in elementary schools was more of a strong predictor of academic achievement in math and reading than socio-economic status. Since the socioeconomic status of a community is something that is difficult to change, it is important to determine what variables in the educational system can be manipulated in order to promote school improvement.

Another social and cultural perspective that this research focuses on are the challenges rural remote and distant elementary schools face. Rural school districts can find it difficult to attract and retain staff to their schools for a variety of reasons. Teachers in rural schools lack colleagues to collaborate which can cause feelings of social isolation. There are limited resources for rural schools and there are not many opportunities to raise funds. Schools are usually located in a large geographic area that tends to have a low population density which influences an already low socio-economic tax base (Howley et al., 2013; Rosenberg et al., 2015). Rural staff and families also face long commutes to school and are distanced from urban centers leading to feelings of physical and social isolation. Teachers also find that there are limited opportunities for professional development (Rosenberg et al., 2015; Redding & Walberg, 2012).

Staff in rural elementary schools also face challenges when teaching students that come from poverty or with other disadvantages that urban families may not have. Rural students tend to be more mobile either due to housing concerns or lack of public transportation. These socioeconomic factors support the need for research to take place at the rural level since rural elementary schools face different critical issues that need to be addressed in order to help provide tangible solutions.

Leadership Perspectives on the Problem

This research began in the midst of the Coronavirus pandemic that began in March 2020. Due to the pandemic, the research took place when the population of schools being invited to participate in this research went to remote learning. This hindered the researcher's ability to visit schools and connect with schools since many buildings were closed.

In my fifteen years of experience in public education, from teacher to principal, I have seen the effects of legislation on public schools. This past year of being an elementary school principal during the COVID-19 pandemic, I have been challenged in my leadership abilities and increased my level of stress that I never could have imagined. In an effort to support teachers the best way I can, in-person or remotely, and help students gain academic achievement, and at the same time, increase morale and school climate, I look to transformational leadership, as well as instructional leadership models to guide my actions. In that process, one needs be a transformational leader in order to become an instructional leader. The distinction between these two leadership models are described below.

In 1978, Burns made the distinction between transactional and transformational leadership citing transformational leadership as "the shaping of private and public opinion, leadership of reform and revolutionary movements" (p.33). Burns also argues that transformational leadership also occurs when leaders engage with others in order to raise everyone to higher expectations (1978). Leithwood and Beatty (2018) go one step further and encourage leaders to include teacher emotions when implementing transformational leadership.

Hallinger (2003) compared transformational leadership to the instructional leadership model, which emerged in the early 1980s. In 2000, Hallinger developed three dimensions to instructional leadership which were: defining a school's mission; overseeing the curricula; and promoting a school-learning climate. Edmonds (1979) reported that in schools working on improvement, the principal, acting as an instructional leader, "assumes the responsibility for the evaluation of the achievement of basic

objectives" (p.18).

Robinson et al., (2008) compared two types of school leaders by using meta-analysis. They claim that transformational leaders focus more on teachers where principals create common goals for the school, inspire, distant staff from external demands, and give teachers autonomy. They found that instructional leaders focus more on students. Instructional leaders focus on student learning by conducting classroom observations, promoting professional development that leads to student achievement, setting high academic standards, and ensuring that the school is a good learning environment. Hattie (2015) states that instructional leaders who use evaluation as a core professional responsibility have a significant effect on student learning outcomes. In addition, the meta-analysis from Robinson et al., (2008) determined that transformational leaders had an effect size of .11 while the effect size for instructional leaders was .42. Hattie's use of effect sizes helps determine which criteria has a better chance of improving student achievement.

It is with the two leadership styles of transformative and instructional leadership that I aim to support rural elementary schools. My transformative leadership style will help me work with colleagues to promote research-based best practices to help more positive reform for public elementary schools. My instructional leadership style will support students through my use of teacher observations and guidance. The data I collect, and its analysis, will help teachers, administrators, and ideally legislators who make policy, determine the best course of action when looking to improve a school's environment in order to positively impact school climate, CTE, and teacher retention.

Specific Problem of Practice

Many rural elementary schools face unique situations as opposed to urban elementary schools. Rural elementary schools grapple with lower socio-economic status that places them in a precarious situation. Due to accountability requirements, many rural schools are already considered low-performing and it is a struggle to find and retain qualified teachers. Teachers are burdened with academic and instructional programs without the professional development to support them through educational reform.

Rural elementary schools have limited funds and tend to focus on varying initiatives which impacts a school's climate as well as CTE. It is not clear why elementary schools are not focusing on these concepts as ways to improve student achievement and teacher retention. If schools are focusing on these areas as ways to improve, it is not clearly understood which components of the school climate; collaboration, student relations, school resources, decision making, or instructional innovation, or which components of CTE, instructional strategies and student discipline, should receive more attention to improve teacher morale and retention, as well as student achievement. Since teachers were forced to go from in-person learning to remote learning due to a pandemic, determining which components of school climate and CTE are impacted from this shift could help administrators and teachers focus on specific areas in times of crisis and still meet accountability requirements.

Due to federal accountability requirements, elementary schools labeled as a school in need of improvement, are forced into restructuring phases. During a restructuring phase, many initiatives or programs can be adopted by administrators and teachers trying to improve a school's performance which can be stressful. In 2015,

Tschannen-Moran and Gareis suggested that research should be conducted to determine the "influence of context on teachers' beliefs" in order to develop models of those beliefs as well as researching how principals organize their schools around trust, high levels of collective efficacy, and the professional workplace (p.7). When low-performing schools face accountability requirements they are under pressure to improve their school's performance and student learning (Cosner & Jones, 2016). Cosner and Jones (2016) suggested that researchers need to study ways to help schools meet accountability requirements. The socioeconomic factors in many demographically large and financially-challenged rural districts also support the need for research to take place at the rural level. Mosoge et al., (2018) encouraged research around CTE to determine if there is a difference in responses between low-performing and high-performing schools which will be taken into consideration when looking at federal accountability requirements.

There are multiple gaps in the literature around school climate, CTE, and rural elementary schools. A study on how a school's climate and CTE interact may be a way to help administrators in rural elementary schools to support their teachers and students. By allowing schools that participate to view the data, and its analysis, teachers and leaders will have the ability to determine the best course of action when looking to improve a school climate, retain qualified teachers, and subsequently improve student achievement. Since this research occurred during the Coronavirus pandemic, the data will also help support rural school districts focus on the crucial components of school climate and CTE during remote teaching. It is also important to note that this research will also add to the insufficient amount of research at the elementary school level.

Ideally the research will provide evidence on what specific areas, or steps, need to be focused on when making fundamental changes in rural elementary schools without overburdening already stressed teachers and administration. The information provided through this study may be a way to help improve rural elementary schools' effectiveness when addressing student achievement gaps, staff morale, and retention. This research may also be helpful for policy makers when determining how to write legislation that impacts rural schools.

Central Research Questions

1.) Which elements that comprise school climate and CTE do elementary teachers in rural schools rate higher during in-person learning and during remote learning?

2.) How do the ratings of school climate and CTE change when teachers transition from a traditional, in-person, elementary classroom to a remote learning environment necessitated by the Coronavirus pandemic?

3.) Are school climate and CTE, from the two measurement occasions, May and June 2020, significantly different from one another?

4.) Which of the elements that comprise school climate and CTE need additional attention to support and retain qualified teachers in rural remote and distant elementary schools?

Chapter 2

Literature Review: Knowledge for Action

Review of Educational Research Literature: Theoretical Sources

There are two theoretical constructs that are the underpinnings of this research on school climate and CTE. The following section introduces school climate through the theoretical construct of Bronfenbrenner's ecological systems theory. Collective teacher efficacy is described through the work of Bandura's social cognitive theory. Following the theoretical analysis, empirical research will be used to define the lens in which this research was developed.

Ecological Systems Theory

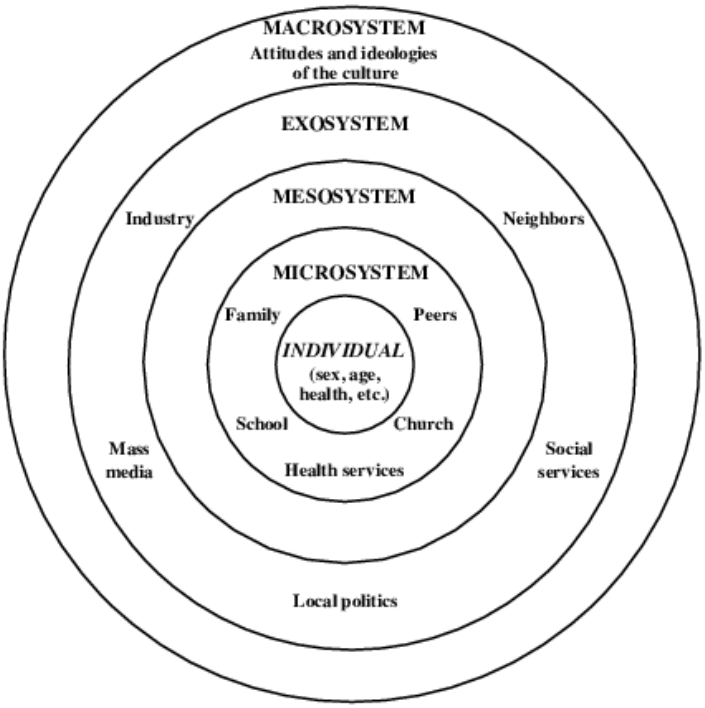
In 1977 Bronfenbrenner developed the ecological systems theory which is a convergence of naturalistic and experimental approaches to human development. The study of a school's environment can be connected to Bronfenbrenner's ecological systems theory. A school's environment has many layers that influence a child and staff members. Bronfenbrenner uses ecological systems to define human development with the physical and social structures that influence and interact with living and nonliving things.

Bronfenbrenner's theory is based on the premise that human development is the study of human organisms and their ever-changing environments in which they live, including any formal or informal social interactions within those settings (Bronfenbrenner, 1977). Bronfenbrenner (1977) also compares human development to ecological environmental systems, and he breaks them into four systems as shown in Figure 1 (Murnane et al., 2018). These systems are: a microsystem, which is one's immediate environment; a mesosystem, one's interrelations in major settings at a specific

time in one's life; an exosystem, the extension of the mesosystem where influences outside one's setting indirectly influences a person's life; and a macrosystem, which is the overreaching influences in one's life such as legal, educational and political structures. This theory can be connected to the studies of school climate since the many facets of school climate affects a child as they move through their years in education. The ecological systems theory can also be connected to teachers as well since they are also influenced by systems in a school climate. School climate can be viewed through the lens of Bronfenbrenner's theory of ecological systems in the way that supports the interconnectedness of students and staff in the school environment.

Figure 1.

Bronfenbrenner's Ecological Systems Theory



Note: From "Personal Informatics in Interpersonal Contexts: Towards the Design of Technology that Supports the Social Ecologies of Long-Term Mental Health Management," by Murnane, E., 2018, *Proceedings of the ACM on Human-Computer Interaction*, p.1-27 (https://doi.org/10.1145/3274396)

Rudasill et al., (2018) proposed a theoretical framework called the systems view of school climate (SVSC) in order to best describe how a school climate's functions. This theoretical framework was formed placing previous models and research on school climate into themes. Rudasill et al., (2018) then defined school climate as the "affective and cognitive perceptions regarding social interactions, relationships, values, and beliefs held by students, teachers, administrators, and staff within a school" (p. 35). They suggested that school climate is positioned within the ecological systems theory in order to help guide research. In their study, they propose the systems view of school climate in order to help develop causal models to provide clarity when studying the different constructs related to school climate. This theory is more current, however it is less researched, so for the purposes of this research, the theory of ecological systems is used to encompass the framework around the school environment.

Social Cognitive Theory

There are many theories in psychology that try to explain human behavior. One such theory is social cognitive theory, founded on the work by Albert Bandura. Social cognitive theory is based on an agentic perspective. To be an agent is to exert intentional influence over one's functioning and the course of events by one's actions (Bandura, 2006). Social cognitive theory subscribes to a casual structure grounded in triadic reciprocal causation (Bandura, 1986). In this triadic codetermination, human functioning is a product of the interplay of intrapersonal influences, the behavior individuals engage in, and the environmental forces that impinged upon them. People are the operators of their lives, not just bystanders coordinated by environmental factors (Bandura, 1999). This reciprocal determinism, where one's behavior is influenced by personal factors and

the social environment, is the premise for analyzing psychosocial situations at multiple levels ranging from one's internal, independent behaviors, to the complexity of functioning at organizational and societal systems (Bandura, 1978).

Stemming from social cognitive theory is the construct of self- efficacy. Bandura (1977) defined self-efficacy as a person's capacity to believe in one's abilities in order to be successful in future endeavors as well as being able to persist through hardships and keep going despite setbacks. Intrapersonal influences, one's self-talk, in which self-efficacy is a constituent, are part of the determining conditions in this dynamic interplay (Bandura, 1999). This aids people in making decisions that affects their lives and the paths their lives take. If one believes they can be an effective teacher, then this connects to their ability to influence their own career as an educator. Collective teacher efficacy is then built on the concept of teacher self-efficacy in that it is the belief that the staff as a whole, rather than the effectiveness of independent teachers, can significantly impact student performance (Goddard et al., 2004, Tschannen-Moran et al., 2014). It is through these belief systems, stemming from Bandura's work, that teachers can influence their pedagogy and ultimately student achievement.

Empirical Sources in Research Literature

In order to examine the current state of education, it is important to look at the impact of federal, state, and local legislation on how public schools educate children. Deniston and Gerrity (2010) and Mertler (2011) claim the implementation of the NCLB Act from 2001 affected the morale in elementary staff by placing a heavy burden on standardized testing requirements in order to hold schools accountable. The passage of these accountability laws fundamentally changed instructional practices and those

practices developed teachers who taught to the test (Welsh et al., 2014). Ultimately, this was not the purpose of NCLB, but these factors became the results of this legislation.

The purpose of NCLB legislation was to reduce the achievement gap in education between rural and urban schools, although it did not take into consideration community issues such as low income, free and reduced lunch programs, poverty, minorities or neighborhood social structures (Emory et al., 2008). Emory et al. (2008) contend that local communities have an effect on academic achievement for students therefore this is an important component to take into consideration when looking at school accountability.

In 2015 NCLB was reorganized, by President Barack Obama into the Every Student Succeeds Act (ESSA), which was defined in Chapter 1, with the Common Core State Standards (CCSS) and standardized testing remaining a component of this law which continues to impact teacher pedagogy and school environments. These impacts include shifts in instructional practices and curriculum with the added pressure to school systems and more attention to teacher accountability which can lead to unethical practices with the pressure for students to perform well (Mertler, 2011; Styron & Styron, 2012). Despite the pressure to increase test scores, research by Amrein and Berliner (2002) demonstrated that student learning has remained the same or in some case has decreased due to the implementation of high-stake testing. Other unexpected results from the mandated testing include increased teacher turnover, cheating by staff and students, and an increase in student drop outs (Amrein & Berliner, 2002). All of these factors contribute to a school's environment and teacher retention.

Many schools in the process of reform continue to spend money on a variety of items in order to help them during this era of accountability. Lafortune et al., (2016)

conducted a study of low-income schools undergoing reform in the wake of the 1990s era of accountability. Their research concluded that money in education can and does matter, however the research design for their study did not provide information on how to best allocate funding for the best possible results for teacher retention or improving a school's environment.

Jackson et al., (2015), through the use of an event-study, researched patterns of outcome of a cohort of adults during the years of school finance reform. These adults were children born between 1955 and 1985 through 2011. Using instrumental variable models, Jackson et al. (2015) analyzed how schools allocated money for reform efforts and found that approximately two-thirds of spending went to training staff with instructional practices which were consistent for positive effects for low-income families. They found that monies from state school reform policies can improve student outcomes and that it can also reduce the "intergenerational transmission of poverty" (Jackson, et al., 2015, p. 41). They also concluded that it is important to determine how the money is spent and allocated since spending should be coupled with systems that help ensure the most productive modes for improvement (Jackson, et al., 2015). If legislative demands on school turnaround and reform is a concern for a low performing school, state education agencies may need to look at best–research based practices that have been shown to improve student achievement as a way to help support them with reform efforts.

Rural Elementary Schools

Teachers in rural settings face different issues than teachers in urban areas. Some examples of those rural issues are transportation concerns, difficulty finding resources and services (Williams, 2010) as well as recruiting and retaining teachers, lack of early

education opportunities, and in some cases, a majority of rural students are from low-income families and changing demographics that diversifies an area (Showalter et al., 2017; Howley et al., 2009). Another increasing concern is the maintenance of public schools in areas where there may be declining populations which means declining enrollment that can reduce funding (Howley et al., 2009) and in some areas, older rural residents, with high-value property, may not want to pay higher taxes for educational purposes (Williams, 2010). In order to alleviate some of these issues, some towns work together to consolidate schools (Howley et al., 2009) to help with potential financial burdens.

Rosenberg et al. (2015) studied nine rural schools that received School Improvement Grants (SIG) from the United States Department of Education that were part of a purposive sampling of 35 schools. This study concluded that rural SIG schools faced unique challenges based on their setting in remote locations (Rosenberg et al., 2015). For student population, a connection was made that students who live close to each other, in low-income housing units, may exhibit urban-like symptoms and behaviors, such a being out late on the streets on school nights, that affects student behavior and conduct. For teacher retention, principals reported from six schools that a teacher's commute posed a significant problem and only two of those schools provided financial compensation for travel (Rosenberg et al., 2015).

Another key issue that faces rural elementary schools is the lack of broadband internet connectivity which was "revealed starkly within the current COVID-19 pandemic" (White & Downey, 2020, p. 5). In the United States, data indicate that 26% of people in rural areas lack adequate broadband coverage, while only 1.7% of people in

urban areas lack adequate access (FCC, 2019). Since there are many challenges that rural elementary schools face compared to urban schools, it is important to differentiate between the two settings in order to focus specifically on the needs of rural schools.

School Climate

There is no universal definition of school climate and scholars still lack consensus on what school climate means (Wang & Degol, 2016). Osman (2012) states that school climate refers to the "feel" of the school and how teachers' perceive their work environment which is influenced by formal and informal relationships within the building. Wang and Degol (2016) state the climate of a school represents multiple aspects in a school setting such as the quality of teaching and learning, relationships, the organization of the school, and structural features of the school. Rudasill et al. (2018) also contend that even though school climate has repeatedly shown to be of critical important, there still is a need for a comprehensive framework in which to study school climate in order to provide guidance for empirical research.

School climate is multidimensional. Wang and Degol (2016) presented their study through the lens of the following constructs: academic, community, safety, and institutional environment. School climate can be viewed through the lens of Bronfenbrenner's theory of ecological systems in the way that supports the interconnectness of students in the school environment. In their review of school climate research, Thapa et al., (2013) separate climate into these four constructs: safety, relationships, teaching and learning, and the institutional environment. Although both studies break climate into constructs, there is not an agreed upon approach to studying school climate, however since school climate can be a target for intervention, breaking

the term into subsets allows for more specificity when working on school reform (Wang & Degol, 2016). In the United States and around the world, there is a growing interest in school climate reform and an appreciation that this is a viable, data-driven school improvement strategy that promotes safer and civil schools (Thapa et al., 2013). Based on the research from Wang and Degol (2016) they suggested that since school climate positively affects students' personal and academic achievements, there is a need to study school climate and its impacts on teachers and administrators.

School culture is yet another term that scholars struggle to define (Hoy, 1990). Barkely et al., (2014) define culture as the beliefs and behaviors of a group and the language, social components and interactions within a group. A school's culture can transform staff behaviors and attitudes. It can also form learning models and it is an important factor schools rely on for efficiency and success (Negiş-Işik & Gürsel, 2013). Hoy's seminal work from 1990 delineates the two terms of climate and culture by connecting climate roots in social psychology to describe pattern behavior and studies would involve statistical analysis while research on culture use qualitative and ethnographic studies rooted in anthropology and sociology to identify shared beliefs and values. Even with varying definitions of climate and culture, most researchers would agree that these two terms can determine the success or failure of a school (Heck & Marcoulides, 2012; Osman, 2012; MacNeil et al., 2009; Wang & Degol, 2016).

Self-Efficacy and Collective Teacher Efficacy

Self-Efficacy

Self-efficacy is derived from the theoretical base of social cognitive theory (Bandura, 2006). Social cognitive theory is based on the interconnectedness of human's

thoughts, behaviors, and environmental surroundings (McCoach & Colbert, 2010). Self-efficacy has been defined as the belief in one's competence of his/her abilities, and able to execute appropriate course of action based on their decisions (Bandura, 1997). Teacher self-efficacy is based on the similar concept and that if a teacher has a self-efficacy then they have a higher potential to influence student achievement (Cantrell & Hughes, 2008).

Bandura (1986) founded teacher efficacy on four components, which are listed in order of effectiveness when contributing to CTE: mastery experiences, vicarious experiences, social persuasion, and affective states. Mastery experiences are when people can associate success from past positive successes. An example of this is when a school has high scores on standardized assessments which builds on the capabilities and success of individual teachers (Goddard et al., 2004). Vicarious experiences are when people see success in others, and their accomplishments, and are able to model those skills (Goddard et al., 2004). Social persuasion comes in the form of feedback or encouragement from a colleague (Goddard et al., 2004). Affective states refer one's emotions, whether positive or negative, when completing a task. Less is known about the effectiveness of affective states in contributing to CTE (Goddard et al., 2004). These four sources of teacher efficacy are connected to the beliefs behind CTE and have been shown to be consistent in schools working on school reform to improve student achievement (Colbert et al., 2006).

Collective Teacher Efficacy

Collective teacher efficacy is also based on Bandura's social cognitive theory (1997), however it is different from teacher self-efficacy as that it is the belief the staff as a whole, instead of just the belief of one teacher, which can impact student performance (Bandura 1993; 1997; Goddard et al., 2004, Tschannen-Moran et al., 2014). Therefore, it

is the beliefs of all teachers that can make an influence on school climate and student achievement.

Recent research indicates that CTE is a strong factor that can improve student achievement (Donohoo et al., 2018). Hattie's list of influences in education are ordered by effect sizes that come from his research of over 1,500 meta-analyses and 300 million students (DeWitt, 2018). This list has 138 influences ranging in scores with an average being 0.40. Collective efficacy has a score of 1.57, a score that is more three times more predictive of student achievement over socioeconomic status (Donohoo et al., 2018). If an influence on this list has an effect size of 0.40, Hattie refers to this number as the hinge point, the point where that influence is equal to at least a year's worth of growth for a year's worth of input (DeWitt, 2018, p. 10). Hattie's research supports seminal work around teacher self-efficacy as well as CTE.

Teachers who work in schools with high collective efficacy more often than not set high standards for their students, consistently improve their pedagogy, and believe in their students' abilities (Tschannen-Moran et al., 2014). These shared beliefs of effectiveness help teachers create norms and expectations and is linked to student achievement even when considering the socioeconomic status (SES) of students (Tschannen-Moran & Gareis, 2015). Donohoo (2018) stated that disadvantaged and/or unmotivated students benefit from CTE therefore it is a construct that can be positive for all students. The SES of students can have an effect on student achievement and research conducted by Hoy et al., (2002) associates CTE with positively affecting a schools' performance in mathematics regardless of SES.

The research conducted by Klassen (2010) discovered the relationships between job stress and job satisfaction and the application of CTE. The results indicated that the main factors that contribute to teacher's stress (i.e., student behavior and workload) may be alleviated by the presence of CTE, although it was found that a teacher's workload was a more difficult area to reduce stress in since student behaviors could be worked on collectively to improve student discipline practices (Klassen, 2010). Caprara et al., (2003) reported that the research is clear that CTE has positive effects on job satisfaction for teachers, however, there is not as much research on CTE and job stress and the measures to test its validity.

Since it is evident the benefits of CTE some researchers are trying to determine how to improve or build CTE. Berebitsky and Salloum (2017) defined CTE as a "group's belief in its capabilities to reach a goal" which is repeatedly linked to student achievement. However, little is known about the antecedents of CTE. Berebitsky and Salloum (2017) researched one predictor being teachers' social networks. Berebitsky and Salloum (2017) developed their research around the social cognitive theory and the social network theory as a way to determine the evidence of CTE in urban impoverished middle schools that were engaged in mathematics reform. It was determined that there is a need for dense networks, which are strong connections between the staff, in order to improve CTE in an urban, middle school (Berebitsky and Salloum, 2017).

Impacts from Natural Disasters/Pandemics

In 2004, a tsunami devastated parts of Thailand. Paton et al., (2008) proposed that if the predictors of adaptive capacity can be identified, that information could be used to develop resiliency in communities impacted by disasters. Although COVID-19 was a

global pandemic, not a localized event, the research from Paton et al. (2008) provides some insight into the collectivist approach when facing challenging life events.

Three main factors were identified to determine the effectiveness of the Thai people's collectivist response and recovery efforts. These factors were: the ability to help people affected by the tsunami, being able to require resources, and the degree in which they could use the support provided by the government. These factors of help, resources allocation, and empowerment could be translated over to the collective beliefs of a school and the ability for teachers to build CTE capacity in light of a disaster such as COVID-19.

Collectivist societies are goal orientated and focus on cooperation and collective goal attainment (Paton et al., 2008). If schools, and the communities they are a part of, can build adaptive capacity with a collectivist mindset, instead of an individualistic mindset, as seen in most Western cultures, future disasters that impact the school and community may be able to respond to in a more collaborative and mutually beneficial way.

Research from previous pandemics, such as the outbreak of severe acute respiratory syndrome (SARS), Influenza A (H1N1), and the West Africa Ebla virus disease has shown that some individuals suffered heightened levels of stress (Bai et al., 2004), anxiety (Bults et al., 2011; Jones & Salathe, 2009), and fear (Shultz et al., 2016). Although at the time of this research, these psychological factors have not been documented, it could be surmised that the coronavirus pandemic has had similar impacts on teachers and rural school systems.

Leadership & Collective Teacher Efficacy

Tschannen-Moran and Gareis (2015) claim that a major component of CTE is building trust and principals play a large role in cultivating trust to help to promote learning. Trust can be beneficial when a school finds itself facing challenges as they are better equipped at handle difficult situations. Along with trust, collaboration among teaching staff is another critical feature for collective efficacy in schools (Moolenaar et al., 2012). DeWitt (2018) acknowledges that teacher efficacy, CTE, and collaboration are deeply connected, although he stresses that "collaboration needs to include times where we not only learn from one another but also challenge each other's thinking" (p. 14). With that being said, staff in schools with high CTE are more resilient and are less discouraged by failures or external negatives forces while schools with low CTE may have unclear expectations among teachers, less consistency in instruction and likely to give up more easily when faced with difficult tasks (Goddard et al., 2000; Sørlie & Torsheim, 2011).

Another important component supporting CTE and leadership was determined by Cansoy and Parlar (2017) where their findings revealed "positive and significant relationships between school leadership, teacher self-efficacy, and collective teacher efficacy" (p. 550). Their research found that teacher self-efficacy significantly and Parlar, 2017). Cansoy and Parlar (2017) recommended future research to investigate characteristics that are prevalent in school leadership that contributes to CTE.

The leadership of a school and school district plays a role with CTE. Ninkovic´ and Floric´'s (2016) research found that not all components of a transformational leadership model are relevant predictors of CTE. The results indicated that the self-

efficacy of teachers plays a significant role on CTE which them increases the amount of evidence of reciprocal causality of these two components of teacher's work (p. 61). Numerous studies have documented the strong connection between CTE and the student achievement (Bandura, 1993; Goddard et al., 2000), and the discovery from Ninkovic´ & Floric´ (2016) suggest that transformational leadership does impact student achievement (p.61).

Instructional leadership was discovered to positively and significantly affect CTE indirectly by working with a teacher's self-efficacy (Çalik et al.,2012). Çalik et al., (2012) found in their study of 328 primary classrooms in Ankara, Turkey that a school's building principal can influence CTE. This was determined by using the Instructional Leadership Scale, the Teacher Self-Efficacy Scale, and Collective Efficacy Scale to gather data.

Ideally schools are places where teachers are able to collaborate across grade levels, with specials' teachers, special education, and at staff meetings, and by doing so, creating a space where teachers know they can bring about change (Tschannen-Moran & Gareis, 2015). In many cases, this is difficult to ascertain due to time constraints, sometimes imposed and encouraged by unions and contractual obligations (Tschannen-Moran & Gareis, 2015). Policies in place at many public schools are geared around individual evaluations and student achievement based on one teacher's performance instead of looking at the school as a whole (Tschannen-Moran & Gareis, 2015). In 2017, the research conducted by Goddard et al., found that CTE beliefs are strong predictors to use in order to meet state and federal policy goals around education equity and excellence.

Donohoo (2018) suggests that policy makers, school and district leaders, and staff place their efforts toward education reforms by determining what components in a school structure supports CTE and foster those needs through change initiatives. It is important to start looking at policy as a way to incentivize the collective work of teachers instead of creating school working environments that promotes competition among school staff (Tschannen-Moran & Gareis, 2015). Goddard et al. (2017) claimed that the strengthening of CTE in a school can be accomplished with the more opportunities for staff to collaborate and through peer observations. Ultimately, it is clear that the benefits of CTE is the power of believing in high expectations for all students and staff in order to build success in schools.

Benefits of Remote Learning

There is research that supports the benefits of remote, or distant learning, at least at the college level. Paul and Johnson (2019) studied the performance of college students in a face to face and remote environmental studies class. Although they found no significant difference in the performance of the students whether they were in person or learning remotely, they did suggest that distant learning does have its economic benefits by shifting away from traditional instruction by using the internet to capture a larger worldwide audience increasing enrollment.

Remote learning tends to be more student-centered rather than teacher-centered as with traditional learning environments (Paul & Johnson, 2019). Distance learning has an effect size of .14, which is a small effect size, but that does not mean it isn't effective (Hattie, 2020). Hattie stresses it means it does not matter whether teachers undertake teaching in person or from a distance over the internet, but it is how and what they do that

matters. Teachers need to focus on what students do not know, listening to feedback from students, and not have students just do busy work. Any instructional setting that promotes active learning for students increases the chances of academic achievement. Few educational interventions can match the power of active learning strategies in improving student academic outcomes (Hattie, 2009).

Data from Relevant Stakeholders

In 2017, the Learning Policy Institute published a report on teacher retention. Carver-Thomas and Darling-Hammond (2017) make multiple policy considerations to help support teacher retention such as ensuring proper principal training and accreditation since school leadership is an effective component to teacher retention. They also encourage strong teacher preparedness and support in the first few years a teacher starts their career. Finally, Carver-Thomas and Darling-Hammond (2017) recommend competitive compensation packages. These three areas suggested by these authors do not appear to suggest policy work around two components that have shown to improve teacher satisfaction and student achievement: school environment and collective teacher efficacy. The research throughout this chapter has cited repeatedly that CTE and school environment can have a positive impact on teachers and students, however there is a lack of consistency and knowledge around applying these strategies.

The Jaffrey-Rindge Cooperative School District, the researcher's place of employment, has worked on multiple initiatives, such as personalized learning through the implementation of learning progressions, writing a Strategic Design, and initiating strategies to help support students with behavioral concerns; however, none of these initiatives get to the root of the best practices that support and improve CTE and school

environment. Through this research, many school districts can focus more directly on what may be more important.

Summary

Decades of federal accountability legislation continues to make teaching in public elementary schools demanding and stressful. The recent outbreak of the Coronavirus impacted education to the point that education may not look the same in the future. The implementation of remote learning forced schools to provide instruction in other ways. Prior to going to emergency remote learning rural elementary school faced unique challenges that warranted insight to what can be done to help these schools. During the midst of the pandemic, additional challenges arose. Research has shown the benefits of addressing the elements of school climate and CTE. What remains unclear however, is when rural elementary schools face educational reform, what components of school climate and/or CTE should be addressed first. Since rural elementary schools face different issues than urban schools, it is important to differentiate between the two in order to focus specifically on the needs of rural schools. The potential of defining a few key areas of reform, and how to allocate money for these initiatives, could save much frustration, through the loss of time and money, for administrators and teachers, all the while increasing teacher retention and student achievement. Ideally, by determining the best practices for school climate and CTE the outcomes of the proposed research have the potential to initiate conversations among state and federal legislators. The findings could enable legislators to write new legislation and policies that support the need for examining these crucial factors more efficiently and effectively to the benefit of rural schools, their administrators, teachers, and their students.

Chapter 3

Methods: Design for Action

Study Purpose and Design

The purpose of this quantitative survey research was to determine which variables of school climate and CTE teachers in rural remote and distant elementary schools claim were present during in-person instruction as well as emergency remote instruction during the Coronavirus (COVID-19) pandemic. A teacher's ability to cope with difficult situations, and their overall emotional well-being, are important components of school climate that contribute to student success (Wang & Degol, 2016) and supports teacher retention. The underlying principles of CTE, collaboration, trust, and the belief of collective efficacy, also contribute to the success of students and teachers. The data from this research will provide evidence of relative strengths, and weaknesses in school climate and CTE in rural elementary schools which could help improve student achievement and teacher retention. Determining areas of school climate and CTE in order to improve student achievement and teacher retention can help guide low-performing rural schools in need of reform become more resilient when facing federal and state mandated accountability laws.

The researcher, having reviewed the literature concerning school climate and CTE, as well as taking into consideration the impact of the coronavirus pandemic forcing schools to go from in-person to remote instruction, formulated the following research questions:

1.) Which elements that comprise school climate and CTE do elementary teachers in rural schools rate higher during in-person learning and during remote

learning?

2.) How do the ratings of school climate and CTE change when teachers transition from a traditional, in-person, elementary classroom to a remote learning environment necessitated by the Coronavirus pandemic?

3.) Are school climate and CTE, from the two measurement occasions, May and June 2020, significantly different from one another?

4.) Which of the elements that comprise school climate and CTE need additional attention to support and retain qualified teachers in rural remote and distant elementary schools?

Participants and Data Sources

This research included rural remote and distant elementary schools in New Hampshire. The National Center for Education Statistics (NCES) has delineated populations throughout the United States with the use of the Census Bureau's population definitions. The definition of an urbanized area is one with 50,000 people or more, urban clusters are between 2,500 and 50,000 people, and rural areas as defined as areas that are not inside an urban area or urban cluster (Rural Education in America, n.d.). The NCES goes one step further to define city, suburban, town, and rural settings with each being subdivided into three categories. The three subcategories for rural are fringe, distant, and remote. The rural fringe area is the Census-defined area that is less than five miles from an urban area and two and a half miles from an urban cluster. A rural distant area is a Census-defined area that is more than five miles, but less or equal to 25 miles from an urban area and two and a half miles less than or equal to ten miles from an urban cluster. A rural remote area is more than 25 miles from an urban area and more than ten

miles from an urban cluster (Rural Education in America, n.d.).

The NCES provides each schools' population definition within its directory. This directory has school enrollment information and school details such as teacher-student ratios. It was this directory the researcher used to determine which school were rural distant and remote elementary schools which were the only schools invited to participate. This research was conducted in order to help determine courses of action that would support these specific schools because of the unique challenges they face.

The sample participants in this research were rural elementary teachers in New Hampshire as identified by a NCES codes as 42 or 43 (i.e., distant within 25 miles of an urban cluster and remote more than 25 miles from an urban cluster). This identification process yielded 102 schools with approximately 1,720 rural elementary school teachers. All 102 elementary school principals were emailed and called to gain permission to share the survey with their staff. Of the 102 schools, 35 agreed to participate in May 2020 with an additional 12 schools agreeing to participate in June. Five schools that participated in May did not participate in the June survey. All kindergarten through grade six teachers, including specials teachers and special education teachers, were invited to be part of this study. Some elementary schools go to grade six and these teachers were included if they were located at that school. Of the 102 distant and remote rural schools, 46% of them participated in at least one administration of the survey. Custodians, kitchen staff, and support staff such as secretaries, guidance, and paraprofessionals were excluded from this data collection.

Participants were sent an anonymous Qualtrics survey (Appendix A) to complete in May 2020. In mid-June 2020, the survey was sent again to see if there was a

significant difference from the two sampling times when there had been a transition from in-person teaching to remote teaching due to the coronavirus pandemic.

Data Collection Instruments

The survey instrument was developed with the use of Qualtrics. The survey started with a consent form, followed by demographic questions, and then the combination of two instruments. The Revised School Level Environment Questionnaire (RSLEQ) was used to measure school climate and the Collective Teacher Efficacy Beliefs Scale (CTEBS) measured rural elementary teachers CTE.

Revised School-Level Environment Questionnaire

In 1983, data from Fraser and Rentoul's research supported the validity and consistency of the School Level Environment Questionnaire (SLEQ). Fisher and Fraser (1990) presented the development and validation of the School-Level Environment Questionnaire (SLEQ) at the Annual Meeting of the American Educational Research Association in Boston, Massachusetts. This 56-question instrument, based off the work by Moos Work Environment Scale from 1974, consisted of 56 questions in eight areas: (1) student support, (2) affiliation, (3) professional interest, (4) staff freedom, (5) participatory decision making, (6) innovation, (7) resource adequacy, and (8) work pressure.

Research conducted by Johnson, Stevens, and Zvoch (2007) in 59 elementary schools in a large southwestern United States school district determined the need to eliminate 13 items and reduced the amount of areas to five instead of eight. The result of this change was the Revised SLEQ (Appendix A), determined by using exploratory and confirmatory factor analysis. The following five areas emerged that accounted for a total

of 63% of the variance on the RSLEQ and includes (1) collaboration (33.9%), (2) student relations (10.4%), (3) decision making (5.9%), (4) instructional innovation (4.8%), and (5) school resources (8.0%). The researchers found inter-factor correlations of 0.29 to 0.63, validating the Revised SLEQ. Goodness-of-fit indices (.93) indicated a reasonable fit between the data and the model. The Comparative Fit Index (CFI; .94) was closely aligned with the recommend criterion of .95. This study demonstrated that it was a valid instrument for all settings of schools: elementary, middle, and high school.

Johnson et al., (2007) demonstrated adequate levels of reliability, with $r = 0.77$ to 0.86. The researchers found that the RSLEQ measured school climate with an alpha-reliability coefficient of 0.90, and the five scales' alpha-reliability coefficients ranged from 0.77 to 0.86. They also cited the work of Goddard et al., (2004) which showed a positive connection between teachers perceived collective efficacy and student achievement. Johnson et al., (2007) suggested that future investigations could include the use of the RSLEQ to investigate the relationship between the school climate and collective efficacy. The RSLEQ is a tool that could help "unravel its mysteries" around school climate (Johnson et al., 2007, p. 842). Therefore, the RSLEQ was found to be an appropriate instrument for the proposed research (Appendix A).

Collective Teacher Efficacy Belief Scale

The Collective Teacher Efficacy Belief Scale (CTEBS) contains 12 items, with a 9-point Likert scale representing each of the two hypothesized factors: collective efficacy in instructional strategies, with a Cronbach's Alpha reliability of .96, and collective efficacy in student discipline, with a Cronbach's Alpha reliability of .94 (see Appendix A). The overall reliability of the instrument is .97. The construct validity for this

instrument was established through factor analysis (Tschannen-Moran and Barr, 2004). Previous tools to measure CTE by Goddard (2002) deemed not as effective since the questions included concepts around external factors, such as home life, and current activities instead of future abilities, which is an important component in the efficacy theory (Bandura, 1997). Therefore, the CTEBS is a more effective measure for CTE since it measures current CTE without including external factors that can possibly affect student achievement (Klassen, 2010). Therefore, the CTEBS was used in the proposed research, (Appendix A).

Specific Practices

This research fell in the midst of the Coronavirus (COVID-19) pandemic. All schools in New Hampshire closed on March 13, 2020 with the proposed reopening date of May 4, 2020, which was then extended for the rest of the 2019-2020 school year. During this time, the researcher contacted, via email and phone, all building principals in the elementary schools that were part of the population identified for the study and explained the benefits for their school to participate and to encourage participation. The Verbal Permission Protocol found in Appendix B was used to introduce the principals via email, and in some cases by telephone, to the research project and its goals. It is important to note that the research questions and the method of data analysis changed during the course of the study due to the impact of remote teaching. As a result, the final data analysis method, paired samples *t*-test, is different from the information given to the building principals, factor analysis.

Once permission was granted the researcher sent the principal the link to the Qualtrics survey to share with that building's kindergarten through grade 6 teachers.

Consent was obtained by including the consent form (Appendix C) which was part of the Qualtrics survey. In May, teachers were instructed to answer the survey questions by reflecting on their school's climate and their teaching practices before their school transitioned to remote learning. In June, teachers were instructed to answer the same questions, but to reflect on the time when they were teaching remotely. For each data collection period, in May and June, approximately a week after sending the survey to the building principal, a follow-up reminder email was sent to encourage participation.

There were more building principals willing to participate and share the survey with their staff during the June collection period. The same procedures from May were used for sending out email reminders in June. All survey data was stored on a password-encrypted flash-drive locked in cabinet in the researcher's home office.

Data Analysis

The data collected from the RSELQ and the CTEBS instruments were analyzed by using the test items and variables as outlined in Appendix D. The researcher used IBM SPSS Statistical Software (Version 26) to first delete any survey data that was not complete. If a survey was missing data, the researcher inserted a mean value for that item. If approximately 11 items, or 30 percent, of the items were missing, the data was not used for that particular survey. It was noted that some teachers completed the RSELQ survey, but did not go on to complete the CTEBS survey. The researcher then had to reverse code item numbers 3, 9, 10, 14, 16, 18, 29, 21 per the scoring instructions for the RSLE. Next the mean and standard deviation for each variable (i.e., five for school climate and two for CTE) was calculated using the SPSS program. Then the researcher conducted a paired

samples *t*-test which was used to determine if there was a significant difference between the two sampling events in May, teaching in-person, and June, teaching remotely.

Demographic data was analyzed and summarized using a descriptive analysis. In this way perceptions on school climate and CTE were analyzed by using demographic information provided by the participants such as gender, number of years in the same grade level, number of years at the same school, and age of the teacher. The means from the paired samples *t*-test provided statistics on any significant differences, and correlations.

Chapter 4

Results and Discussion: Data Analysis and Recommended Action

Federal and state mandates have placed many elementary schools under scrutiny, causing additional stress on teachers and resulting in high teacher turnover (VanGronigen & Meyers, 2019). In addition, rural remote schools face different challenges than their urban counterparts, such as decreased access to internet, insufficient resources, lower salaries, social isolation, lower academic achievement levels, and lack of diversity. As of March 2020, many schools have faced new challenges brought about by the Coronavirus pandemic. The switch from in-person instruction to remote instruction included challenges such as reliable internet access, lack of resources, varying technology skills, concerns over social-emotional components for students and staff, the overall stress cause by the pandemic and the rapid change of instruction.

It has been well established in the literature that many components of school climate and CTE have a positive effect on teacher retention, and ultimately student achievement (Kraft et al., 2016; Donohoo, 2018; Donohoo et al., 2018), however many initiatives brought to rural elementary schools do not incorporate these components. District and building administrators could benefit from guidance on what to focus on to support staff and students whether school is in-person or during remote teaching. This researcher sought to identify which elements of school climate and CTE were present and which elements could be enhanced in order to support teachers in rural elementary schools in New Hampshire.

Teacher Demographic Data

Surveys were sent to 35 rural elementary schools in New Hampshire in May 2020 and 47 rural elementary schools in June 2020. In May of 2020 there were 123 teacher participants and in June 2020 there were 96 participants. Even though 12 more schools agreed to participate in June 2020, there was less individual teacher participation. As indicated in Table 4.1, the gender of participants from both data collections periods was predominantly female, which is typically seen at the elementary level. It may have been anticipated that more teachers in the younger age range, having more experience with technology, would have completed the survey, but this was not the case. Most participants who completed the survey were over 44 years old. This could be because they are more experienced and more vetted in educational practice. Although the age range of 68-73 was included in the both surveys, no participants were in this age range.

Table 4.1

Teacher Characteristics

Characteristic	In-person teaching (n)	Remote teaching (n)
Gender		
Female	81% (100)	92% (88)
Male	19% (23)	8% (8)
Age		
20-25	8% (10)	5% (5)
26-31	15% (19)	10% (10)
32-37	11% (14)	8% (8)

38-43	10% (13)	15% (14)
44-49	15% (18)	20% (20)
50-55	18% (22)	20% (20)
56-61	16% (20)	18% (17)
62-67	6% (7)	2% (2)

Note. n=123 in-person, n= 96 remote

Table 4.2 depicts the characteristics of the rural elementary teachers' positions. The highest percentage reported that they have been in their current position for over ten years. This indicates that in many rural elementary schools, teachers tend to stay at their current grade level. This may be due to the fact than many rural schools are small in size and only have one classroom per grade level. Most participants have been in the teaching profession for over ten years in their rural elementary school setting indicating that they are veteran and experienced teachers. These teachers may stay in their rural position longer since they are invested in the local community.

Table 4.2

Position Characteristics

Characteristic	In-person teaching (n)	Remote teaching (n)
Years at current grade		
1-2 years	28% (34)	18% (17)
3-5 years	24% (30)	27% (26)
6-10 years	16% (20)	14% (13)
Over 10 years	**32% (39)**	**42% (40)**

Years in the teaching profession		
1-2 years	8% (10)	10% (10)
3-5 years	15% (18)	16% (15)
6-10 years	13% (16)	5% (5)
Over 10 years	**64% (79)**	**69% (66)**
Years at this school		
1-2 years	24% (30)	22% (21)
3-5 years	24% (29)	25% (24)
6-10 years	11% (14)	9% (9)
Over 10 years	**41% (50)**	**44% (42)**

Note. n=123 in-person, n= 96 remote

This researcher had anticipated being able to visit schools in order to solicit more participation, but due to the Coronavirus pandemic, schools were closed. It was very difficult trying to connect with building principals to gain permission to survey the staff as most of the time principals were not in their building and the researcher had to rely on emails during a time when administrators where being overloaded with emails. As a result, fewer teachers than anticipated participated in the survey. In June, even though more school administrators agreed to send the survey to their staff, less staff participated. This could be attributed to screen-time fatigue after approximately three months of remote teaching.

Teacher Perception of School Climate and Collective Teacher Efficacy in Rural Elementary Schools

The means derived from the five-point RSLEQ Likert scale and the nine-point

CTEBS scale indicated that there were some areas of strengths and some areas of weaknesses during in-person and remote teaching which addresses the first research question posed: which elements that comprise school climate and CTE do elementary teachers in rural schools rate higher during in-person learning and during remote learning?

Table 4.3

Comparison of Means for In-person and Remote Teaching

		M	*SD*	*SEM*
		RSLEQ		
Student Relations	In-person teaching	3.80	.642	.066
	Remote teaching	3.90	.684	.070
Instructional Innovation	In-person teaching	3.72	.583	.060
	Remote teaching	3.48	.423	.043
Collaboration	In-person teaching	3.62	.642	.066
	Remote teaching	3.66	.684	.070
School Resources	In-person teaching	3.52	.586	.060
	Remote teaching	3.27	.664	.068
Decision Making	In-person teaching	3.10	.613	.063
	Remote teaching	2.95	.582	.063
		CTEBS		
Instructional Strategies	In-person teaching	7.34	1.03	.115
	Remote teaching	6.53	1.54	.172

Student Discipline	In-person teaching	6.84	1.22	.136
	Remote teaching	6.09	1.75	.195

Note. *n* = RSLEQ = 96, CTEBS = 81

In Table 4.3 the mean values of the five variables of school climate and the two variables of CTE are presented. It should be noted that a typographical error was discovered for 13 survey items on the RSLEQ scale that were positively coded (i.e., 4 = Agree, 5 = Somewhat Agree rather than Strongly Agree). However, further data analysis of recoded teacher responses (i.e., 4 = Somewhat Agree and 5 = Agree) yielded comparable means and *t*-test significance outcomes for all RSLEQ elements. Thus, the initial analysis is presented in Table 4.3 as the researcher is confident that teachers selected a 5 to indicate they strongly agreed with the item and there were no notable differences in the analysis if a 4 for Agree was selected.

During In-Person Teaching

School Climate. The questions teachers answered about school climate were based on the five variables established by Johnson et al., (2007) in the RSLEQ. These variables were collaboration, student relations, decision making, instructional innovation, and school resources. For collaboration teachers were asked questions that related to working on instructional practices with other teachers, good teamwork, discussing the needs of students, and regular opportunities to work with other teachers. The questions around student relations asked teachers about whether or not students were well-mannered and respectful to staff, well-behaved, helpful, cooperative, and motivated to learn. The school resources questions pertained to the supply of equipment and resources, the availability of video and instructional equipment, and the

available resources and materials in the school library. Decision making questions asked teachers if they were frequently asked to participate in decisions or if the principal made most of the decisions. The questions around instructional innovation asked if teachers were willing to try new teaching approaches in their school, if they felt innovative, and whether or not new curricula were implemented. These five areas help make up a school's climate.

As can be seen the first section of the RSLEQ data in Table 4.3, during in-person instruction these rural elementary teachers reported the strongest areas of school climate to be student relations and instructional innovation. Teachers believed that when they were teaching in-person students were well-mannered, helpful, cooperative, and motivated to learn. This resulted in a high rating for this category (M=3.80). Teachers also believed that while teaching in-person, they implemented innovative and creative ways to teach students as evidence by the higher rating in the instructional innovation category (M=3.72).

In comparison, the weakest in-person school climate areas rated by these teachers were decision making and school resources. These rural elementary teachers did not feel like they had a lot of say for what happens in their building as evidence by the lower mean in the decision making category (M=2.95). Decision making included day-to-day operations as well as helping with instructional or curricular decisions.

Collective Teacher Efficacy. The questions on the CTEBS are comprised to support two variables: instructional strategies and student discipline. For instructional strategies, teachers are asked questions about how they produce meaningful student learning, help students believe they can do well in schoolwork, and if they are able to

help students master complex content. The questions also ask how teachers promote a deep understanding of academic concepts, help students think critically, and foster student creativity. The questions on student discipline required these rural remote teachers to reflect on if expectations are clear about appropriate student behavior, if there are established rules and procedures that facilitate learning, and how teachers should respond to defiant students. Questions on student discipline are based upon how teachers in their school control disruptive behavior, get students to follow school rules, and what teachers do to help students feel safe while they are at school.

Based on the in-person nine-point CTEBS from May 2020, these rural remote teachers reported that the strongest variable of the two CTE areas was Instructional Strategies (*M*=7.34). These rural teachers believed that the area of student discipline was also strong during in-person instruction (*M*=6.84).

During Remote Teaching

School Climate. During remote learning, the strongest variables of school climate were student relations and collaboration as can be seen in Table 4.3. Student relations increased while teaching remotely which meant students continued to be well-behaved and respectful (*M*=3.80 in person; *M*=3.90 remote). Collaboration also increased during remote teaching (*M*=3.62 in person; *M*=3.66 remote).

The weakest variables of school climate during remote teaching were school resources and decision making (*M*=3.27; *M*=2.95 respectively). While these rural elementary teachers were teaching remotely they did not feel they had access to school resources and they were unable to participate in the making of schoolwide decisions.

Collective Teacher Efficacy. The strongest CTE area for remote teaching was instructional strategies (*M*=6.53). The weakest CTE variable for remote teaching was student discipline (*M*=6.09). This was the lowest mean for CTE.

Discussion of Findings for Research Question 1

Based on the analysis of the data shown in Table 4.3, the first research question can be answered: which elements that comprise of school climate and CTE do elementary teachers in rural schools rate higher during in-person learning and during remote learning?

Of the five areas of school climate (student relations, instructional innovation, collaboration, school resources, decision making) from the five-point RSLEQ scale, teachers that participated in this research reported that during in-person instruction the highest three areas of school climate were student relations (*M=3.80),* instructional innovation (*M*=3.72), and collaboration *(M*=3.62). During remote instruction, these remote teachers reported the same top three areas, student relations (*M*=3.90), collaboration (*M*=3.66), and instructional innovation (*M*=3.48), although collaboration ranked second during remote instruction instead of instructional innovation.

The high teacher ratings for student relations during remote instruction might not have been the case had instruction gone to remote learning at the beginning of the school year. Since rural elementary teachers went to remote teaching in March, solid relationships and classroom procedures and expectations were already in place for teachers and students to carry over into the remote setting. Gares et al., (2020) also reported that having “strong, preexisting connections” with their college learners, and

their colleagues, allowed them to navigate the difficulties of going to remote instruction (p. 3332).

One explanation for the strong ratings for collaboration during remote instruction was observed by this researcher at her school as teachers looked to one another for ideas and suggestions for remote lessons. Teachers shared responsibilities, and built upon each other's strengths. For example, a tech savvy teacher would help make videos while another teacher would help make copies for the whole grade level instead of just their own class.

It's important to note the two areas of school climate that were ranked the lowest by these rural elementary teachers. During in-person and remote instruction school resources ranked low and (*M*=3.52; *M*=3.27 respectively). Decision making scored the lowest during in-person and remote instruction (*M*=3.10; *M*=2.95 respectively). These rural elementary teachers reported that they felt there were fewer school resources available to them as they taught remotely such as the supplies of instructional equipment and resources. This makes sense as many resources would be in the school building and teachers did not have had access to these materials. These teachers also felt that they did not have much input with school decisions.

Of the two areas of CTE Instructional Strategies and Student Discipline, analyzed with the CTEBS nine-point scale, the highest mean area was Instructional Strategies during in-person instruction (*M*=7.34). Student discipline during in-person instruction also was high with a mean of 6.84. The means for both areas were lower for remote instruction with Instructional Strategies at 6.53 and Student Discipline at 6.09.

Since this would be the first time for teachers and staff to teach and learn remotely, it is understandable why the results indicate a low mean for instructional strategies. It is evident from the data that remote teachers struggled with how to hold students accountable during the period of remote teaching. Perhaps the absence of policy and procedures for remote leaning could have contributed to the lack of engagement and expectations for remote students and teachers, easily causing inconsistences and frustration with an already difficult situation.

Mean Comparison of School Climate and CTE During In-person and Remote Teaching

Unexpectedly, this research occurred during the COVID-19 pandemic which required many schools to close their doors and teach remotely. Due to the rapid shift to emergency remote learning, teachers were significantly impacted. They were expected to deliver quality instruction remotely which exposed wide disparities of experience with the use of technology as the primary method of instruction. By comparing the means from the data from the RSLEQ climate survey and the CTEBS survey for both in-person and remote teaching the second research question is addressed: how do the ratings of the areas of school climate and CTE change when teachers transition from a traditional, in-person elementary classroom to a remote learning environment?

School Climate

Student Relations. For both data collecting periods for in-person and remote instruction, student relations had the highest mean for all the variables during in-person instruction (M = 3.80) and during remote instruction (M = 3.90), as can be seen in Table 4.3.

Collaboration. Collaboration between teachers increased slightly during remote teaching as can be seen by examining Table 4.3. The mean for collaboration during in-person teaching was 3.62 and the mean for remote teaching was 3.66.

Instructional Innovation. Table 4.3 shows that instructional innovation decreased during remote learning, from a mean of 3.72 during in-person instruction to 3.48 while remote teaching.

Resources. By examining Table 4.3 it is clear that school resources was consistently ranked one of the lowest areas of school climate. The mean for School Resources during in-person teaching was 3.52 while the mean for remote teaching was 3.27.

Decision-making. For both in-person and remote teaching, decision making was ranked by teachers lower than all the others, as can be seen when looking at Table 4.3. The mean for decision making during in-person teaching was 3.10 and the mean for remote teaching was 2.95.

Collective Teacher Efficacy

Instructional Strategies. On the nine-point CTEBS scale, these rural teachers rated instructional strategies, for in-person instruction, with a mean of 7.34 during in-person instruction and it decreased during remote teaching to a mean of 6.53, as show in Table 4.3.

Student Discipline. The CTE variable of student discipline also had decreased during remote instruction. As can be seen when examining Table 4.3, means decreased from 6.84 during in-person instruction to 6.09 during remote instruction.

Discussion of Findings for Research Question 2

Based on the analysis of the mean data shown in Table 4.3, the second research question can be answered: how do the ratings of the areas of school climate and CTE change when teachers transition from a traditional, in-person elementary classroom to a remote learning environment?

One of the strongest areas of school climate was student relations. The teachers that participated in this research felt they were able to teach and reach student more productively while they were teaching in person. Teachers were able to connect better with students who are struggling or having behavioral difficulties when they are in person. These teachers also believed that they could respond to students needs and behavior better in person rather than remotely. This supports the literature that indicates that students, whether in-person or remote, in rural elementary schools are typically well-mannered, respectful, helpful, cooperative, motivated to learn, and well-behaved. This could also be attributed to the setting of rural schools where families and schools may be more connected through not only school events, but throughout the community.

Collaboration is an integral part of school climate and it was one of the top three elements these rural elementary school teachers scored at a higher level (M=3.62 during in-person instruction and M=3.66 for remote instruction). The increase of collaboration during remote teaching may be indicative of teachers depending on their colleagues to support them during this drastic change in learning environments. Just as students learn from students, teachers learn from other teachers, so anytime the school can provide time for teachers to work together, with a purpose, such time will generally help strengthen a school's climate.

For the areas of instructional innovation, overall these rural elementary teachers believed that they were fairly innovative with their instructional practices while teaching in person. The ability to connect and motivate students, be creative with the delivery of instruction, and incorporate new curriculum was more challenging during remote instruction.

School resources was reported as an area of weakness for these rural remote teachers. There was a decline in the mean between these two testing periods indicating that when these rural elementary teachers were teaching remotely they thought there was a decrease in the amount of school resources that were available to them. Teachers believed that when they were in in-person teaching they had more accessibility to school resources such as technology and library materials. During remote learning, they reported having less resources such as instructional equipment and teaching tools. This could be attributed to the fact that all the materials teachers use to teach were in the schools and not with them at home as they tried to teach. These rural elementary teachers reported more access to school resources during in-person instruction rather than when they were teaching remotely.

For both in-person and remote teaching decision making was ranked as the lowest category by these rural teachers. As a building principal, this researcher had experiences during this time that might provide a possible explanation for this. It was noticed that school and district administration were charged with making many decisions without guidance from state or national authorities. It is easy to see how staff would feel that they did not have the same decision-making contributions as they would have if they were in the building. Decision-making opportunities for teachers decreased during the time of

remote learning. Decision making was rated low by these rural elementary teachers and even lower by these teachers when they were teaching remotely.

The strongest CTE area for remote teaching was instructional strategies, however it was not as strong as it was in person. Teachers reported that they were not feeling as confident in their ability to teach students to think critically, produce meaningful learning, believe they can do well, and foster creativity when teaching remotely.

It would appear that during remote instruction both areas of CTE, instructional strategies and student discipline, had lower ratings. These rural teachers did not feel as confident in their knowledge of strategies and skillset to deliver quality content remotely in order to help students be successful. This is an area of importance when building CTE. These rural elementary teachers found, during remote instruction, that it was more difficult to produce meaningful student learning, help students master complex content, promote deeper understanding of concepts, foster creativity, and help students think critically.

During the time of remote instruction, it appears that these rural teachers struggled to make clear expectations for student behavior, establish rules and procedures to facilitate learning, respond to defiant students, control disruptive behavior, and have students follow school rules. The researcher's conversations with teachers during this time period provides some context for the lower student discipline ratings. Teachers reported that they found attendance and participation to be a concern for some of their students. Some students would not show up for meetings or they would attend meetings but turn their camera off making it difficult for teachers to ascertain whether or not a child was engaging in the lesson.

As documented by Donohoo (2020), the effects of pandemics can negatively impact individuals and groups of individuals, such as stress (Bai et al., 2004), anxiety (Bults et al., 2011; Jones & Salathe, 2009), and fear (Shultz et al., 2016). Since efficacy beliefs are situational specific (Bandura, 1977), the impact on CTE for these rural teachers can be shown from the data collected in this research.

Significant Differences Between In-person and Remote Teaching

In order to answer the third research question, (i.e., Are school climate and CTE, from the two measurement occasions, May and June 2020, significantly different from one another?), a paired samples *t*-test was calculated to compare the mean score from the in-person survey administration to the mean of the remote survey administration. There were four variables that had significant differences when comparing the mean scores from in-person to remote teaching: school resources and instructional innovation from the RSLEQ survey and both variables from the CTEBS survey, instructional strategies and student discipline.

The *t* value and the 2-tailed significance for each element is documented in Table 4.4. The mean for school resources from the RSLEQ during the in-person teaching time period was 3.52 (SD = .585) and the mean from the period of time remote teaching was 3.27 (SD = .664). A significant difference from the two administrations was found ($t(95) = 2.46$, $p < .016$).

The mean for instructional innovation from the RSLEQ during the in-person teaching time period was 3.72 (SD = .583) and the mean from the period of time remote teaching was 3.48 (SD = .423). A significant difference from the two administrations was found ($t(95) = 2.79$, $p < .006$).

The mean for instructional strategies from the CTEBS during the in-person teaching time period was 7.34 (*SD* = 1.03) and the mean from the period of time remote teaching was 6.53 (*SD* = 1.54). A significant difference between the two administrations was found ($t(80) = 3.65$, $p < .000$).

The mean for student discipline from the CTEBS during the in-person teaching time period was 6.84 (*SD* = 1.22), and the mean from the period of time remote teaching was 6.09 (*SD* = 1.75). A significant difference between the two administrations was found ($t(80) = 3.01$, $p < .003$).

Table 4.4

Paired Samples t-Test

		t	*p* (2-tailed)
	RSLEQ		
School Resources	In-person teaching Remote teaching	**2.46**	**.016**
Collaboration	In-person teaching Remote teaching	-.393	.695
Decision Making	In-person teaching Remote teaching	1.54	.127
Instructional Innovation	In-person teaching Remote teaching	**2.79**	**.006**
Student Relations	In-person teaching Remote teaching	-1.26	.211
	CTE		

Instructional Strategies	In-person teaching Remote teaching	**3.65**	**.000**
Student Discipline	In-person teaching Remote teaching	**3.01**	**.003**

Note. *n* = RSLEQ = 96, CTEBS = 81, *df* = 80

Discussion of Findings for Research Question 3

Based on the data in Table 4.4, the school climate areas of school resources and instructional innovation, and the CTE areas of instructional strategies and student discipline, showed significant differences from in-person teaching and remote teaching. This answers the second research question; are school climate and CTE, from the two measurement occasions, May and June 2020, significantly different from one another?).

In all four of the areas that showed significant difference (school climate areas of school resources and instructional innovation and the CTE areas of instructional strategies and student discipline), teachers reported to a significant degree that in-person instruction was preferred and more effective than remote teaching. During a time where teachers have been challenged more than ever, rural school district administrators would want to focus their attention on these four areas in order to help improve school climate and collective teacher efficacy. Improving school climate and CTE has far reaching implications as the literature clearly demonstrated the correlation between these two constructs and increased teacher retention and ultimately improvements in student achievement.

For the significant difference highlighted by the RSLEQ in the area off school resources it can be inferred that teachers reported that they had more access to resources when they were teaching in-person rather than remotely.

A significant difference for instructional innovation on the RSLEQ was found and this data shows that these teachers believed that their ability to be innovative in their teaching, such as producing meaningful learning and helping students master complex content was more effective while teaching in-person.

As shown in Table 4.4, a significant difference was found for instructional strategies on the CTEBS. This is evidence that these rural remote and distant teachers believed that they could help their students produce more meaningful work, do well with their schoolwork, promote deep understanding of academic concepts, think critically, and foster creativity more effectively while teaching in-person rather than remotely.

As shown in Table 4.4, a significant difference was found for student discipline on the CTEBS. The data shows that teachers reported that in the area of student discipline they believed that they had more control over students' behaviors when they were teaching in person rather than teaching remotely.

Paired Samples Correlations

Table 4.5 documents the paired samples correlations between in-person teaching and remote teaching. No significant correlations were found between the two sampling periods.

Table 4.5

Paired Samples Correlations In-person and Remote Teaching

		Correlation	*p*
School Resources	In-person teaching Remote teaching	-.240	.019
Collaboration	In-person teaching Remote teaching	-.126	.223
Decision Making	In-person teaching Remote teaching	-.084	.414
Instructional Innovation	In-person teaching Remote teaching	-.293	.004
Student Relations	In-person teaching Remote teaching	-.147	.152
	CTE		
Instructional Strategies	In-person teaching Remote teaching	-.182	.104
Student Discipline	In-person teaching Remote teaching	-.107	.343

Note. *n* = RSLEQ = 96, CTEBS = 81, *df* = 80

Implications and Recommendations That Contribute to the Field of Educational Leadership

It was important to determine which areas of school climate and CTE were present during in-person learning and then compare these findings to the areas that were

present during remote learning. In this way, it can be determined what rural elementary schools could focus on while engaged in in-person learning and then determine what areas of school climate and CTE showed significant differences when teachers shifted to remote learning.

It has been well documented in the literature that a positive school climate and a strong sense of CTE can help retain teachers and improve student achievement (Kraft et al., 2016; Donohoo, 2018; Donohoo et al., 2018). Therefore, school administrators have much to gain by strengthening elements of school climate and CTE in order to support and retain their teachers. The following discussion seeks to address the fourth and final research question: Which of the elements that comprise CTE and positive school environment need additional attention to support and retain qualified teachers in rural remote and distant elementary schools?

Based on the data collected, there are several variables of school climate and CTE that need additional attention to support and retain qualified teachers, and ultimately improve student achievement in these rural remote and distant elementary schools. Pertaining to school climate, primarily elements related to school resources and instructional innovation could be a focus. When looking at CTE, instructional strategies and student discipline are elements that need attention. In the sections that follow, these elements, along with recommendations that may be helpful to school administrators, will be discussed.

It is clear that rural elementary school administrators have a few areas to help support teachers when school is in-person and if they are in a remote teaching situation. It should be noted that the mean for all elements of school climate was never above the

rating of a four, on a scale of one to five, therefore all elements of school climate could be examined. It is recommended, based on these teachers' ratings of school climate during in-person instruction, that administrators need to help teachers continue to foster student relations as this is reported as the strongest factor in school climate. Teachers should be encouraged to continue to be innovative with their instruction, for example cultivating a culture of creativity, asking more open-ended questions, creating flexible learning environments and seating options, and promote flexible thinking with a growth mindset.

The data indicated that instructional innovation is another area that administrators should support these rural teachers with while teaching in-person, and that support becomes even more critical when teaching remotely. In order for teachers to be more innovative, administrators could consider looking into professional development opportunities, in-person, virtually, or with book groups. Professional development opportunities could be areas that encourage a growth mindset, risk taking, and whatever needs the staff indicate are important and needed by conducting a needs assessment. Some ideas to improve instructional innovation might be to incorporate Science, Technology, Engineering and Technology (STEM) or Science, Technology, Engineering, Art, and Technology (STEAM). STEM or STEAM programs provides students with ways to approach real-word problems that requires them to ask questions, think critically, and be creative. These are skills students need as they pursue their education. If they have not already been incorporated in the school, administrators could start looking at ways to build STEM/STEAM programs. Two examples are Camp Invention or Makerspace.

Camp Invention is a program schools and parents can purchase that will provide lessons and activities that encourage creativity and innovation. Makerspace is another way to incorporate creativity, innovation, technology, critical thinking and problem-solving skills by providing supplies and a space for children to discover and create all within the realms of the curriculum. STEM or STEAM can also be integrated in the Makerspace.

The findings from this research make it clear that to improve school climate, administrators need to look to improving school resources. Teachers need more school resources, more so when teaching remotely, but also while they are teaching in-person. This can be done by purchasing more resources teachers need, such as document cameras, laptops, as well as providing profession development on how to use these items.

Based on the questions from the RSLEQ, teachers reported the need for more access to technology and video equipment. If the school has a technology teacher or district technology coordinator, inventory of what the school has should take place to help plan for what is needed, from Chromebooks/laptops for staff and students as well as mice and headphones for all students.

It should be noted that not all resources have to be technology-based. The school library is a resource for teachers. In order to determine the needs of the school library a School Library Evaluation Checklist, published the American Association of School Libraries, could be conducted with relevant stakeholders, including administration, teachers, parents, and students to determine needs. Based on what is needed administrators will need to work with their school board to help budget for the materials

and resources needed. Including teacher on the decisions of what resources they need should be part of the conversations between administration and teachers.

Whether teaching in-person or remotely, administrators need to give these rural remote teachers more decision-making capacity when working to improve school climate since this was reported as one of the weakest areas by the rural remote and distant teachers that participated in this study. Since, most rural school districts are governed by state law and local School Board-approved policies, some ideas for improving teacher's involvement in school and curricular decisions might be as follows: Administrators could keep their staff apprised of federal and state bills that are being discussed. Administrators could also inform staff of school board meeting agendas and decisions that impact teachers. At the school level, administrators should seek to build and foster a culture of trust, transparency, and collaboration. This can be done by creating staff meeting agendas and reviewing the agenda with the staff prior to the meeting for any revisions or additions to the agenda. Curricular, scheduling, school decisions should be discussed with stakeholders and provide opportunities for them to give feedback.

In order to build CTE in rural elementary schools, the findings of this research point to the need for administrators to focus their attention on both variables of instructional strategies and student discipline. A focus on these two areas in rural elementary schools might help build teacher resiliency with federal and state initiatives or top-down directives. When improving teachers' confidence in their use of instructional strategies, Goddard et al. (2004) found, "The connections between collective efficacy beliefs and student outcomes depend[ed] in part on the reciprocal relationships among these collective efficacy beliefs, teachers' personal sense of efficacy, teachers'

professional practice, and teachers' influence over instructionally relevant school decisions" (p. 3). In other words, if administrators seek to improve teachers' CTE, then supporting teachers to improve their knowledge and skills in instructional strategies and empowering them to select instructional areas of focus is of paramount importance. Of note, decision making had the lowest mean score of all the school climate variables and the literature supports its connection to overall CTE. Along with helping make curricular decisions, teachers should be involved in the decisions made about professional development so they can advocate collectively as a staff for the skills and knowledge they need to work on.

The results of this study indicate that administrators need to continue to support teachers by improving instructional strategies when teaching remotely. There are several ways that administrators might want to try to accomplish this. Proper and timely professional development on technology platforms such as Google and Zoom can help support remote teachers. The development of a Remote Learning Handbook can establish schoolwide practices, procedures, and expectations that students and teachers can refer to in order to support accountability. This handbook could also include anecdotes that outline teachers' voices of success which would strengthen efficacy through documenting vicarious experiences. In keeping with the findings of this study, it may behoove administrators to ask teachers to be part of the decision making on what professional development they need along with helping write the Remote Handbook.

Administrators could help build the area of instructional strategies by conducting observations with staff, in-person and even during a period of remote instruction, in order to provide messages of high expectations and positive reassurances, which builds efficacy

through social persuasion. Administrators could also provide opportunities for teachers to observe the successful practices of other teachers which creates vicarious experiences.

Student discipline, as part of CTE, was also an area that teachers reported as an area of need, especially during remote teaching. The development of a Remote Learning Handbook could help provide support for the area of student discipline. The Handbook could be written with input from all stakeholders and could provide guidance and clear expectations for what is expected of students, families, and staff. The document would be approved by the school board which then makes it policy and can support administrators when reaching out to families about attendance or behavioral concerns during remote instruction.

Another possible way to build CTE would be for administrators to help teachers create "repeated successes" through four processes that create mastery experiences (Donohoo & Katz, 2019). These four processes incorporate the following: learning together, cause-and-effect relationships, goal-directed behavior, and purposeful practice (Donohoo & Katz, 2019). Learning together requires an interdependence among the teachers on the team to depend on each other to collaborate and problem solve together. Teachers often look at the results of their teaching, such as test scores and rarely look to see what caused those results. This is the cause and effect relationships that teachers need to look at and address when trying to create mastery experiences. Goal-directed behavior should be focused on setting goals about learning new approaches to instruction as a team. Finally, teachers should be supported to develop purposeful teaching practices by focusing on the four essential components of purposeful practices: narrow goals, a specific area of focus, a plan on how to attain those goals, and ways to monitor progress

for their work in these areas (Ericson & Pool, 2016). Once teachers begin creating these mastery experiences, where teachers are able to build success upon previous successes, CTE will improve.

Recommendations and Implications for Educational Leadership for Social Justice

Principals are the leaders in the area of social justice for the schools (Theoharis, 2007). Providing a high-quality and equitable education for all students regardless of the district the student is enrolled in is an important responsibility of any educational leader. The results of this study highlights few areas which administrators in these rural schools can look to in order to support social justice at the elementary level. As the research clearly indicated, school resources for both in-person and remote teaching is an area that needs attention in the rural schools that participated. As has been documented in prior research rural elementary schools are known for not having the same resources as their urban counterparts (Rosenberg et al., 2015; Redding & Walberg, 2012). A significant need for all schools is the capacity to support remote learning with technological resources. Some examples of these resources would be digital cameras, document cameras, laptops, and one-to-one devices for all students and staff. These resources are crucial, and can build teachers' perceptions of school climate and CTE, especially during a time where remote learning is clearly prevalent and most likely not going away.

Access to the internet is another challenge in many rural areas and an example of a critical resource that can create educational inequities between urban and rural districts. From the perspective of the researcher, who is an educational leader in her district, this disparity was evident over the past year when schools were forced into remote learning. Administrators need to help advocate with local internet providers to help get students

and staff the support they need in order to access teaching and learning. For example, this researcher was able to connect with an internet provider and get a family the extra modems they needed for their large family. Our district worked to purchase hot spots for families that did not have internet. These are all examples of ways to provide equality for our rural staff and students. These needs, that are connected to school climate and CTE, are unlike those of students in urban areas that usually have well established internet access.

Finally, by focusing on what the findings of this research determined was important for improved school climate and CTE in schools (i.e., school resources and instructional innovation) administrators will want to provide timely and research-based professional development. Professional development is a social justice issue related to the equality of training available to rural educators. Often rural teachers lack access to professional development to improve instructional innovation for example, primarily because of the travel distance to major cities where opportunities are more prevalent. Professional development offered locally or virtually can provide the equity in education that is needed in order to retain qualified teachers in rural schools.

Limitations

As has been reported, the number of participants was lower than anticipated when starting this research. The Coronavirus impacted some principal's decisions on whether they would allow this researcher to share the survey with the staff given the increased stress level of teachers. The researcher also was not able to visit schools to encourage survey participation as originally planned.

Another limitation to this study could be that teachers with more experience and commitment to the field of education may have had a greater inclination to fill out the survey. As the research indicated, 64% of the in-person participants and 68% of the remote participants, were experienced teachers. Teachers with high CTE may also have been more likely to complete the surveys. In-person participants (38%) and remote participants (42%) reported that they had been at the same school for over ten years indicating an investment in their school. They would believe in the importance of contributing to the success of their school. If younger and less experienced teachers had participated, the results of the data collected might have been affected. There were also more women that completed the survey then men. This however, rather than a limitation may reflect the typical male female ratio of teachers in schools.

Although the surveys were not lengthy, a person's mood at that particular time of day the survey was completed may have altered the results. For example, a bad day, or negative experience from that day, could have impacted the survey responses. Also, the shift to emergency remote teaching in March may have led to screen time burnout reducing the amount of participation for this study.

The timing of the surveys may also be seen as a limitation to the reported results, as participants during the May administration were asked to reflect on their beliefs of school climate and CTE during in-person teaching, however, by that time most teachers had already begun the period of remote teaching.

Implications for Leadership Agenda and Growth

The researcher intends on reaching out to all the principals who agreed to have their staff surveyed and share the results and recommendations from this research. The

intent would be to also have conversations and share ideas about what components of school climate and CTE they have fostered or if they are interested in providing professional development for their staff in any of the areas that have proven to be areas that need attention in order to support their staff and students.

Although the researcher does not work in a school that is delineated by NCES as a rural remote or distant school, she does work in a rural fringe school which exhibits many of the same struggles as rural remote and distant schools. Ideally, next steps would include finding ways to include staff in more decision-making opportunities, as the evidence from the research indicates teacher involvement in school level and curricular decisions would strengthen and improve school climate. It would be important to also determine what school resources staff need to be successful while teaching in-person and remotely. One possibility would be to have staff work with the technology teacher to take inventory and survey staff on what they need.

Finally, for the components of CTE, instructional design and student discipline, this researcher plans to start a Principal Advisory Council for the next school year with a member from each grade level and members of the staff who are not classroom teachers such as counselors, nurses, and specials' teachers. These meetings will meet once a month and will be facilitated by two chairs who are collective bargaining members. This committee will work on helping make school-based decisions on instructional strategies and student discipline. During this process, the Committee will help develop staff meeting agendas that empower teachers to have voice and choice in these meetings.

Future Directions

Future research might want to investigate school climate and CTE in urban schools in the state of New Hampshire using the same instruments to compare and contrast results. The addition of in-person visits to schools and the use of open-ended qualitative questions in future research may be able to enhance the data collected and validate or refute the results obtained here.

Ultimately more research could be used to determine how to build on what practices are working well for staff and what areas need attention in order to build the school's climate and CTE. The Coronavirus completely altered the way we look at public education. There is no doubt that additional research will need to be conducted on the impact of remote learning on teachers and the question of where remote learning will lead us in the future.

References

American Institutes for Research. (2018, June). ESSA: Accountability.

Amrein, A. L., & Berliner, D. C. (2002). High-stakes testing, uncertainty, and student learning. *Education Policy Analysis Archives*, *10*(181), 1–74.

Bai Y., Lin C., Lin C.Y., Chen J.Y., Chue C., & Chou P. (2004). Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatric Services, 55(9).

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191-215.

Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist*, 344–358.

Bandura, A. (1986). From thought to action: Mechanisms of personal agency. *New Zealand*, *15*(1), 1–17.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117–148.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A. (1999). Social cognitive theory: an agentic perspective. *Asian Journal of Social Psychology*, *2*, 21–41.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science*, *1*(2), 164–180. https://doi.org/10.1111/j.1745-6916.2006.00011

Berebitsky, D., & Salloum, S. J. (2017). The relationship between collective efficacy and teachers' social networks in urban middle schools. *AERA Open*, *3*(4), 1–11. https://doi.org/10.1177/2332858417743927

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, *15*(1), i–vi. https://doi.org/10.5281/zenodo.3778083

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, *32*(7), 513–531.

Bults M., Beaujean D., de Zwart O., Kok G., van Empelen P., van Steenbergen J., & Voeten H. (2011). Perceived risk, anxiety, and behavioural responses of the general public during the early phase of the influenza A (H1N1) pandemic in the Netherlands: Results of three consecutive online surveys. BMC Public Health, 11(2).

Burns, J. M. (1978). *Leadership*. New York, NY: Harper & Row.

Çalik, T., Sezgin, F., Kavgaci, H., & Kilinç, A. Ç. (2012). Examination of relationships between instructional leadership of school principals and self-efficacy of teachers and collective teacher efficacy. *Educational Sciences: Theory & Practice*, 2498–2504.

Cantrell, S. C., & Hughes, H. K. (2008). Teacher efficacy and content literacy implementation: An exploration of the effects of extended professional development with coaching. *Journal of Literacy Research*, *40*(95), 95-127. http://dx.doi.org/10.1080/10862960802070442

Consolidated State Plan: The Elementary and Secondary Education Act of 1965, as

amended by the Every Student Succeeds Act. (2019, January 18). New Hampshire Department of Education.

Cansoy, R., & Parlar, H. (2018). Examining the relationship between school principals' instructional leadership behaviors, teacher self-efficacy, and collective teacher efficacy. *International Journal of Educational Management*, *32*(4), 550–567.

Caprara, R. P., Barbaranelli, C., Borgogni, L., & Steca, P. (2003). Teachers', school staff's and parents' efficacy beliefs as determinants of attitudes toward school. *Journal of Educational Psychology*, *65*, 49–67.

Carver-Thomas, D., & Darling-Hammond, L. (2017). *Teacher Turnover: Why It Matters and What We Can Do About It*. Learning Policy Institute.

Chirkina, T. A., & Khavenson. (2018). School climate: a history of the concept and approaches to defining and measuring it on PISA questionnaires. *Russian Education & Society*, *60*(2), 133–160. https://doi.org/10.1080/10609393.2018.1451189

Cosner, S., & Jones, M. F. (2016). Leading school-wide improvement in low-performing school facing conditions accountability. *Journal of Educational Administration*, *54*(1), 41–57. https://doi.org/10.1108/JEA-082014-0098

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, Quantitative, and Mixed Methods Approach* (5th ed.). Thousand Oaks, CA: Sage.

Deniston, R., & Gerrity, K. (2010). Elementary school teachers' perceptions of No Child Left Behind and its effect on morale. *Scholarlypartnershipsedu*, *5*(2), 26–34.

DeWitt, P. M. (2018). *School climate: Leading with collective efficacy*. Thousand Oaks, CA: Corwin.

Donohoo, J. (2020, August 11). Has COVID-19 placed self-efficacy and collective efficacy at risk? *Jenni Donohoo Center for Collective Efficacy*. http://teacher-efficacy.com/covid-19/

Donohoo, J. (2017). Collective teacher efficacy research: Implications for professional learning. *Journal of Professional Capital and Community*, *2*(2), 101–116. https://doi.org/10.1108/JPCC-10-2016-0027

Donohoo, J. (2018). Collective teacher efficacy research: Productive patterns of behaviour and other positive consequences. *Journal of Educational Change*, *19*(3), 323–345. https://doi.org/10.1007/s10833-018-9319-2

Donohoo, J., Hattie, J., & Eells, R. (2018). The power of collective efficacy. *Educational Leadership*, *75*, 41–44. http://www.ascd.org/

Donohoo, J., Katz, S., (2019). What drives collective efficacy? *Educational Leadership*, *76*, 25- 29. http://www.ascd.org/

Edmonds, R. (1979). Effective Schools for the Urban Poor. *Educational Leadership*, *37*(1), 15–18, 20–24.

Eells, R. J. (2011). *Meta-analysis of the relationship between collective teacher efficacy and student achievement*. Loyola, Chicago.

Emory, R., Caughy, M., Harris, T. R., & Franzini, L. (2008). Neighborhood social processes and academic achievement in elementary school. *Journal of Community Psychology*, *36*, 885–898.

Ericson, A., & Pool, R. (2016). *Peak: How to master almost anything*. Penguin. https://irp-cdn.multiscreensite.com/

Federal Communications Commission (FCC, 2019). *Broadband deployment report: Inquiry concerning deployment of advanced telecommunications capability to all Americans in a reasonable and timely fashion*. https://docs.fcc.gov/public/attachments/FCC-19-4A1.pdf.

Fisher, D. L., & Fraser, P. J. (1990). Fisher, Darrell L.; Fraser, Parry J. TITLE Validity and Use of the School-Level Environment Questionnaire. Presented at the Annual Meeting of the American Educational Research Association, Boston, MA.

Gares, S. L., Kariuki, J. K., & Rempel, B. P. (2020). Community matters: student-instructor relationships foster student motivation and engagement in an emergency remote teaching environment. *Journal of Chemical Education*, *97*(9), 3332–3335. https://doi.org/10.1021/acs.jchemed.0c00635

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, *37*, 479–507.

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2004). Collective efficacy beliefs: theoretical developments, empirical evidence, and future directions. *Educational Researcher*, *33*(3), 3–13.

Goddard, R. D., LoGerfo, L., & Hoy, W. K. (2004). High school accountability: The role of perceived collective efficacy. *Educational Policy*, *18*(3), 403–425. https://doi.org/10.1177/0895904804265066

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, *37*, 479–507.

Goddard, R. D., Skria, L., & Salloum, S. J. (2017). The role of collective efficacy in closing student achievement gaps: A mixed methods study of school leadership for excellence and equity. *Journal of Education for Students Placed at Risk*, *22*(4), 220–236. https://doi.org/10.1080/10824669.2017.1348900

Hallinger, P. (n.d.). Leading educational change: reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education*, *33*(3), 329–352.

Hattie, J. (2009). Visible Learning: A synthesis of over 800 meta-analyses relating to achievement. New York, NY: Routledge

Hattie, J. (2015). *10 mindframes for visible learning*. New York, NY: Routledge.

Hattie, J. (n.d.). Hattie ranking: 252 influences and effect sizes related to student achievement.

Hattie, J., (2018). *Collective teacher tfficacy (CTE) according to John Hattie*. Visible Learning. https://visible-learning.org/2018/03/collective-teacher-efficacy-hattie/

Hattie, J. (2020). Visible learning effect sizes when schools are closed: what matters and what does not. Corwin. https://corwin-connect.com/2020/04/visible-learning-effect-sizes-when-schools-are-closed-what-matters-and-what-does-not/

Heck, R. H., & Marcoulides, G. A. (1996). School culture and performance: testing the invariance of an organizational model. *School Effectiveness and School Improvement*, *7*(1), 76-96. https://doi.org/10.1080/0924345960070104

Howley, A., Rhodes, M., & Beall, J. (2009). Challenges facing rural schools: Implications for gifted students. *Journal for the Education of the Gifted*, *32*(4), 515–536.

Howley, C., Showalter, D., Sturgill, D., & Smith, M. (2013). Rural Math Talent, Now and Then. *Roeper Review*, *35*(2), 102–114.

Hoy, W. K. (1990). Organizational climate and culture: A conceptual analysis of the school workplace. *Journal of Educational and Psychological Consultation*, *1*(2), 149–168.

Hoy, W., Sweetland, S., & Smith, P. (2002). Toward an organizational model of achievement in high schools: The significance of collective efficacy. *Educational Administration Quarterly, 38*(1), 77-93.

IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp

Jackson, C. K., Johnson, R. C., & Persico, C. (2015). The effects of school spending on educational and economic outcomes: evidence from school finance reforms. *NBER Working Paper No*. *20847*.

Jenson, J. L., McDaniel, M. A., Woodard, S. M., & Kummer, T. A. (2014). teaching to the test…or testing to teach: exams requiring higher order thinking skills encourage greater conceptual understanding. *Educational Psychology Review*, *26*(2), 307–329.

Johnson, B., & Stevens, J. J. (2001). Exploratory and confirmatory factor analysis of the school level environment questionnaire (SLEQ). *Learning Environments Research*, *4*, 325–344.

Johnson, B., Stevens, J. J., & Zvoch, K. (2007). Teachers' perceptions of school climate a validity study of scores from the revised school level environment

questionnaire. *Educational and Psychological Measurement*, *67*(5), 833–844. https://doi.org/10.1177/0013164406299102

Jones J., & Salathé M. (2009). Early assessment of anxiety and behavioral response to novel swine-origin influenza A(H1N1). PLoS One. 4(12).

Jordan P. W. & Hamilton, L.S. (2019). *Walking a fine line: School climate surveys in state ESSA plans*. Georgetown University. https://www.future-ed.org/

Klassen, R. M. (2010). Teacher stress: The mediating role of collective efficacy beliefs. *The Journal of Educational Research*, *103*, 342-350. http://dx.doi.org/10.1080/00220670903383069

Lafortune, J., Rothstein, J., & Schanzenbach, D. W. (2016). School Finance Reform and the Distribution of Student Achievement. *IRLE Working Paper No*. *100-16*.

Leithwood, K., & Beatty, B. (20018). *Leading with Teacher Emotions in Mind*. Thousand Oaks, CA: Corwin.

MacNeil, A., Prater, D., & Busch, S. (2009). The effects of school culture and climate on student achievement. *International Journal of Leadership in Education*, *12*(1), 73–84. https://doi.org/10.1080/13603120701576241

McCoach, D. B., & Colbert, R. D. (2010). Factors Underlying the collective teacher efficacy scale and their mediating role in the effect of socioeconomic status on academic achievement at the school level. *Measurement and Evaluation in Counseling and Development*, *43*(1), 31–47. https://doi.org/10.1177/0748175610362368

Mertler, C. (2011). Teachers' perceptions if the influence of No Child Left Behind on classroom practices. *Current Issues in Education*, *13*(3).

Miri, B., Ben-Chaim, D., & Zoller, U. (2007). Purposely teaching for the promotion of higher- order thinking skills: A case of critical thinking. *Research in Science Education*, *37*(4), 353–369. https://doi.org/10.1007/s11165-006-9029-2

Moolenaar, N. M., Sleegers, P. J., & Daly, A. J. (2012). Teaming up: Linking collaboration networks, collective efficacy, and student achievement. *Teaching and Teacher Education*, *28*, 251-262. http://dx.doi.org/10.1016/j.tate.2011.10.001

Mosoge, M. J., Challens, B. H., & Xaba, M. I. (2018). Perceived collective teacher efficacy in low performing schools. *South African Journal of Education, 38*(2), 1–9. https://doi.org/10.15700/saje.v38n2a1153

Murnane, E., Walker, T., Tench, B., Voida, S., & Snyder, J. (2018). Personal informatics in interpersonal contexts: Towards the design of technology that supports the social ecologies of long-term mental health management. *Proceedings of the Acm on Human-Computer Interaction, 2*(Cscw), 1-27. http://dx.doi.org/10.1145/3274396

National School Climate Council. (2007). The school climate challenge: Narrowing the gap between school climate research and school climate policy, practice guidelines and teacher education policy.

Negiş-Işik, A., & Gürsel, M. (2013). Organizational culture in a successful primary school: An ethnographic case study. *Educational Sciences: Theory & Practice*, *13*(1), 221–228.

New Hampshire Department of Education. (n.d.). *NHDOE: Technical Report: Additional Targeted Support (ATS) Schools*.

Ninkovic´, S. R., & Floric´, O. C. K. (2016). Transformational school leadership and teacher self-efficacy as predictors of perceived collective teacher efficacy. *Educational Management Administration & Leadership*, *46*(1), 49–64. https://doi.org/10.1177/1741143216665842

Osman, A. A. (2012). School climate: The key to excellence. *Journal of Emerging Trends in Educational Research*, *3*(6), 950–954.

Paton, D., Gregg, C., Houghton, B., Lachman, R., Johnston, D., and Wongbusarakum, S. (2008). The impact of the 2004 tsunami on coastal Thai communities: Assessing adaptive capacity. *Overseas Development Institute, 2*(1):106-19. https://doi.org/10.1111/j.1467-7717.2007.01029.x

Paul, J., & Jefferson, F. (2019). A Comparative Analysis of Student Performance in an Online vs. Face-to-Face Environmental Science Course From 2009 to 2016. *Frontiers Computer Science*., *1*, 7.

Redding, S., & Walberg, H. J. (n.d.). Promoting Learning in Rural Schools. Center on Innovation & Improvement.

Robinson, V., Lloyd, C., & Rowe, K. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, *44*(5), 635-674. https://doi.org/10.1177/0013161X08321509

Rosenberg, L., Christianson, M. D., & Angus, M. H. (2015). Improvement efforts in rural schools: experiences of nine schools receiving school improvement grants. *Peabody Journal of Education*, *90*(2), 194–210. https://doi.org/10.1080/0161956X.2015.1022109

Rudasill, K. M., Snyder, K. E., Levinson, H., & Adelson, J. L. (2018). Systems view of school climate: A theoretical framework for research. *Educational Psychology Review*, *30*, 35–60. https://doi.org/10.1007/s10648-017-9401-y

Saeki, E., Segool, N., & Pendergast, L. (2018). The influence of test-based accountability policies on early elementary teachers: School climate, environmental stress, and teacher stress. *Wiley*, 391–403. https://doi.org/10.1002/pits.22112

Showalter, D., Klein, R., Johnson, J., & Hartman, S. L. (2017). *Why rural matters 2015-2016: Understanding the changing landscape*.

Sørlie, M.-A., & Torsheim, T. (2011). Multilevel analysis of the relationship between teacher collective efficacy and problem behavior in school. *School Effectiveness and School Improvement*, *22*(2), 175-191. https://doi.org/10.1080/09243453.2011.563074

Styron, J. L., & Styron, R. A. (2012). Teaching to the test: A controversial issue in quantitative measurement. *Systemics, Cybernetics And Informatics*, *10*(5), 22–25.

Tanujaya, B., Mumu, J., & Margono, G. (2017). The relationship between higher order thinking skills and academic performance of student in mathematics instruction. *International Education Studies*, *10*(11), 78–85

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (n.d.). A review of school climate research. *Review of Educational Research*, *13*, 357-385. https://doi.org/doi.org/10.3102/0034654313483907

Theoharis, G. (2007). Social justice educational leaders and resistance: toward a theory of social justice leadership. *Educational Administration Quarterly*, *43*(2), 221–258.

Tiplic, D., Brandmo, C., & Elstad, E. (2015). Antecedents of norwegian beginning teachers' turnover intentions. *Cambridge Journal of Education*, *45*(4), 451–474. https://doi.org/10.1080/0305764X.2014.987642

Trujillo, T. (2015). *Review of dramatic action, dramatic involvement: the research on turnaround*. Boulder, CO: National Education Policy Center.

Tschannen-Moran, M., & Barr, M. (2004). Fostering student learning: the relationship of collective teacher efficacy and student achievement. *Leadership and Policy in Schools*, *3*(3), 189–209.

Tschannen-Moran, M., Salloum, S. J., & Goddard, R. D. (2014). Context matters: the influence of collective beliefs and shared norms. *Handbook of Teacher Beliefs*, 1–14.

Tschannen-Moran, M., & Gareis, C. R. (2015). Principals, trust, and cultivating vibrant schools. *Societies*, *5*, 256–276. https://doi.org/dx.doi.org/10.3390/soc5020256

Tye, K.A. "The culture of the school" in Goodlad, J.I., Klein, M.F., Novetney, J.M., and Tye, K.A. Toward a Mankind School: An Adventure in Humanistic Education. New York, McGraw-Hill. 1974.

United States Department of Education. (n.d.). Every Student Succeeds Acts (ESSA).

VanGronigen, B. A., & Meyers, C. V. (2017). How state education agencies are administering school turnaround efforts: 15 years after No Child Left Behind. *Educational Policy*, *33*(3), 423–452. https://doi.org/10.1177/0895904817691846

Wang, M.-T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review*, *28*(3), 315–352. https://doi.org/10.1007/s10648-015-9319-1

Welsh, M. E., Eastwood, M., & D'Agostino, J. (2014). Conceptualizing teaching to the test under standards-based reform. *Applied Measurement in Education*, *27*, 98–114. https://doi.org/10.1080/08957347.2014.880439

White, S., & Downey, J. (2020). International Trends and Patterns in Innovation in Rural Education. *Rural Education Across the World: Models of Innovative Practice and Impact*, 3–21. https://doi.org/10.1007/978-981-33-6116-4_1

WHO (2020). *Coronavirus disease (COVID-19) Pandemic*. World Health Organization. https://www.who.int/emergencies/diseases/novel-coronavirus-2019

Williams, D. T. (2010). *The rural solution: How community schools can reinvigorate rural education* (pp. 1–36). Center for American Progress.

Zaglas, W. (2020). Education expert John Hattie weighs in on the impacts of distance learning. Education Review. https://www.educationreview.com.au/2020/04/education- expert-john-hattie-weighs-in-on-the-impacts-of-distance-learning/

APPENDICES

Appendix A

Adapted CTEBS and CTE Qualtrics Survey Instrument

Thank you for agreeing to participate in this research. The following survey has 36 questions and is mostly multiple choice. It should take approximately 15 minutes to complete. Your answers will be kept completely confidential and are submitted anonymously.

1) Male or female

2) Age ranges: 20-25, 26-31, 32-37, 38-43, 44-49, 50-55, 56-61, 62-67, 68-73

3) Years in teaching at current grade level: 1-2 years, 3-5 years, 6-10 years, over 10 years

4) Years in the teaching profession: 1-2 years, 3-5 years, 6-10 years, over 10 years

5) Years at this school: 1-2 years, 3-5 years, 6-10 years, over 10 years

Please answer the following questions about collective teacher efficacy **before** you transitioned to remote learning. For each question, identify to what extent teachers and students in your school are able to do what is described. (The survey in June will ask for how participants felt during remote learning due to COVID-19.)

	None at all (1)	(2)	Very Little (3)	(4)	Some Degree (5)	(6)	Quite a Bit (7)	(8)	A Great Deal (9)
How much can teachers in your school do to produce meaningful student learning?									
How much can your school do to get students to believe they can do well in schoolwork?									
To what extent can teachers in your school make expectations clear about appropriate student behavior?									
To what extent can school personnel in your school establish rules and procedures that facilitate learning?									
How much can teachers in your school do to help									

	None at all (1)	(2)	Very Little (3)	(4)	Some Degree (5)	(6)	Quite a Bit (7)	(8)	A Great Deal (9)
students master complex content?									
How much can teachers in your school do to promote deep understanding of academic concepts?									
How well can teachers in your school respond to defiant students?									
How much can school personnel in your school do to control disruptive behavior?									
How much can teachers in your school do to help students think critically?									
How well can adults in your school get students to follow school rules?									
How much can your school do to foster student creativity?									
How much can your school do to help students feel safe while they are at school?									

Please answer the following questions about your school's climate **before** you transitioned to remote learning. After each statement rank your level of agreement. (The survey in June will ask participants how they felt during remote learning due to COVID-19.)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Teachers design instructional programs together.					
Most students are well-mannered and respectful to the school staff.					

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Instructional equipment is not consistently accessible.					
Teachers are frequently asked to participate in decisions.					
New and different ideas are always being tried out.					
There is good communication among teachers.					
Most students are helpful and cooperative with teachers.					
The school library has sufficient resources and materials.					
Decisions about the school are made by the principal.					
New courses or curriculum materials are seldom implemented.					
I have regular opportunities to work with other teachers.					
Students in this school are well behaved.					
Video equipments, tapes and films are readily available.					
I have very little to say in the running of the school.					
We are willing to new teaching approaches in my school.					

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I seldom discuss the needs of individual students with other teachers.					
Most students are motivated to learn.					
The supply of equipment and resources are not adequate.					
Teachers in this school are innovative.					
Classroom instruction is rarely coordinated across teachers.					
Good teamwork is not emphasized enough at my school.					

Appendix B

Verbal Permission Protocol

Email and call school principals in the identified sample to solicit participation and use the following script:

Hello. My name is Kelly Marcotte. I am a doctoral candidate at Plymouth State University working on my dissertation. I am also in my fifth year as an elementary school principal in Rindge, New Hampshire. I am hoping to speak to you about conducting research at your school. If you would like to provide me with a phone number, I would be happy to call you. You are also welcome to read below about the research and reply via email if you would allow me to send a survey to your teaching staff.

Thank you very much for your time!

Kelly

Research: I am conducting a research project that seeks to identify which components of school climate and collective teacher efficacy (CTE) are important from the perspective of teachers in rural remote and distant elementary schools like yours. The research will use a survey and then factorial analysis to identify which factors that make up CTE and school climate might need additional attention and support. The results could help improve teacher retention as well as help guide low-performing rural schools when facing federal and state mandated accountability laws. There will be one 15 minute survey for teachers to anonymously fill. They will receive it at two different times, one in May and one toward the end of June. I am happy to email you a copy of the questions. There are no risks to the teachers and they can withdraw at any time. Special education, general education, and specials' teachers will be emailed a link to a consent form to sign along

with the survey. There are no costs associated with this research. Following my research, I would be happy to go over the results with you and discuss the strong factors that were identified in rural remote and distant elementary schools and any that may need additional attention and support.

Appendix C

INFORMED CONSENT FORM
CONSENT TO PARTICIPATE
VOLUNTARILY IN A RESEARCH INVESTIGATION
PLYMOUTH STATE UNIVERSITY

INVESTIGATOR(S) NAME: Kelly Marcotte
STUDY TITLE: An Exploratory Factor Analysis of Rural Remote and Distant Elementary Schools' Climate and Collective Teacher Efficacy

PURPOSE OF THE STUDY

The purpose of this research study is to determine what factors of collective teacher efficacy and school climate are strongly connected in order to help with school reform. You are being asked to be a participant in the study because you are a kindergarten through grade five or six general or special education elementary school teacher working in a rural remote or distant school.

DESCRIPTION OF THE STUDY

This study has fallen during the time period of remote learning due to COVID-19. The study will look at the factors that make up collective teacher efficacy and school climate and weigh them against each other to see which factors are more connected to each other in rural remote and distant elementary schools versus urban schools. Once this is known, these factors may be areas of focus for any school improvement. The amount of time required to participate in the study is approximately 15 minutes which is the amount of time you will need to take the online survey.

There are no costs to participate. The survey can be conducted at home or at school.

RISKS AND DISCOMFORTS

As a participant in this study, I may experience no risks or discomfort.

BENEFITS

There may be no direct benefits of participating in this study; however, the knowledge received may be of value to administrators, and potentially even policy makers, to allow decisions to be made that are based on research that supports best practices.

ALTERNATIVE PROCEDURES

The alternative is not to participate in this study.

CONFIDENTIALITY

All documents and information pertaining to this research study will be kept confidential in accordance with all applicable federal, state, and local laws and regulations. I understand that data generated by the study may be reviewed by Plymouth State University's Institutional Review Board, which is the committee responsible for ensuring my welfare and rights as a research participant, to assure proper conduct of the study and compliance with university regulations. If any presentations or publication result from this research, all data will be aggregated. No individual teacher data will be used. I will not be identified by name. The information collected during my participation in this study will be kept for five years. My confidentiality will be also protected by a password-encrypted flash-drive locked in a cabinet in the researcher's home office. The researcher will be the only one with access to the information gathered from the surveys.

TERMINATION OF PARTICIPATION

I may choose to withdraw from this study at any time and for any reason. If I choose to drop out of the study, I will contact the investigator and my research records will be destroyed. If this is an anonymous survey, research records cannot be destroyed following submission of the survey.

COMPENSATION

I will not receive payment for being in this study. Participation in this study is strictly voluntary. There will be no cost to me for participating in this research.

INJURY COMPENSATION

Neither Plymouth State University nor any government or other agency funding this research project will provide special services, free care, or compensation for any injuries resulting from this research. I understand that treatment for such injuries will be at my expense and/or paid through my medical plan.

QUESTIONS

All of my questions have been answered to my satisfaction and if I have further questions about this study, I may contact Kelly Marcotte, at 603-532-6255, kmarcotte@plymouth.edu. If I have any questions about the rights of research participants, I may call the Chairperson of the Plymouth State University's Institutional Review Board at 603-535-3221

VOLUNTARY PARTICIPATION

I understand that my participation in this study is entirely voluntary, and that refusal to participate will involve no penalty or loss of benefits to me. I am free to withdraw or refuse consent, or to discontinue my participation in this study at any time without penalty or consequence.

I voluntarily give my consent to participate in this research study. I understand that I will be given a copy of this consent form.

Signatures:

_____

Participant's Name (Print)

_____ _____

Participant 's Signature Date

I, the undersigned, certify that to the best of my knowledge, the subject signing this consent form has had the study fully and carefully explained by me and have been given an opportunity to ask any questions regarding the nature, risks, and benefits of participation in this research study.

Kelly Marcotte

Investigator's Name (Print)

Investigator's Signature Date May 1, 2020

Appendix D

Revised SLEQ – Items & Factors

Collaboration
20. Classroom instruction is rarely coordinated across teachers.
11. I have regular opportunities to work with other teachers.
6. There is good communication among teachers.
21. Good teamwork is not emphasized enough at my school.
16. I seldom discuss the needs of individual students with other teachers.
1. Teachers design instructional programs together.

Student Relations
2. Most students are well mannered or respectful of the school staff.
12. Students in this school are well behaved.
7. Most students are helpful and cooperative with teachers.
17. Most students are motivated to learn.

School Resources
18. The supply of equipment and resources is not adequate.
3. Instructional equipment is not consistently accessible.
13. Video equipment, tapes, and films are readily available.
8.The school library has sufficient resources and materials.

Decision Making
4. Teachers are frequently asked to participate in decisions.
14. I have very little say in the running of the school.
9. Decisions about the school are made by the principal.

Instructional Innovation
15. We are willing to try new teaching approaches in my school.
5. New and different ideas are always being tried out.
19. Teachers in this school are innovative.
10. New courses or curriculum materials are seldom implemented.

From Johnson, B., Stevens, J. J., & Zvoch, K. (2007). Teachers' perceptions of school climate: A validity study of the revised School Level Environment Survey (SLEQ). *Educational and Psychological Measurement 67,* 833-844.

Appendix E

Directions for Scoring the Collective Teacher Efficacy Scale

Developer: Megan Tschannen-Moran, College of William and Mary

Tschannen-Moran, M., & Barr, M. (2004). Fostering Student Learning: The Relationship of Collective Teacher Efficacy and Student Achievement. *Leadership and Policy in Schools,* 3(3), 189-209.

Construct Validity
Construct validity of the Collective Teacher Efficacy Scale was established through factor analysis. Two strong factors emerge that were moderately correlated. When a second order factor analysis was conducted, the two factors formed a single factor.
Subscale Scores
An overall Collective Teacher Efficacy score can be computed by taking a mean of all 12 items. To determine the *Collective Efficacy in Instructional Strategies* and the *Collective Efficacy in Student Discipline* subscale scores, compute a mean score of the items that relate to each factor.
Instructional Strategies
1. How much can teachers in your school do to produce meaningful student learning?
2. How much can your school do to get students to believe they can do well in schoolwork?
3. How much can teachers in your school do to help students master complex content?
4. How much can teachers in your school do to promote deep understanding of academic concepts?
5. How much can teachers in your school do to help students think critically?
6. How much can your school do to foster student creativity?
Student Discipline
7. To what extent can teachers in your school make expectations clear about appropriate student behavior?
8. To what extent can school personnel in your school establish rules and procedures that facilitate learning?
9. How well can teachers in your school respond to defiant students?
10. How much can school personnel in your school do to control disruptive behavior?
11. How well can adults in your school get students to follow school rules?
12. How much can your school do to help students feel safe while they are at school?