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Examining the Construct of Collective Efficacy in Rural High School Teachers Working in a Model Professional Learning Community School

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Examining the Construct of Collective Efficacy in Rural High School Teachers Working in a Model Professional Learning Community School

Abstract

The purpose of this mixed-methods study was to examine the perceptions of 18 rural high school singleton teacher participants who worked in districts that had implemented the professional learning community (PLC) framework and to assess if there was a relationship between the teachers' perception of collective efficacy and the PLCs—despite the potential of limiting the organizational structures within their schools. A mixed-methods explanatory sequential case study in one rural high school with the designation of a Model PLC School was used to conduct the research. The participants reported a significant positive correlation between the variables of instructional practice, student behavior, and collective efficacy. Additionally, the results also indicated that gender plays a role in the levels of perceived collective efficacy. Furthermore, four themes and 10 subthemes emerged as important from the qualitative focus group. The first theme was structures of a PLC, with subthemes of (a) leadership and expectations and (b) professional development. The second theme was collaboration, with the following subthemes: (a) teaming, sharing strategies and support, (b) collective responsibility, (c) data driven collaborative decision making, and (d) student-centered. The third theme was benefits, with subthemes of (a) collegiality and (b) improved outcomes. The fourth and final theme was challenges and included a) singletons and b) lack of buy-in as subthemes. Confirming that teachers reported higher levels of collective efficacy while working in a PLC, the findings provided the basis for recommendations involving future research, rural administrators, rural teachers, and professional development.

Examining the Construct of Collective Efficacy in Rural High School Teachers Working in a

Model Professional Learning Community School

By

Eileen M. Wolcott Feinman

Submitted in partial fulfillment

of the requirements for the degree

EdD in Executive Leadership

Supervised by

Michael Wischnowski, PhD

Committee Member

Deborah Leh, EdD

Ralph C. Wilson, Jr. School of Education

St. John Fisher University

August 2023

Dedication

The decision to embark on obtaining a doctoral degree is not one that is made lightly. It requires grit, determination, perseverance, and, most importantly, the unending support of family. At times, I was not always sure that I had the first three traits, but I never doubted for a minute the support of my family. I dedicate this dissertation to that family. My parents were two of the most incredible people that I have ever known, and it is because of them that I am the person I am today. Mom, I miss you every single day and wish you were still here to see me finish this. Your sage advice to "be an engine and not a caboose" will always help steer me in the path forward.

To my husband, Bob, and four children, Kelsey, Michael, Kayden, and C. Matthew—there are not enough words to express how grateful I am to have you in my life. You all are my rocks! From proofing to editing, creating studying spaces (multiple times), buying groceries, doing laundry, being a shoulder to cry on, offering an encouraging word, and saving lost work on a computer, you guys are simply the best, and I could not have done this without you. To my sister, Bunny (and husband Carl), who attended this program vicariously with me, you deserve an honorary degree. Thank you for your interest, listening ear, encouragement, and love. To my brother Paul, you are the strong, silent type but never for a minute do I question your support or loyalty. I know there is not anything that you wouldn't do for me. I appreciate that more than you know. To the rest of the Wolcott family (Diane, Ben, Kathy, Libby, Justin, Sarah, and Ben), thank you from the bottom of my heart for the roles that you played in supporting me.

Biographical Sketch

Eileen M. Wolcott Feinman is currently the Superintendent at Wayland-Cohocton Central School. Mrs. Feinman attended the State University of New York (SUNY) at Brockport from 1987 to 1990 and graduated with a Bachelor of Science degree in Communication with a minor in Psychology. She earned a Master of Arts degree from Alfred University in 1994 and then completed her Certificate of Advanced Study in Educational Administration from SUNY Brockport in 2000. She came to St. John Fisher University in the summer of 2021 and began doctoral studies in the EdD Program in Executive Leadership. Mrs. Feinman pursued her research examining the impact of professional learning communities on rural teachers and their perceived levels of collective efficacy under the direction of Dr. Michael Wischnowski and Dr. Deborah Leh and received the EdD degree in 2023.

Abstract

The purpose of this mixed-methods study was to examine the perceptions of 18 rural high school singleton teacher participants who worked in districts that had implemented the professional learning community (PLC) framework and to assess if there was a relationship between the teachers' perception of collective efficacy and the PLCs—despite the potential of limiting the organizational structures within their schools. A mixed-methods explanatory sequential case study in one rural high school with the designation of a Model PLC School was used to conduct the research. The participants reported a significant positive correlation between the variables of instructional practice, student behavior, and collective efficacy. Additionally, the results also indicated that gender plays a role in the levels of perceived collective efficacy. Furthermore, four themes and 10 subthemes emerged as important from the qualitative focus group. The first theme was structures of a PLC, with subthemes of (a) leadership and expectations and (b) professional development. The second theme was collaboration, with the following subthemes: (a) teaming, sharing strategies and support, (b) collective responsibility, (c) data driven collaborative decision making, and (d) student-centered. The third theme was benefits, with subthemes of (a) collegiality and (b) improved outcomes. The fourth and final theme was challenges and included a) singletons and b) lack of buy-in as subthemes. Confirming that teachers reported higher levels of collective efficacy while working in a PLC, the findings provided the basis for recommendations involving future research, rural administrators, rural teachers, and professional development.

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Chapter 1: Introduction

Education reform has been a focus of federal and state governmental agencies for decades. Despite this focus and the allocation of billions of dollars, implementing successful and lasting reform movements has been fleeting (Olivier & Huffman, 2016; U.S. Department of Education [USDOE], 2001). Beginning with its authorization in 1965, the Elementary and Secondary Education Act (ESEA) supported funding for eligible districts to run programs for struggling learners to raise academic achievement (USDOE, 2001). More recently, the No Child Left Behind Act (NCLB), 2002, a reauthorization of ESEA, was a pivotal reform movement specifically focused on increasing student achievement and re-culturing schools in the United States (USDOE, 2001). NCLB (2002) instituted a significant change in the allocation of federal funds focusing on supporting schools, with the expectation of evaluating students' strengths and weaknesses (USDOE, 2001). Specific highlights of the Every Student Succeeds Act (ESSA), 2015), the most recent reauthorization of ESEA, include generating greater equity for students in need, aligning curriculum to college and career standards, and providing data to stakeholder groups regarding students' progress. It also promised accountability for schools that are not reaching benchmarks as well as a commitment to the utilization of evidence-based practices (USDOE, 2015).

While there has been some improvement with reform efforts, little evidence suggests that the results are significant and long-lasting (Olivier & Huffman, 2016). "Too often, school reform efforts have been linked to programmatic issues or surface-level changes, rather than seeking and sustaining substantial cultural changes reflecting increased professional learning and enhanced

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professional practices" (Olivier & Huffman, 2016, p. 301). Educating students in the 21st century requires a different perspective, approach, and behaviors from teachers and administrators (Senge, 2006). We must prepare students for a future that is rapidly developing and changing (Senge, 2006). However, "our schools are paralyzed. Overstressed teachers and administrators try desperately to fend off pressures from dissatisfied business leaders and fearful parents" (Senge, 2006, p. 361) and "pressures to preserve a traditional system" (p. 362). Professionals in the field have long recognized the positive impact of professional learning communities (PLCs) on improving schools and student learning (DuFour et al., 2008), and they have been a widely adopted approach toward school reform. The adoption of a PLC framework has been endorsed by many schools as a method to provide effective professional development for teachers, ultimately leading to improved student outcomes (Watson 2014).

PLCs

The term *professional learning community* can be found in literature dating back several decades, and it seems to have emerged from many different sources (Stoll et al., 2006). Since the 1990s, there has been a push to utilize PLCs to transform schools and improve student achievement along with teacher pedagogy (Voelkel, 2019). However, from the outset, several different definitions of PLCs have been in use and, as a result, the term is in danger of losing its intended meaning (Barton & Stepanek, 2012). DuFour (2004) stated, "people use this term to describe every imaginable combination of individuals with an interest in education" (p. 6), and they often do not completely implement the true tenets of a PLC (DuFour, 2004).

Senge (2006) first used the term *learning organization* in 1990 that related to the work within the business world (Jones et al., 2013b). Since then, several researchers, such as DuFour and Eaker (1998), Hipp and Huffman (2010), Hord (1997), and Sergiovanni (1994), translated

the definition of learning organizations into an educational context and coined the term PLCs (Jones et al., 2013b). In 1998, DuFour and Eaker coauthored the book that elevated the level of interest in the concept of PCLs in many American schools (Eaker & Keating, 2012). "Professional learning communities (PLCs) are described as an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (DuFour et al., 2016, p. 10). PLCs are regarded as one of the most promising strategies used to improve student achievement and teacher pedagogy, and they have long been recognized for their positive impact on improving schools and student learning (DuFour et al., 2008; Eaker & Keating, 2012; Hord, 2004; Lomos et al., 2011). "The most promising strategy for sustained, substantive school improvement is developing the ability of school personnel to function as professional learning communities" (DuFour et al., 2008, p. 1).

To define the framework of a PLC, DuFour (2004) identified three overarching principles: (a) ensuring a focus on learning, (b) building a collaborative culture and collective responsibility, and (c) establishing a results orientation. The overall success of a PLC is impacted by the level of understanding, implementation, and buy-in of these three principles by teachers and administrators (DuFour et al., 2016). The first overarching principle, ensuring a focus on learning, is predicated on the belief that the fundamental purpose of a school is to ensure high levels of learning for all students (DuFour et al., 2016). Teachers must continually work together to determine what students must know and be able to do, evaluate their students' progress, and implement interventions and extensions to meet the students' needs based on their assessment (DuFour et al., 2016). The second principle, building a collaborative culture and collective responsibility, posits that "educators must work collaboratively and take collective responsibility

for the success of each student. Working collaboratively is not optional" (DuFour et al., 2016, p. 11). This expectation sets the standard for the premise that teachers must work and learn together and from each other. The last principle, a results orientation, is focused on results and evidence of student learning. Using concrete data helps to inform decisions related to curriculum, planning, effective instructional strategies, and interventions for students (DuFour et al., 2016).

DuFour and Eaker (1998) further refined the definition of a PLC as also having the following subcomponents: shared mission, vision, values, and goals; collective inquiry; action orientation and experimentation; and continuous improvement. Within this framework, teachers must ask four critical questions to determine their instructional planning, teaching, and assessment of learning. First, what do students need to know and be able to do? Second, how will we know that they have learned it? Third, what will we do when they do not learn it, and, fourth, what will we do when they have already learned it? (DuFour & Eaker, 1998). DuFour (2004) stated that when a school addresses all of these requirements, only then can it claim to be a true PLC.

School districts that have a high level of understanding, implementation, and buy-in of these three principles and subcomponents by teachers and administrators (DuFour et al., 2016) can apply through a national accreditation body for the designation of a Model PLC district or school. For districts or schools to receive the designation of a Model PLC, the district or school must complete an application that demonstrates a commitment to the overarching principles of a PLC, demonstrates the implementation of those principles for a minimum of 3 years, and provides compelling evidence of student learning (Solution Tree, 2020). The second part of the process involves a review of the application by a review committee for either acceptance or revisions. Once a district or a school receives the designation of being a Model PLC, the district

or school must annually submit data that continues to meet the established criteria (Solution Tree, 2020).

Although research on PLCs supports improved instructional practices, which lead to improved student achievement (Jones et al., 2013b), the framework and practices are challenging to implement and sustain. Many schools profess to function under the umbrella of a PLC, but they do not fully implement the framework with fidelity. DuFour and Reeves (2016) referred to these communities as PLC *lite*. DuFour and Eaker (1998) advised that if schools are to successfully implement the principles of a PLC, stakeholders must first acknowledge that the traditional way of providing professional development is no longer effective. Hord (2007) asserted:

> [There are] two types of supportive conditions necessary for PLCs to function productively: (1) logistical conditions such as physical and structural factors and resources and (2) the capacities and relationships developed among staff members so that they may work well and productively together. (p. 3)

Collective Efficacy

A review of the research indicates that an outcome from the effective implementation of PLCs is higher levels of perceived teacher collective efficacy (Goddard et al., 2015; Lee et al., 2011). When teachers perceive their districts as positively implementing PLCs, there is a higher level of teacher efficacy (Voelkel & Chrispeel, 2017). Bandura (1997) defined collective efficacy as "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment" (p. 477).

Since the time Bandura (1997) initially introduced the term *collective efficacy*, researchers have also studied the effect of perceived collective efficacy on student achievement

(Donohoo, 2016). Donohoo et al. (2018) reported that "collective teacher efficacy is greater than three times more powerful and predictive of student achievement than socio-economic status" (p. 41). Hattie (2016) analyzed the findings from over 1,200 meta-analyses relating to the impact of collective efficacy on student achievement and reported that the number one factor influencing student achievement was teacher collective efficacy (Donohoo, 2016; Hattie, 2016). The research and findings on collective efficacy and PLCs, and the relationship between the two, may contribute to understanding differing levels of student achievement within and among schools (Goddard et al., 2000, 2015).

Rural PLCs

Implementing and sustaining the tenets and practices of PLCs is arduous and time consuming, and schools often struggle to achieve the desired results (Jones et al., 2013b). Being designated a rural school is potentially another compounding factor influencing the effective implementation of PLCs in some schools. Less qualified teachers, limited access to resources and quality professional development, and lower literacy levels are additional obstacles rural districts face (Lavalley, 2018). Unfortunately, Lavalley (2018), purported that "rural schools are largely left out of research and policy discussions, and little is understood about rural schools and the unique challenges they face outside of the communities in which they operate" (p. 1).

Within the context of secondary schools, there are added barriers influencing the effective implementation of PLCs and teacher collaboration. Departmentalization, teachers' belief in their need for autonomy and independence, and having a large number of teachers teaching one subject or content (often referred to as *singletons*) are potential factors that could impact teacher collaboration (Little, 2002; Lomos et al., 2011). Additionally, the lack of research related to rural schools, in general, and, specifically, to PLC implementation in rural high schools

and collective efficacy shows a clear need for additional study (Lomos et al., 2011). Given this gap in research and to better understand the constructs of PLCs, teacher collaboration and teachers perceived collective efficacy in a rural high school setting, there is a need for further exploration.

Problem Statement

Despite several studies focused on PLCs, collective efficacy, and student achievement, much of the research speaks of those constructs and their impact as they relate to an elementary-level population in suburban and urban settings. The research on education reform and the successful implementation of a PLC in a high school setting is not as extensive (Lomos et al., 2011). Critics have claimed that the progress of high school reform has been at a stalemate and that secondary schools have not kept up with the progress of elementary schools (Chance & Segura, 2009). Many of the reform movements and restructuring that have been implemented at the high school level have not resulted in improved instructional practices, teacher collaboration, or increased student achievement (Halverson & Clifford, 2013). Traditional high schools, typically departmentalized and isolating by nature, are often the last to implement lasting change (Chance & Segura, 2009). This lack of progress can be tied to several challenges, including a lack of equity among districts, the size of some high schools, teachers' beliefs in their need for autonomy and independence (Little, 2002), and their physical separation and isolation and conventional norms held by many secondary teachers (Lomos et al., 2011).

Additional complexity is added when the concept of high school reform is discussed in a rural education setting. Issues confronting rural districts are complex and often involve factors of poverty, lack of funding and resources, large geographic regions (Hunt-Barron et al., 2015), and a lack of staffing with certified and qualified teachers (Chance & Segura, 2009). Significant

challenges for rural high schools implementing PLCs are creating meaningful teams and making time for collaboration within those teams.

A fundamental principle of an effective PLC is the requirement for teachers to work in collaborative teams. High-functioning collaborative teams in a PLC report greater collective efficacy, which is often correlated with higher student achievement. DuFour et al. (2016) stated, "the best team structure for improving student achievement is simple: a team of teachers who teach the same course or grade level" (p. 61). For small rural high schools, it is difficult to form meaningful collaborative teams when you are the only person teaching a specific course or content (often referred to as a singleton). As a result, teachers in rural highs schools often do not necessarily belong to a collaborative team; yet many rural high schools claim to have PLCs.

Given these complexities and limited research on the topic, education reform, particularly the implementation of PLCs in rural high schools, requires further investigation. With 44% of New York State school districts identified as rural and over 300,000 students attending school in a rural location, the research discovered could benefit a significant number of students (National Center for Education Statistics [NCES], 2013). Further understanding of the relationship between collective efficacy, PLCs, and teachers in a rural high school setting could provide information to develop the necessary components to realize the full potential of this reform movement in a rural high school setting and provide additional research to the field.

Theoretical Rationale

The construct of efficacy, whether individual or collective, is deeply embedded within social cognitive theory (Bandura, 1997). Social cognitive theory, with its roots based on the assertion that people learn by observing and imitating others, will be the lens used to explore the constructs of PLCs and collective efficacy within an educational setting (Costlow & Bornstein,

2018). Social cognitive theory posits that individuals watch the behavior of others, observe the consequences (positive or negative) of that behavior, and then make decisions to inform their own behavioral choices (Costlow & Bornstein, 2018; Martin, 2014). An additional critical component of this theory is the acknowledgement that cognitive processes play a role in learning and behavior (Brown, 2020; Costlow & Bornstein, 2018; Martin, 2014). A critical component of social cognitive theory is the concept of reciprocal determinism. According to Bandura (1997), reciprocal determinism posits that a person's behavior is influenced by their environment and, in turn, the behavior of the individual impacts the environment. Personal factors and the social environment play critical roles in this exchange. They influence a person's behavior, and, consequently, in return they are influenced by the behavior. The feedback loop between these factors influences the repetition of behavior (Brown, 2020). Figure 1.1 provides a visual model of the concept of reciprocal determinism.

Self-efficacy and collective efficacy are significant constructs within social cognitive theory. To further understand the concept of collective efficacy, self-efficacy must be addressed first. As defined by Bandura (1997), "perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). This perspective of human behavior asserts that the perceptions that an individual has about their capabilities has a large impact on their behavior and experiences (Bandura, 1997). In the field of education, researchers have found that student achievement is higher when a teacher possesses a higher level of self-efficacy (Donohoo, 2016; Goddard et al., 2015; Voelkel, 2019).

Figure 1.1

Visual Model of Reciprocal Determinism
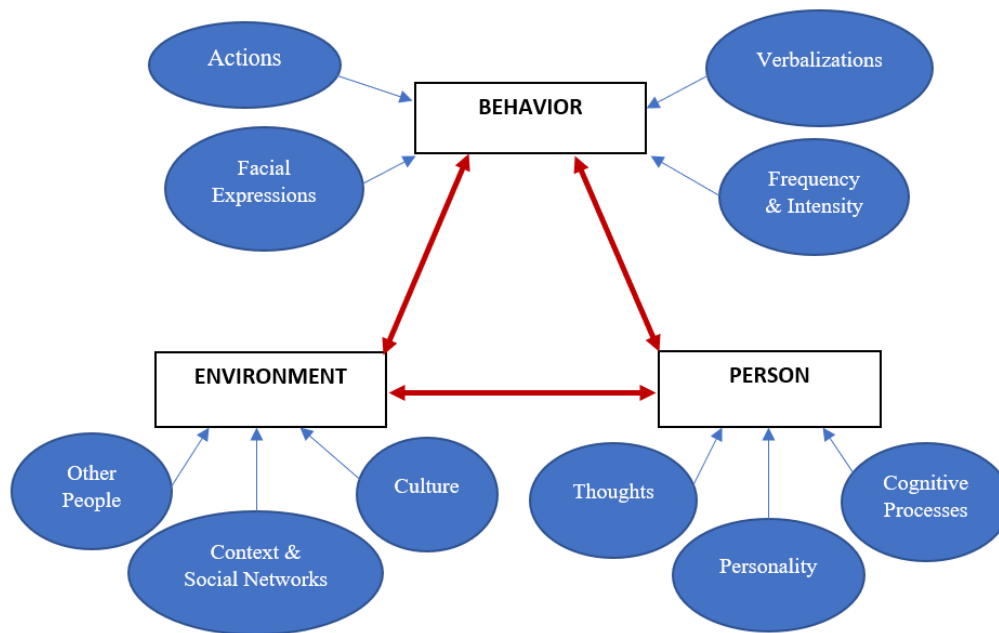
Note. Reciprocal determinism is a model that asserts that a reciprocal relationship exists among the environment, the behavior, and the individual. Reprinted From "Self-Efficacy: The Exercise of Control" by A. Bandura, 1997. Copyright 1997 by W. H. Freeman and Company.

By applying the concepts of social cognitive theory, Bandura (1997) expanded the tenets of self-efficacy to an organizational level to introduce the concept of collective efficacy. Collective efficacy has properties similar to self-efficacy (Voelkel, 2019). "Collective teacher efficacy is when teachers share the belief that, together, they can positively influence student learning over and above other factors and make an educational difference in the lives of students" (Donohoo & Katz, 2017, p. 2). However, self-efficacy beliefs are focused on individual teachers, individuals who largely works in isolation, and collective efficacy refers to the beliefs that a group or team of teachers has regarding their capability to create and implement a plan required to reach a desired goal (Bandura, 1997; Donohoo, 2016; Voelkel, 2019). Within the

framework of a well-functioning PLC, higher levels of collective efficacy are likely to help

maintain the necessary and effective components of that community (Gray et al., 2014).

Bandura's (1997) seminal work postulated that there are four sources (experiences) that

shape efficacy beliefs. They include mastery experiences, vicarious experiences, social

persuasion, and affective states (Donohoo, 2016; Goddard et al., 2015). Goddard et al. (2000)

noted that just as the "four sources are critical for individuals, they are also fundamental in the

development of collective teacher efficacy" (p. 484). Of the four, Bandura (1997) suggested that

master experiences may be the most powerful source in shaping efficacy beliefs. A key form of

mastery experiences and a fundamental principle of a PLC is the concept of teacher collaboration

within teams of teachers (Goddard et al., 2015). Teacher collaboration is also critical to the

development of collective efficacy and is predictive of higher student achievement (Goddard et

al., 2015). Martin (2014) stated that, "social cognitive theory is one of the most influential

psychological theories of learning informing contemporary education" (p. 2). As a result, it

provides a valuable theoretical lens for exploring teachers' perceptions on the impact of PLCs

and teacher collaboration, specifically in rural high schools, on their collective efficacy beliefs.

Statement of Purpose

The purpose of this mixed-methods study is to examine the perceptions of rural high

school singleton teachers working in districts that have implemented the PLC framework and to

assess if there is a relationship between teacher perception of collective efficacy and PLCs,

despite potential limiting organizational structures of their school. A review of the literature

indicates that professionals in the field of education have long recognized the positive impact of

PLCs on improving schools and student learning (DuFour et al., 2008). Teacher collaboration is

a fundamental principle of PLCs, and it is a powerful predictor of collective efficacy, having the

potential to impact student achievement (Goddard et al., 2015). Voelkel and Chrispeel (2017) found that when teachers perceive their districts as positively implementing PLCs, teachers working on collaborative teams have a higher level of collective efficacy. "Collective efficacy is greater than three times more powerful and predictive of student achievement than socio-economic status" (Donohoo et al., 2018, p. 41). There is a lack of research, however, that examines PLC implementation at a secondary level, particularly in rural districts. Teachers in rural high schools are often singletons, being the only teacher that teaches a specific content or course, and they do not necessarily belong on a collaborative team.

Research Questions

Because research shows that the successful implementation of PLC framework positively impacts teachers' collective efficacy and student achievement (Donohoo et al., 2018; Goddard et al., 2015), it is important to understand the association between the two constructs. A third important and related variable is the topic of teacher collaboration. Teacher collaboration is a critical and necessary component of effective PLCs and is a factor able of impacting collective efficacy beliefs (Goddard et al., 2015). As Bandura (1997) indicated, it is those shared mastery experiences that occur with teacher collaboration that are the foundation for creating collective efficacy. This study will explore the perceptions of rural high school teachers working in a PLC framework and assess the impact that the model has on their collective efficacy beliefs. The goal of this study was to gather pertinent data to answer the research question:

How do rural high school teachers who teach in a Model PLC school perceive their collective efficacy?

Significance of the Study

Reform initiatives and federal and state legislation have influenced policy and practices in public schools for decades. Billions of dollars have been allocated for initiatives to improve teaching practices, but few have had little to no impact (USDOE, 2001; Olivier & Huffman, 2016). As more dollars are allocated for education reform focusing on what works based on research (USDOE, 2001), evaluating the effectiveness of initiatives and improving the quality of teachers becomes paramount (USDOE, 2001). At the secondary level, critics have claimed that reform initiatives at that level are at a stalemate and that secondary schools have not kept up with the progress of elementary schools (Chance & Segura, 2009). Throughout the research, several studies supported the claim that the successful implementation of PLCs are recognized for their positive impact on school reform at any level (DuFour et al., 2008). Effective PLCs are also connected to higher levels of teacher collective efficacy and student achievement (Goddard et al., 2015; Voelkel & Chrispeels, 2017). Knowing and understanding that the effective implementation of PLCs can positively impact teachers' levels of collective efficacy, which, in turn, can positively impact student achievement, has the potential to purposefully drive future professional development and reform initiatives (Goddard et al., 2015; Moolenaar et al., 2012; Voelkel, 2019; Voelkel & Chrispeels, 2017).

When exploring the issues related to education within a rural setting, there are additional factors to consider. Even though 44% of the school districts in New York State are classified as rural (NCES, 2013), they receive little attention in either policy or academia (Lavalley, 2018). The attention that they have received indicates that the academic performance of rural students has improved recently, however, a gap continues to exist between suburban and rural students

(Lavalley, 2018). Poverty, a lack of resources, and a limited number of quality certified teachers are all factors that contribute to these circumstances (Chance & Segura, 2009).

Research clearly supports the evidence that the effective implementation of PLCs has a significant positive correlation with teacher collective efficacy (Goddard et al., 2015; Moolenaar et al., 2012; Voelkel, 2019; Voelkel & Chrispeels, 2017). Further studies also suggest a positive correlation between high levels of teacher collective efficacy and student achievement (Goddard et al., 2015). This knowledge, combined with research that supports a lack of successful education reform efforts at secondary schools and lower achievement levels of rural students provides an opportunity to study the relationship between PLCs in rural secondary schools and teacher collective efficacy. With a better understanding of the relationship between these constructs, administrators and teachers in rural settings will be better able to implement more effective PLCs with the goal of higher levels of student achievement for this population.

Definitions of Terms

Joyner et al., 2018 recommended that definitions of complex terms be clear and concise. The following terms are used throughout the work and supporting research.

Collaboration – a systematic approach by which a group of people interdependently work to achieve a common goal and to analyze and impact professional practice to improve individual and collective results (DuFour, 2006)

Collective efficacy – "Collective teacher efficacy is when teachers share the belief that, together, they can positively influence student learning over and above other factors and make an educational difference in the lives of students" (Donohoo & Katz, 2017, p. 2).

Efficacy – the belief that educators can accomplish what they set out to do; they have control or mastery over the events in their life. As a result, this leads to a greater willingness to

take risks and tackle difficulties; an increased likelihood of developing new skills or using existing ones; and greater resilience in the face of failure, criticism, or loss (Butler, 1998).

Learning organization – institutions "where people continually expand their capacity to create the results, they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (Senge, 2006, p. 3).

Professional development –

Refers to formal or informal activities in which a school's staff members participate to strengthen existing skills and learn new skills and strategies. The purpose of professional development is to produce professional learning. Targeted or traditional professional development can be observed in schools as teachers work independently, in small groups, or in whole staff workshops to learn new knowledge intended to improve classroom practice. (Fay Langston, 2012, p. 25)

Reciprocal determinism – a model that asserts that a corresponding relationship exists among environment, behavior, and the individual (Bandura, 1997).

Rural – communities characterized by low population, a significant distance from more populated areas, and economically depressed with limited resources (Lavalley, 2018).

Chapter Summary

Implementing successful and lasting educational reform movements have been fleeting (Olivier & Huffman, 2016; USDOE, 2001) and there is little evidence suggesting that the results are significant and long-lasting (Olivier & Huffman, 2016). Professionals in the field have long recognized the positive impact of PLCs on improving schools and student learning (DuFour et al., 2008) and it has been a widely adopted approach to school reform. For several decades there

has been a push to utilize PLCs to transform schools, however, the framework and practices are challenging to implement and sustain (Voelkel, 2019). Research indicates that an outcome from the effective implementation of PLCs is higher levels of perceived teacher collective efficacy (Goddard et al., 2015; Lee et al., 2011). Donohoo et al. (2018) reported that "collective teacher efficacy is greater than three times more powerful and predictive of student achievement than socio-economic status" (p. 41).

Despite the positive outcomes affiliated with the implementation of PLCs, there are compounding factors that can influence their effective implementation. Being designated as a rural school and working in a high school structure can be contributing factors to the lack of effective implementation of the PLC framework. Less qualified teachers, fewer resources, poor quality professional development, high school departmentalization, and singleton teachers are all potential hurdles to overcome (Lavalley, 2018; Little, 2002; Lomos et al., 2011).

There are several studies focused on PLCs, collective efficacy, and student achievement, however, much of the research speaks of those constructs and their impact as they relate to an elementary-level population in suburban and urban settings. The research on education reform and the successful implementation of a PLC in a high school setting in rural settings is not as extensive (Lomos et al., 2011). This study will assess the relationship between teachers' perceptions of collective efficacy as a result of the implementation of PLCs, despite potential limiting organizational structures and challenges inherent in their school. This study set out to answer the research question:

How do rural high school teachers who teach in a Model PLC School perceive their collective efficacy?

Further understanding of the relationship between collective efficacy, PLCs, and teachers in a rural high school setting could provide information to help develop the necessary components to realize the full potential of this reform movement in a high school setting and provide additional research to the field.

Chapter 2 is a review of the literature examining the relationship between PLCs and teacher collective efficacy in rural high schools. Following the review of the literature, the research design and methodology are discussed in Chapter 3. The results of the research are disseminated in Chapter 4, and Chapter 5 provides a discussion of the findings and recommendations based on the analysis of the data collected.

Chapter 2: Review of the Literature

Introduction and Purpose

  PLCs have been researched and discussed extensively since the early 1990s. Despite several studies focused on PLCs, collective efficacy, and student achievement, much of the research speaks about those constructs and their impact as they relate to an elementary-level population in suburban and urban settings. The research on education reform and the successful implementation of a PLC in a high school setting and in a rural setting is not as extensive (Lomos et al., 2011). Many of the reform movements and restructuring that have been implemented at the high school level have not resulted in improved instructional practices, teacher collaboration, or increased student achievement (Halverson & Clifford, 2013). Traditional high schools, typically departmentalized and isolating by nature, are often the last to implement lasting change (Chance & Segura, 2009).

  Additional complexity is added when the concept of high school reform is discussed in a rural education setting. Issues confronting rural districts are complex and often involve factors of poverty, lack of funding and resources, large geographic regions (Hunt-Barron et al., 2015), and a lack of staffing with certified and qualified teachers (Chance & Segura, 2009). Significant challenges for rural high schools implementing PLCs are creating meaningful teams and making time for collaboration within those teams.

  A fundamental principle of an effective PLC is the requirement for teachers to work in collaborative teams (DuFour, 2004). High-functioning collaborative teams in PLCs report greater collective efficacy, which is often correlated with higher student achievement (Voelkel &

Chrispeels, 2007). For small rural high schools, it is difficult to form meaningful collaborative teams when you are the single person teaching a specific subject or content (also referred to as a singleton). As a result, teachers in rural high schools often do not necessarily belong on a collaborative team; yet many rural high schools claim to have PLCs (Lomos et al., 2011). Given these complexities and limited research on the topic, education reform, particularly the implementation of PLCs in rural high schools, requires further investigation. This review will highlight the gaps in the research and demonstrate the need for continued exploration.

To explore the complexities of this topic in this literature review, studies that investigated the conceptual underpinnings of PLCs, collective efficacy, and leadership within the framework of secondary schools were included. Data and information from previous literature reviews and meta-analyses, and specific search terms helped formulate the parameters for this review.

The first criterion established for searching the literature was studies that specifically examined the relationship between PLCs, teacher collective efficacy, and leadership. Also, with interest in the framework of secondary schools, the search was expanded to include that construct. Due to the limited number of studies found that researched the topic in secondary schools, the review also includes studies that took place in elementary schools. The second criterion focused on identifying keywords that would be used in the search. Because of the multiple definitions of PLCs, specific keywords were used to limit the search. The following keywords were generated: professional learning communities, PLCs, learning communities, collective efficacy, efficacy, teacher collaboration, leadership, school leadership, shared leadership, teacher leadership, elementary school, secondary school, high school, rural, empirical, and peer reviewed. Combinations of those terms were entered in the following databases: ERIC on EBSCO, SAGE Journal, Taylor & Francis Social Science & Humanities

Library, ProQuest Central, Education Source, and Google Scholar. The third criterion was to examine articles published between 2012 and 2021. Articles focusing solely on PLCs and student achievement were excluded. The described criteria resulted in identifying the 25 articles that are discussed here. It is important to note that the constructs reviewed were not independent of one another. One article may have researched more than one component.

Research and studies on the topic of PLCs are extensive. Individual studies have explored the relationship between PLCs, collective efficacy, and leadership; however, a systematic review of the literature is lacking. Reviews of studies that investigate PLC implementation in secondary schools are scarce, and they are discussed here as well. Chapter 2 provides an overview of studies relating to (a) historical reviews of literature on PLCs, (b) PLCs and collective efficacy, (b) PLCs and leadership, and (c) PLC implementation at the secondary level—particularly in rural areas.

Historical Review of Literature on PLCs

Several literature reviews, since the year 2000, focused on PLCs and they were conducted by various researchers (Doğan & Adams, 2018; Donohoo, 2016; Lomos et al., 2011; Holanda Ramos et al., 2014; Vescio & Adams, 2008; Vescio et al., 2015). Within the context of those literature reviews, approximately 90 empirical studies were examined. Doğan and Adams (2018) conducted a review of empirically based literature on the topic of PLCs (primarily in an elementary setting) that especially examined the connection between PLCs, teacher practice, and student achievement and outcomes. These studies found evidence that teachers who participated in PLCs had improved instructional practices and incorporated new strategies into their teaching content (Doğan & Adams, 2018). The studies also reported improvements in student

achievement, student-to-student interactions, and improved student engagement because of teachers participating in PLCs (Doğan & Adams, 2018).

Vescio et al. (2008) and Vescio et al. (2015) focused on studies that examined the impact of PLCs on teacher practice and student learning and achievement. Both studies described five components as essential pieces of a PLC: (a) shared values and norms, (b) clear and consistent focus on student learning, (c) reflective dialogue, (d) deprivatizing practice, and (e) focus on collaboration (Vescio et al., 2008, 2015). Both reviews indicated that because of participation in PLCs, utilizing the defined characteristics, teacher practices improved and were more student focused, reflecting a change in the professional culture and a fundamental shift in habits of the mind. Teachers were more willing to examine their practices through collaborative structures, such as lesson sharing, collectively examining data, and focusing on student learning and continuous teacher learning. In addition, results indicated that student learning improved with significantly more students meeting grade-level standards (Vescio et al., 2008, 2015). The number of studies that examined the construct of PLCs in a secondary school in a rural setting were limited. Those found will be discussed later in this chapter.

Lomos et al. (2011) reviewed five studies that examined the impact of PLCs on student achievement, but unlike the studies by Vescio et al. (2008), Vescio et al. (2015) did not include the construct of teacher practice. Lomos et al. (2011) stated that,

> The presence of professional communities in secondary/high schools is considered limited, being generally a characteristic of elementary schools. However, even in the case of secondary high schools, there is a close connection between successful school reforms, increased student achievement levels and PLCs. (p. 125)

The results indicated a positive and significant relationship between student achievement and participation in a PLC. Although this study reviewed the construct of PLCs in a secondary school, it did not extend to a rural setting.

The single construct of collective efficacy beliefs was the focus of a review conducted by Holanda Ramos et al. (2014). The review specifically researched empirical studies that examined the interactions and working relationships among faculty and staff in educational organizations and its impact on collective efficacy. Of the studies investigated, there were seven thematic subcategories identified,

> Specifically: (a) collective teacher efficacy (CTE) and students' performance; (b) CTE
> and self-efficacy; (c) validation and analysis of scales; (d) sources of information of CTE;
> (e) technical and administrative support, goals, and compromise; (f) satisfaction at work
> and CTE; (g) confidence in the co-workers and CTE. (Holanda Ramos et al., 2014, p.
> 180)

The findings from this systematic review indicated that there are several studies that examined the identified subcategories; however, there are still gaps that exist. Holanda Ramos et al. (2014) reported that for a more comprehensive understanding of the topic, there needs to be further research that examines the construct of PLCs across various contexts, for example, in high schools and schools that have extreme poverty levels, which may include rural schools.

Donohoo (2016) examined studies focused on collective efficacy and professional development implications, and until this review, there were no others that focused on those two constructs specifically. Throughout the study, Donohoo (2016) found that there is little research that has examined the relationship between professional development structures and its impact on collective teacher efficacy. "Researchers have undertaken very few investigations of CTE and

professional learning over the past ten years. Very little is known about effective professional learning structures that might be leveraged to foster CTE" (Donohoo, 2016, p. 112). Effective and quality professional development can significantly influence the practices and beliefs of teachers which could ultimately impact levels of collective teacher efficacy (Donohoo, 2016).

A synopsis of these reviews of empirical studies reveals that there are gaps in the research examining the relationship between PLCs and collective teacher efficacy. Reviews of studies investigating the implementation of PLCs in secondary schools are scarce. With this understanding, this study aims to examine the relationship between the implementation of PLCs, collective efficacy, and leadership, specifically within the organization of secondary schools in rural settings.

PLCs and Collective Efficacy

The organization of educational systems has often promoted the isolation of teachers and the privatization of their practices. Teachers have also worked in isolation and were excluded from teams for years (Battersby & Verdi, 2015). DuFour et al. (2016) stated, "there is simply no credible evidence that schools are more effective when educators work in isolation" (p. 23). A critical element within the structure of PLCs intended to counteract that isolation is collaboration (DuFour et al., 2016). Studies that researched the constructs of collective efficacy and PLCs conducted primarily in suburban and urban elementary schools all found a significant and positive relationship between PLCs and collective efficacy.

Two of the seven studies in this category analyzed data utilizing a multilevel structural equation model (SEM). In a study focused on 181 teacher surveys from eight elementary schools in one district from an affluent area, Voelkel (2019) utilized a structural equation model to analysis and research the causal relationship between transformational leadership (TL), teacher

collective efficacy (TCE), and a PLC. The variables within the transformational leadership, teacher collective efficacy, and a PLC were identified and further analyzed. The results indicated that the constructs of transformational leadership and a PLC were significantly correlated ($r = .432; p < .01$). A significant correlation was discovered ($r = .415; p < .01$) between the PLC total and teacher collective efficacy total, suggesting that teachers' level of efficacy was higher when they perceived that they were working in an effective PLC model. The transformational leadership and teacher collective efficacy were statistically significant ($r = .398; p < .01$), indicating a strong correlation between transformation leadership and teacher efficacy (Voelkel, 2019). Goddard et al. (2015), utilizing structural equation model, analyzed self-administered surveys from 1,606 teachers and 4,167 students from 93 schools. The purpose of the study was to examine the direct and indirect relationships between the constructs of leadership, collaboration, and collective efficacy (Goddard et al., 2015). The results indicated a strong and positive relationship between instructional leadership and levels of teacher collaboration. Levels of collaboration were a strong predictor of collective efficacy, and collective efficacy was a strong predictor of differences in school achievement (Goddard et al., 2015). Providing an opportunity for high levels of collaboration is often difficult in rural high schools because of the limitation of organizational structures. Rural high school teachers often work in isolation and do not belong on a collaborative team because of their singleton status. There is a gap in the research because this is an understudied area.

Using a mixed-methods research design, Voelkel and Chrispeels (2017) studied the link between PLCs and teacher efficacy by studying 310 teachers and school principals from 16 schools in one district. Quantitatively, the participants completed surveys that assessed the levels of PLC implementation in their teams. The differences in teachers' perceptions were explored

and analyzed for the qualitative portion. The overarching research question was, "What is the relationship between variables measuring teacher collective efficacy and variables measuring PLC characteristics?" (Voelkel & Chrispeels, 2017, p. 512). An analysis of the findings supported a strong correlation between teacher efficacy and PLC implementation. Specifically, it indicated that when teachers perceive their districts as positively implementing PLCs, there is a higher level of teacher efficacy (Voelkel & Chrispeels, 2017). Findings from this study are corroborated by the results from Voelkel (2019).

In studies conducted by Lee et al. (2011) and Gray et al. (2014), the specific constructs of PLCs, trust in colleagues, and collective efficacy were studied. Researchers from both studies utilized the research instrument, the Professional Learning Communities Assessment (PLCA). The instrument measured six components listed as (a) shared and supportive leadership, (b) shared values and vision, (c) collective learning and application, (d), shared personal practice, (e) supportive conditions-relationships, and (f) supportive conditions-structures (Gray et al., 2014; Lee et al., 2011). Utilizing multilevel analyses, Gray et al. (2014) and Lee et al. (2011) concluded that enabling school structures, mutual trust among colleagues and administrators, and a high-performing community of teachers must be present for a PLC to thrive. These conditions also help positively influence teachers' commitment to students (Gray et al., 2014; Lee et al., 2011). Enabling school structures promotes an overarching framework that is positive and guides and encourages teachers in their work. The rules and regulations within the organization are structured to promote growth and problem solving among the teachers (Gray et al., 2014). Support from administration, allocated time to meet, open communication, and collaboration among colleagues are specific examples of enabling school structures (Gray et al., 2014).

As defined by Gray et al. (2014), trust is the belief that teachers can rely on one another and share information openly and honestly without fear of judgment. Colleagues must have a perceived belief that others are also open, honest, competent, and reliable for trust to be developed (Gray et al., 2014). Trust in administrators is established when there is a belief that teachers will receive support from the principal and that they (the principal) will do what is in the best interest of the teachers and will follow through on their word (Gray et al., 2014). Collectively, these conditions led to greater teacher efficacy, improved job satisfaction, and increased student achievement (Lee et al., 2011; Gray et al., 2014).

Finally, Moolenaar et al. (2012) applied social network analysis and multiple regression analysis to examine the role collective efficacy played in influencing the link between student achievement and teacher collaborative learning networks. Utilizing a social network survey and questions from Goddard's (2002) Collective Efficacy Scale (CE-Scale) data were gathered from 775 educators (teachers and principals) from 53 school districts. Findings indicated that close teacher learning networks cultivated collective efficacy beliefs, strong collective efficacy beliefs bolstered student achievement, and strong collaborative relationships between teachers supported student achievement (Moolenaar et al., 2012).

Overall, the findings indicate that there is a positive and significant relationship between PLCs and collective efficacy (Goddard et al., 2015; Gray et al., 2014; Lee et al., 2011; Moolenaar et al., 2012; Voelkel, 2019; Voelkel & Chrispeels, 2017). It is important to note that collectively, these studies involved hundreds of schools and thousands of students, and the findings corroborated each other, even when utilizing different types of research methods. These findings certainly establish a secure research base, and the results could support improvements in education reform and the effective implementation of PLCs. Effective building-level leadership

also plays a critical role in creating conditions that support PLCs (Gray et al., 2014). This concept is explored and discussed further in the next section.

PLCs and Leadership

With the emerging implementation of PLCs, it is important to note that the successful development and sustainability of PLCs are largely dependent upon the level of support given by district and building-level administrators (Olivier & Huffman, 2016). Tichnor-Wagner et al. (2016) reported that school administrators played a pivotal role in promoting a learning culture in effective schools by implementing specific strategies. Four qualitative studies (Carpenter, 2014; Horton & Martin, 2013; Jones & Thessin, 2017; Olivier & Huffman, 2016) examined the construct of leadership in relation to PLCs. The use of qualitative studies allows for the collection of participants' views, perspectives, and experiences with a specific phenomenon (Willis & Templeton, 2017). To summarize the findings, the next two sections review studies that examined the concepts of leadership and PLCs at different levels of school organizations.

District Level

Studies conducted by Olivier and Huffman (2016) and Horton and Martin (2013) examined the relationship between district-level leadership and PLC implementation and sustainability. Both studies utilized interviews and focus groups with principals, teacher leaders, and central office staff districts to gather data; however, Olivier and Huffman (2016) analyzed the data using a constant comparative analysis to sort and organize data into categories as themes emerged. Horton and Martin (2013) analyzed their data using the causal-comparative method. The results indicated that districts with support and guidance from the central office administration and building-level administration experienced greater effectiveness within the PLC framework.

Building Level

In Carpenter's (2014) and Jones and Thessin's (2017) studies, data from interviews, observations, field notes, and artifacts were transcribed, coded, and themed. Carpenter (2014) sampled three building-level administrators and 12 teachers from three urban and suburban districts. The districts were chosen based on the criteria of having well-established PLCs. Components of effective PLCs that were examined included: "(a) shared purpose and values, (b) collaborative culture, (c) collective inquiry, (d) continuous improvement, and (e) shared leadership" (Carpenter, 2014, p. 683). Effective principal leadership is thought to positively impact the implementation and sustainability of a PLC. District A received professional development in the five areas of focus. In contrast, Districts B and C received very little professional development and had teachers that did not participate in PLC meetings. The theme that emerged from District A was having an administrator who understood the change process, had a working knowledge of effective PLCs, and engaged in shared and supportive leadership that could positively impact school culture and influence the policies and protocols created (Carpenter, 2014). Using a case study methodology, Jones and Thessin (2017) surveyed 48 teachers and administrators, interviewed seven PLC leaders, and reviewed and analyzed documents. Participants were selected based on the criteria for being a member of a well-established PLC. The analysis description was limited throughout the study; however, a similar theme emerged through inductive analysis. Having a building-level administrator who understands the change process and has knowledge of implementing effective PLCs allows schools to improve throughout the process continuously.

In a study focused on 181 teacher surveys from eight elementary schools in one district from an affluent area, Voelkel (2019) utilized structural equation model analysis to research the

causal relationship between transformational leadership, teacher collective efficacy, and PLCs. The transformational leadership survey relied on Kouzes and Posner's (2002) Leadership Practices Inventory that analyzes five different components: "(a) model the way, (b) inspire a shared vision, (c) challenge the process, (d) enable others to act, and (e) encourage the heart" (Voelkel, 2019, p. 9). There are six questions for each of the five categories (Voelkel, 2019). Initially, descriptive statistics were reviewed, then a factor analysis was conducted. Third, to assess the relationship between the variables of transformational leadership, teacher collective efficacy, and a PLC, Pearson's r correlation was used (Voelkel, 2019). Significant correlations were discovered between the variables, transformational leadership with PLC ($r = .432$; $p < .01$), PLC with teacher collective efficacy ($r = .415$; $p < .01$) and transformational leadership with teacher collective efficacy ($r = .398$; $p < .01$) (Voelkel, 2019).

These data suggest a strong positive correlation between PLCs and the construct of leadership at the district and building levels. Smaller sample sizes in some studies limited the overall generalizability of the findings. Because most participants were identified based on their experience with PLCs, this may have produced sampling bias. The results may not represent teachers with little or no experience with PLCs and is a relevant consideration especially for rural high school teachers who often have little to no exposure to a PLC framework (Voelkel, 2019).

PLCs at the Secondary Level

Reform movements at the high school level have been the center of attention and review for decades (Little, 2002). Critics have claimed that the progress of high school reform has been at a stalemate and that secondary schools have not kept up with the progress of elementary schools (Chance & Segura, 2009). This lack of progress can be tied to several challenges,

including a lack of equity among districts, the size of some high schools, teachers' belief in their need for autonomy and independence (Little, 2002), teachers' physical separation and isolation, and conventional norms held by many secondary teachers (Lomos et al., 2011). Given these challenges and a lack of significant change in reform efforts at the secondary level, PLCs continue to receive attention and support as an effective professional development strategy (Lomos et al., 2011).

De Jong et al. (2020) and Admiraal et al. (2016) conducted studies at the secondary level that evaluated the structures and practices identified by teachers as necessary conditions for the effective implementation and sustainability of PLCs. Utilizing different methodologies, similar conclusions were reached. In a quantitative multiyear study, de Jong et al. (2020) worked with 2,111 teachers from 15 secondary schools over the course of 3 years. The focus was on teachers' perceptions regarding professional learning and collaboration and factors that influence the successful implementation of a PLC (de Jong et al., 2020). The researchers defined PLC *elements* (i.e., shared knowledge [SK], collaboration [CL], professional development [PD], and professional inquiry [PI]) as indicators that the school was functioning as a PLC. In addition, they defined PLC *conditions* (i.e., shared support [SS], communication [CM], leadership [LS], collegial support [CS]) as factors that support a PLC framework (de Jong et al., 2020). "The aim of this study was to gain insight into the change of teachers' perceptions of the learning culture of their school over time and what conditions support or hinder this change" (de Jong et al., 2020, Conclusion and discussion section, para. 1). The results indicated that teachers' perceptions of PLC elements and conditions were moderately correlated over the period of 3 years. The conditions of shared support, communication, and leadership had the most significant correlations to certain PLC elements. The positive correlations are reported as, SS with PD (r =

.26; $p < .001$), SS with SK ($r = .36$; $p < .001$), SS with PI ($r = .49$; $p < .001$), SS with CL ($r = .38$; $p < .001$), CM with SK ($r = .19$; $p < .001$); CM with CL ($r = .11$; $p < .05$), LS with PD ($r = .23$; $p < .001$), LS with PI ($r = .11$; $p < .05$), and LS with CL ($r = .15$; $p < .01$). The results indicated that the teachers perceived the factors of shared knowledge, leadership, and effective communication as significantly impacting the elements of a PLC.

Utilizing a qualitative field study, Admiraal et al. (2016) similarly evaluated the structures and practices identified by different stakeholder groups as necessary conditions for the effective implementation and sustainability of secondary PLCs. The sample population was garnered from five different stakeholder groups. The first group consisted of 11 scholars from nine different higher education institutions. The second group had 39 individuals (teachers and leaders) from 10 secondary schools. The third group consisted of nine individuals who were either a consultant or a policymaker (Admiraal et al., 2016). The researchers utilized a Delphi technique and group and individual interviews to collect data (Admiraal et al., 2016). The participants were asked to list and place a value on conditions they felt promoted professional learning in secondary schools (Admiraal et al., 2016). Elements of a PLC, such as teacher collaboration, collectively developing instructional plans, sharing practices, and reflecting on teaching, supported professional learning. Distributed leadership and having the time and space needed to collaborate were additional factors that were also highlighted as contributing elements to effective and sustained professional learning (Admiraal et al., 2016).

In a related study, Jones and Thessin (2017) used a case study methodology to assess factors relating to sustaining continuous improvement through PLCs at the secondary level. The researchers surveyed 48 teachers and administrators, interviewed seven PLC leaders, and reviewed and analyzed documents from one high school. Participants were selected based on the

criteria of being a member of a well-established PLC, and as with de Jong et al. (2020) and Admiraal et al. (2016), a similar theme emerged. At the secondary level, having a building administrator who understands the change process and has knowledge of implementing effective PLCs allows schools to improve throughout the process continuously. Concurrently, but utilizing different methodologies, de Jong et al. (2020), Admiraal et al. (2016), and Jones and Thessin (2017) studied different stakeholder groups and their perceptions and beliefs about the necessary factors required to develop and sustain an effective PLC at the secondary level. Effective leadership was the common theme among the three different studies; however, it is important to note that there is research that details the influencing potential that school structures and practices have on the development and sustainability of PLCs (Admiraal et al., 2016; de Jong et al., 2020; Jones & Thessin, 2017).

In a study conducted by Tichnor-Wagner et al. (2016), the researchers utilized a qualitative study and conducted interviews and focus groups with administrators, teachers, and students. The purpose of the study was to analyze key factors in effective high schools that led to higher levels of achievement for students. The results indicated that effective high schools had specific procedures and protocols. "They include frequent opportunities for formal collaboration, shared goals centered on universal high expectations, structured opportunities for participatory leadership and deliberate supports to help students engage and achieve in academics" (Tichnor-Wagner et al., 2016, p. 602).

Researchers Sims and Perry (2014) conducted a qualitative study that examined the perceptions of 18 high school teachers participating in a PLC. Teachers from a single high school that taught Grades 9 through 11 English, math, and science were interviewed and observed participating in a PLC meeting. The researchers used coding and theming to interpret the results.

The findings indicated that not all research on PLC implementation in rural high schools is positive. The teachers perceived the existing framework of their high school PLC as ineffective because of many factors. They reported that the agendas for the meetings were too narrow in focus, there was a lack of support from leadership, and a lack of dedicated time to collaborate. Therefore, they perceived the implementation and participation in a PLC as unsuccessful in supporting a collaborative culture and improving teacher practice. Given the limited number of empirical studies examining the topic of PLCs in secondary schools, additional studies that researched the construct of PLC implementation at the elementary level are also explored in this review.

PLCs in Elementary Schools

Over the past 2 decades several literature reviews focusing on PLC implementation at the elementary level have been conducted (Doğan & Adams, 2018; Donohoo, 2016; Lomos et al., 2011; Holanda Ramos et al., 2014; Vescio et al., 2008, 2015). Overall, the studies found that the implementation of a PLC framework at the elementary level had a positive correlation with improved instructional practices, higher student achievement levels, and improved teacher self-efficacy (Doğan & Adams, 2018). Five studies specifically researched the impact of PLCs on elementary teachers' knowledge, practice, and student learning (Doğan et al., 2016). Four of the five studies were conducted using a mixed-methods approach (Diaconu et al., 2012; Jones et al., 2013a; Mintzes et al., 2013; Popp & Goldman, 2016), and Guzey et al. (2014) utilized a qualitative study method to explore the issue. Diaconu et al. (2012) and Jones et al. (2013a) conducted their studies in an urban high-needs school system; however, the locale for the remaining three studies was not specified.

In a multiyear study, Mintzes et al. (2013) started with a group of 116 teachers from Grades K–5. However, through attrition and absenteeism, only 89 participants completed a pre- and post-test that measured efficacy and outcome expectancy. Forty-eight teachers were in the experimental group (participating in PLC workshops and meetings), while 41 teachers were in the control group (did not participate in PLC-related activities). Using the social learning theory of Bandura (1997) as a framework, the researchers studied the impact that participation in a PLC had on teachers' level of self-efficacy and outcome expectancy.

Bandura (1997) suggested that personal self-efficacy and outcome expectancy are reflected in an individual's belief in their ability to perform a task and that a positive outcome would be the result of following through with that task (Mintzes et al., 2013). Utilizing the Teaching Science as Inquiry instrument, data were gathered through the administration of questionnaires, performing observations, and conducting interviews (Mintzes et al., 2013). Results from simple t tests and an analysis of covariance (ANCOVA) indicated significant differences between the control group and the experimental group on all five dimensions of the self-efficacy scale "($p < .01$ on four subscales and $p < .05$ on one subscale)" (Mintzes et al., 2013, p. 1209). A mean effect size of 1.2 using Cohen's d indicates a large positive effect on teachers' self-efficacy because of their participation in PLCs. Analysis of the outcome expectancy dimension, using simple t tests and ANCOVA resulted in similar findings, including these significant differences "($p < .01$ on two subscales and $p < .05$ on three subscales)" (Mintzes et al., 2013, p. 1209). A mean effect size of 1.0 using Cohen's d indicated a large positive shift on outcome expectancy because of their participation in PLCs. Overall, the results indicated that throughout the study, the teachers' knowledge, skills, practices, levels of self-efficacy, and

outcome expectancy grew significantly in the experimental group over the teachers in the control group because of participating in the PLC work (Mintzes et al., 2013).

Diaconu et al. (2012), in another multiyear study, worked with 80 elementary teachers from Grades 3–5 and assigned them to a control group (did not participate in PLC-related activities) or an experimental group (participated in PLC workshops and meetings) as well. Interpreting data from surveys, questionnaires, observations, and interviews, the researchers reported similar findings to Mintzes et al. (2013). As a result of comprehensive participation in PLCs, there was an improved change in teacher practices and an improved knowledge base (Diaconu et al., 2012).

Using qualitative and mixed methods designs, Guzey et al. (2014), Jones et al. (2013a), and Popp and Goldman (2016) also researched the construct of PLC implementation and the reported impact on teachers in elementary schools. These three studies are interesting because they did not report an overwhelmingly positive correlation between participation in a PLC and a positive impact on teachers' practices and improved pedagogy (Guzey et al., 2014; Jones et al., 2013a; Popp & Goldman, 2016). Working with teachers in Grades PreK–6, who taught English language arts (ELA) and science, the researchers collected data to gain insight into factors that influenced the success or failure of PLCs by examining the perceptions of the teachers (Guzey et al., 2014; Jones et al., 2013a; Popp & Goldman, 2016). All three studies highlighted a gap between the theory and support of PLCs and their successful implementation (Guzey et al., 2014; Jones et al., 2013a; Popp & Goldman, 2016). Productive learning on the teachers' parts was reported as the exception rather than the rule in the study conducted by Popp and Goldman (2016), and in the study by Jones et al. (2013a), a high number of participants reported that new teachers experienced more benefit from PLCs than veteran teachers. A lack of formalized time to

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collaborate, the focus of the meetings, and the relationships between the teachers on the teams were all factors that played a role in the perceived success of the PLCs in their respective districts (Popp & Goldman, 2016; Jones et al., 2013a).

Research on the implementation and impact (positive or negative) of PLCs in elementary schools is readily available. Studies examining the PLC construct in a secondary school setting are an understudied area and deserve more attention. Studies conducted in suburban and urban areas are also prevalent in education literature (Lavalley, 2018). The following section explores studies examining the implementation of PLCs in rural settings.

Rural Schools

Research examining educational issues relating to teachers and professional development reform in rural settings remains limited compared to suburban and urban settings (Barrett et al., 2015). Only six of the 25 studies reviewed looked explicitly at the construct of professional development reform, including PLC implementation at the rural level (Barrett et al., 2015; Glover et al., 2016; Hunt-Barron et al., 2015; Shoulders & Krei, 2015; Willis & Templeton, 2017; Woodland & Mazur, 2019). Three of the six studies examined the issue at the secondary level (Shoulders & Krei, 2015; Willis & Templeton, 2017; Woodland & Mazur, 2019).

In studies conducted by Barrett et al. (2015), Glover et al. (2016), and Hunt-Barron et al. (2015), the researchers examined constraints and barriers that rural districts face when implementing any type of professional development, which includes PLCs. Glover et al. (2016) used a quantitative study to investigate potential differences in professional development opportunities between rural and non-rural teachers. Teachers from schools were selected by stratified random sampling to be part of the study. There were 268 teachers from a rural locale and 327 teachers from a non-rural setting (Glover et al., 2016). Glover et al. (2016) stated:

Descriptive statistics, chi-square tests of independence and one-way between groups

ANOVAS were used to investigate whether teachers from different locals had varied

experiences with respect to their demographics and educational backgrounds,

professional development participation, or perceptions and classroom practices pertaining

to training foci. (p. 6)

The results from this study did not indicate any significant differences regarding specific

characteristics of professional development between rural and non-rural teachers. The type of

providers, the number of hours spent in professional development, and opportunities for

feedback and collaboration were comparable between the two groups (Glover et al., 2016). The

focus of the professional development played a factor in rural and non-rural teachers'

perceptions of the usefulness of the professional development, increasing their own knowledge

base, and utilizing the strategies in the classroom after the session (Glover et al., 2016).

In a qualitative multi-case study, Hunt-Barron et al. (2015) examined the use of digital

tools (blogging) as a mechanism for professional development in rural schools. However, they

did not examine the same issue relating to non-rural teachers as in the study conducted by Glover

et al. (2016). The Hunt-Barron et al. study made up the sample population of 36 ELA teachers

from Grades 7 to 10 from three rural districts. Data were collected through the administration of

two surveys and was analyzed using a constant comparative method. The three districts were

examined as individual cases (Hunt-Barron et al., 2015). In all three cases, the researchers

identified several obstacles to this type of professional development: (a) a lack of time, (b)

limited access to digital tools in rural settings, and (c) perceived vulnerability of sharing teaching

practices publicly by the teachers participating in the study (Glover et al., 2016). The results

indicated that the rural teachers in this study did not find blogging as a valuable digital

professional development tool to help improve their teaching practices and pedagogy (Glover et al., 2016).

In a larger study conducted by Barrett et al. (2015), the researchers utilized a quasi-experimental method to explore the correlation between content-specific professional development and student math achievement. In cooperation with the Appalachian Math and Science Partnership (AMSP), teachers in Grades 4–8 from 10 rural districts in Kentucky participated in the study (Barrett et al., 2015). Math achievement data was collected from the local school districts and the Kentucky Department of Education (KDE). Data related to the delivery of the professional development was gathered from the Kentucky Education Professional Standards Board (EPSB) and the AMSP administrators (Barrett et al., 2015). Teachers participating in the professional development opportunity received training specific to content in math and science (i.e., algebra, geometry, physics, and biology) over a period of time (Barrett et al., 2015). The results indicated that the math achievement of students working with teachers who participated in the AMSP professional development were positively impacted during the first year and even lingered into the following school year. The findings from this study corroborate the findings from Glover et al. (2016) and Hunt-Barron et al. (2015), indicating that the type of professional development offered plays a critical role in the professional development of teachers in rural settings (Glover et al., 2016; Hunt-Barron et al., 2015). Investing in resources, such as content-specific and in-person professional development that is regular and systematic, can positively impact student outcomes and improve the skill sets of individuals living and working in rural communities (Barrett et al., 2015; Glover et al., 2016; Hunt-Barron et al., 2015).

Willis and Templeton (2017) and Woodland and Mazur (2019) investigated the construct of PLC implementation in rural secondary schools using qualitative design studies, while Shoulders and Krei (2015) studied the same issue utilizing a quantitative study. In the study conducted by Woodland and Mazur (2019), they reported, "teacher collaboration is a vital factor in successful school reform, and the networks in which educators are embedded support (or constrain) access to social capital resources" (p. 816). Utilizing a case study with social network analysis, Woodland and Mazur (2019) examined the structure of a rural school district's development of teacher collaboration within a PLC framework. They were specifically studying how the implementation of a PLC impacted the sharing of ideas between teachers. The results indicated that with the enactment of a PLC framework, the district could create collaborative teams, reduce isolation, and increase cohesion and the overall collaborative network of their teachers (Woodland & Mazur, 2019).

Willis and Templeton (2017) used purposive sampling methods to select principals with at least 3 years of experience from rural districts. Using interviews as the primary source of information, data were transcribed, coded, and themed. The study aimed to understand principals' perspectives and beliefs about factors that most influence creating successful and sustainable PLCs (Willis & Templeton, 2017). Common themes emerged that were believed to influence the sustainability of PLCs. A lack of time to collaborate and individuals serving in dual roles were hurdles that the principals indicated needed to be addressed first (Willis & Templeton, 2017). Creating buy-in and trust with the teachers were significant, influential factors, and the principal serving as a facilitator and providing consistent and shared leadership (Willis & Templeton, 2017).

In the study conducted by Shoulders and Krei (2015), researchers examined rural high school teachers' perceived levels of efficacy and the impact on student engagement, instructional practices, and classroom management. Using purposive and convenience sampling, 256 rural high school teachers were surveyed using the Teachers' Sense of Efficacy Scale (Shoulders & Krei, 2015). Causal comparative inquiry and one-way analysis of variance were used to analyze the data. The results indicated that there was a significant difference between years of experience and efficacy in instructional practices ($p < .01$) and classroom management ($p < .00$). Teachers with more years of experience were more efficacious in instructional practices and classroom management (Shoulders & Krei, 2015). There was also a significant difference reported between levels of teachers' formal education and efficacy in instructional practices ($p < .05$) and classroom management ($p < .05$). Teachers with advanced degrees were more efficacious in areas related to instructional practices and classroom management than those with only a bachelor's degree (Shoulders & Krei, 2015). Gender was not a significant factor impacting efficacy related to student engagement, instructional strategies, and classroom management (Shoulders & Krei, 2015). Professional learning is often associated with higher levels of teacher efficacy, which can also produce favorable student outcomes (Shoulders & Krei, 2015). Based on these findings, additional research related to the implementation of PLCs, focusing on professional learning, and improving teacher efficacy is warranted at the rural high school level. Within rural settings, educating students is often met with complexities and hurdles that are not necessarily present in urban or suburban areas (Willis & Templeton, 2017). These studies indicate that the implementation and sustainability of PLCs may provide the necessary framework to improve the education and achievement of students living in rural settings.

Chapter Summary

Research on the single construct of PLCs is extensive. Individual studies have explored the relationship between PLCs, collective efficacy, and leadership; however, a systematic review of the literature is lacking. Research has indicated that successfully implementing PLCs can positively impact teachers' collective efficacy, boost student achievement, and contribute to the overall development of schools; however, when discussing the construct of collective efficacy, many questions remain—despite an increase in research on the topic (Donohoo, 2016). When looking holistically at the literature, gaps in the research surfaced. Although there is rich literature that examines PLCs and collective efficacy in certain settings, studies investigating the implementation of PLCs in secondary schools were scarce.

Reform movements at the high school level have been the center of attention and review for decades (Little, 2002). Critics have claimed that the progress of high school reform has been at a stalemate and that secondary schools have not kept up with the progress of elementary schools (Chance & Segura, 2009). Increasing levels of accountability, however, continue to push the agenda for "comprehensive change in high schools" (Little, 2002, p. 694), and PLCs continue to receive attention and support as an effective professional development strategy (Lomos et al., 2011). Continued emphasis and research on the construct of PLCs as an effective reform movement for secondary schools could provide valuable information toward positive change.

A second gap that surfaced was a lack of empirical research focused on this topic in a rural setting—at all building levels—and in schools or districts with a Model PLC designation. With 44% of New York State school districts identified as rural, over 300,000 students attend school in a rural location. These data suggest that the issue of rural education continues to be an important topic (NCES, 2013). In rural settings, there are additional complexities to overcome if the implementation of PLCs is to be successful. Factors such as poverty, lack of funding and

resources, (Hunt-Barron et al., 2015), and a lack of staffing with certified and qualified teachers (Chance & Segura, 2009) are all issues that can impact the successful implementation of PLCs. Singleton teachers are another complexity for rural districts (Willis & Templeton, 2017).

Studies that were conducted at the secondary level indicated that education reform movements, including implementing PLCs, are arduous. A small sample of studies indicated that with the right policies and protocols in place, successful PLCs can be implemented in rural secondary schools, and districts can create collaborative teams, reduce isolation, and increase cohesion and the overall collaborative network of their teachers (Admiraal et al., 2016; de Jong et al., 2020; Shoulders & Krei, 2015; Tichnor-Wagner et al., 2016; Willis & Templeton, 2017 & Woodland & Mazur, 2019). A study examining the implementation of a model PLC in a rural school is warranted.

Finally, studies examining the construct of PLCs at the elementary level are abundant but lacking at the secondary level. Studies occurring in suburban and urban settings are more prevalent than those in rural settings. Based on the results of this review and the identified gaps, additional empirical research is warranted, specifically regarding the impact of a PLC on rural high school teachers' perceived level of collective efficacy. High-functioning teams in a PLC report greater collective efficacy, which is often correlated with high student achievement (Voelkel & Chrispeels, 2017).

This research study aims to answer the following overarching research question: How do rural high school teachers who teach in a model PLC school perceive their collective efficacy? Given the need to study the collective efficacy of teachers working in a rural high school that is designated as a Model PLC School, Chapter 3 provides the details of the research design,

methodology, context, participants, and the data collection and analysis process used in this study.

Chapter 3: Research Design Methodology

Introduction

The adoption of a PLC framework has been endorsed by many schools as a method to provide effective professional development for teachers (Watson 2014). Despite several studies focused on PLCs, collective efficacy, and student achievement, much of the research speaks about those constructs and their impact as they relate to an elementary-level population in suburban and urban settings. The research on education reform and the successful implementation of a PLC in a high school setting is not as extensive (Lomos et al., 2011). Additional complexity is added when the concept of high school reform is discussed in rural education settings.

Teachers in rural high schools often face significant challenges. They are often singletons, the only teacher who teaches a specific subject or content, and they do not necessarily belong on a collaborative team. Making time for collaboration within those teams is also a challenge—if they do exist. PLCs, however, continue to receive attention and support as an effective professional development strategy, even in rural schools (Lomos et al., 2011).

This study examined the perceptions of rural high school teachers working in one district that, at the time of this study, had been recognized as exemplary in implementing a PLC framework. The district and school where the research was conducted was chosen because of their designation as a Model PLC School. This study assessed the relationship between the teachers' perceptions of collective efficacy as a result of the implementation of PLCs—despite

potentially limiting organizational structures and challenges inherent in their school. This study answered the research question:

How do rural high school teachers who teach in a Model PLC School perceive their collective efficacy?

Chapter 3 focuses on the mixed-methods research design, research context, and instrumentation used to gather the perspectives of rural high school teachers regarding the impact of PLCs on their level of collective efficacy. It concludes with data collection and analysis procedures.

Research Design

This mixed-methods, explanatory sequential case study (Creswell & Creswell, 2018) utilized a quantitative questionnaire, the Collective Teacher Beliefs Scale (CTBS), along with demographic questions and a qualitative focus group with the teacher participants. Yin (2009) suggested that "case studies are commonly used as a research method in the social science disciplines" (p. 5) and, not surprisingly, they are a common research method used in the field of education. Using a case study allowed the researcher to examine real-life events, such as small-group and organizational behavior, such as a single school, in more depth (Yin, 2009). The unique strength of a case study is the ability to examine a broad scope of evidence, such as observations, interviews, documents, and artifacts (Yin, 2009). The initial quantitative results of this study are explained further with the qualitative results (Creswell & Creswell, 2018). This methodology was chosen based on the understanding that collecting multiple and different data sets within a bounded system provides a more thorough, in-depth analysis of the research problem (Creswell & Creswell, 2018; Yin, 2009).

Researcher Positionality

At the time of this work and for the previous 4 years, the candidate served in the role of Superintendent in a rural district with approximately 1,300 students, overall, and 350 students in the high school. The candidate also had 20 years of prior experience in the district as the Director of Special Education, Middle School Principal, and High School Principal. The tenets of a PLC were implemented by the candidate while serving in each of the respective roles, but the tenets had not been implemented from a wholistic district-wide approach.

In 2019, however, the district decided to implement the concept of PLCs throughout the district. The elementary and middle schools had progressed, but the high school was not as far along. Perceived and real hurdles, like those identified in the literature, became evident in the high school. The researcher was interested in examining the perceptions of teachers from a rural high school that had successfully implemented the PLC framework to investigate the impact that the implementation may have had on the teachers' levels of collective efficacy. There were no preexisting or established relationships with the researcher and the participants in this study.

Research Context

For decades there have been several different definitions of PLCs, and DuFour (2004) stated that, "people use this term to describe every imaginable combination of individuals with an interest in education" (p. 6), and they often do not completely implement the true tenets of a PLC. The following definition of a PLC is used to provide parameters and guidance for this study. DuFour (2004) identified three overarching principles of a true PLC: (a) ensuring a focus on learning, (b) building a collaborative culture and collective responsibility, and (c) establishing a results orientation.

This study explored the workings of one rural high school within a school district that had attained the designation of a Model PLC District at the elementary, middle, and high school levels. School districts that have a high level of understanding, implementation, and buy-in of the three principles of PLCs by their teachers and administrators, can apply, through a national accreditation body, for the designation of a Model PLC District or School. The national accreditation body, founded in 1998, is an organization that provides professional development and educational materials relating to the creation of positive learning environments including PLCs to K–12 educators around the world.

Former and current authors and educational experts with the national accreditation body provide short- or long-term professional development events or workshops to schools and districts. For districts or schools to receive the designation of a Model PLC entity, the district or school must complete an application that demonstrates a commitment to the overarching principles of a PLC, demonstrates the implementation of those principles for a minimum of 3 years, and provides compelling evidence of student learning (Solution Tree, 2020). The second part of the process involves a review of the application by a PLC review committee for either acceptance or revisions. Once a district or a school receives a designation of a Model PLC entity, the district or school must annually submit data that continues to meet the established criteria (Solution Tree, 2020).

The Finley Central School District is a pseudonym for a rural district located in the southern area of New York State. In 2013, the district was designated as a Model PLC District, after its three elementary, middle, and high schools were all designated as Model PLC Schools. It was the only district in the United States that had all of its buildings and the overall district boasting Model PLC status. At the time of this study, the high school was a Title 1 school, which

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made it eligible to receive federal dollars to support programs that provide a fair, equitable, and high-quality education, while closing achievement gaps for its students. It had an enrollment of 496 students (249 female and 247 male) and 44 teachers. The high school had a 92% graduation rate, which ranked the school fifth out of 15 districts in the regional Board of Cooperative Educational Services (BOCES), and the high school had a 47% free and reduced-price lunch rate. The classification rate for the students with disabilities was 14% compared to the average classification rate in the high school's BOCES region of 15%. Of the 496 students, 93.2% were White, 2% were Black, 3.2% were Hispanic, and 1.6% were Native Hawaiian or Other Pacific Islander (NCES, 2022; New York State Education Department [NYSED], 2022). The student-to-teacher ratio in the high school was 11:1. At the time of this study, 6% of the high school teachers had less than 4 years of teaching experience, 60% had between 4–20 years of experience, and 34% had 21+ years of teaching experience. Finley (pseudonym), New York is considered a rural area and the area's largest industries are retail, health care and social assistance, and educational services (Data USA, 2022; U.S. Chamber of Commerce, 2022).

The district had earned several statewide and national honors, and it had the highest number of newly named New York State Master Teachers. This is the highest honor given to teachers in the areas of science, technology, computer science, engineering, and mathematics (The State University of New York, 2023). New York State Master Teachers are recognized for their excellence and commitment to growth in the domains of content knowledge, teaching practices and connections to student's families and communities (The State University of New York, 2023).

In addition to the New York State Superintendent of the Year, it is also home to an Empire State Excellence in Teaching Award winner, and the district is recognized as one of the

best communities for music education. It boasts partnerships with local businesses to provide

career pathways to the K–12 population of students. At the time of this study, the high school

had a designated mental health clinic and offered 29 advanced placement courses and immediate

acceptance into a local community college through a College Express Partnership (New York

State Council of School Superintendents, 2019). The teachers employed at Finley High School

were the focus of this study. The Finley Central School District and the high school, specifically,

were identified because they are a rural district with approximately 1,500 students and the high

school was designated as a Model PLC School within a Model PLC District.

Research Participants

With the superintendent's approval (Appendix A), and utilizing a voluntary response

sampling, approximately 45 high school classroom teachers from the rural district of Finley

Central School were eligible and were invited to participate in this research study. A total of 18

respondents completed the survey. Voluntary response sampling is a method that asks specific

members of a particular population (i.e., rural high school teachers) to participate and provide

information on a voluntary basis relating to a specific area of study (Creswell & Creswell, 2018).

To incentivize participation, everyone who returned the completed quantitative questionnaire

received a $10.00 gift card and an opportunity to enter their names in a drawing to win an

additional $100.00 gift card. The individuals who participated in the focus group received an

additional $10.00 gift card.

Questionnaire Participants

The 18 teacher volunteer participants completed the Collective Teacher Belief Scale

(CTBS), Appendix B) regarding their beliefs about their collective capability (as opposed to their

individual efficacies) to influence student achievement, despite any obstacles that could make

learning difficult. For this study, all the participants provided specific demographic information (Appendix C), for example: certification area, content area taught, total years of teaching experience, total years of teaching experience in the Finley Central School District, total years of teaching experience in Finley High School, past participation in a PLC, gender, and age.

Focus Group Participants

The individuals who completed the CTBS questionnaire were asked if they would be willing to participate in a focus group. Of the 18 individuals who completed the questionnaire, six agreed to participate in the focus group. Predetermined discussion prompts (Appendix D) were used to facilitate the focus group. The focus group discussion was audio recorded and transcribed, and the researcher took field notes and coded the responses of the participants.

Instruments Used in Data Collection

Quantitative Questionnaire

The Collective Teacher Belief Scale, which is publicly accessible, is based on Bandura's 1990 unpublished Teacher Self-Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). In prior research, Bandura's unpublished Teacher Self-Efficacy Scale was administered to measure teachers' beliefs in their own individual efficacy or ability to influence student outcomes. The teacher self-efficacy framework of Bandura's unpublished scale is broader in scope than the CTBS, offering 30 questions that fall under seven different categories: (a) decision-making, (b) school resources, (c) instructional self-efficacy, (d) disciplinary self-efficacy, (e) parental involvement, (f) community involvement, and (g) positive school climate. The questions are rated on a 9-point Likert scale ranging from a rating of 1 = *nothing*, 5 = *some degree*, and 9 = *a great deal* (Lazarides & Warner, 2020).

In contrast to Bandura's 1990 unpublished Teacher Self-Efficacy Scale, the CTBS measures faculty members' perspectives regarding their capability or efficacy to collectively impact student outcomes—despite roadblocks (Blitz & Schulman, 2016). The instrument has 12 items that fall into either the category of student discipline or instructional practices. It measures teachers' collective beliefs about their capacity to impact student outcomes relating to student discipline and instructional practices. Like the Teacher Self-Efficacy Scale, the 12 items on the CTBS are scored on a 9-point Likert scale with a rating of 1 = *nothing*, 5 = *some degree*; and 9 = *a great deal* (Blitz & Schulman, 2016).

Validity. Tschannen-Moran and Barr (2004) reported that:

In a factor analysis, the 12 items loaded on one factor, with factor loadings ranging from .79 to .58, demonstrating adequate construct validity. When two factors were specified, the rotated factors divided along the predicted content, with factor loadings on the six items in the instructional strategies subscale ranging from .78 to .67 and the six items in the student discipline subscale ranging from .78 to .64. (p. 199)

Evaluating construct validity is one way to determine meaningful and useful inferences with data collected by the instrument being used (Creswell & Creswell, 2018). Construct validity focuses on if the instrument measures the construct being examined (Creswell & Creswell, 2018). With adequate construct validity, the CTBS was an appropriate method to measure the variable of collective efficacy (Adams & Lawrence, 2019).

Reliability. A reliability of .94 on the student discipline subscale and a reliability of .96 on the instructional strategies scale was reported based on the field testing conducted in 66 middle schools in Virginia (Tschannen-Moran & Barr, 2004). "Information on the internal consistency shows that the Teacher Collective Belief Scale seems to be adequate for the

measurement of the perception of collective efficacy" (Casanova & Azzi, 2015, p. 403). With validity and reliability indicators at an acceptable level, the CTBS in this study was an appropriate measure to examine the faculty members' beliefs accurately and consistently regarding their levels of collective efficacy.

Qualitative Focus Group

Facilitating a focus group was the second step of this explanatory sequential mixed-methods case study design. A focus group was an acceptable method for gathering information because of the explanatory nature of this study (Creswell & Creswell, 2018). After first collecting the quantitative results, those results were analyzed and used to plan the focus group discussion prompts that were used in the qualitative phase (Creswell & Creswell, 2018). The researcher collected qualitative focus group discussion views from the participants to help explain the results of the questionnaire and clarify any confusing or odd responses (Creswell & Creswell, 2018).

Procedures Used for Data Collection

Quantitative Data

After approval from the St. John Fisher University Institutional Review Board (IRB), the collection of the quantitative data came from the CTBS and the demographic questions. The data collection occurred in five steps. The researcher (a) provided the Superintendent of the Finley Central School District with a cover letter that provided specific information regarding the study and requesting written approval; (b) sent a brief prenotice and explanatory email to all high school classroom teachers in the Finley High School; (c) emailed an informed consent form (Appendix E), ensuring confidentiality along with the questionnaire; (d) during the second week of the timeline, sent a reminder email to the individuals who had not completed the

questionnaire, asking them to consider doing so; and (e) as completed questionnaires were returned, a $10.00 gift card was sent to the respondents, and their names were entered into a drawing for an additional $100.00 gift card. At the close of the timeline, all collected data were analyzed, and the qualitative focus group discussion prompts were finalized. This portion of the quantitative data collection took 3 weeks to complete.

Qualitative Data

The focus group process progressed in three phases: (a) identification of potential participants, (b) contacting potential participants (Appendix F) and obtaining informed consent, and (c) conducting the focus group discussion. The researcher traveled to Finley High School, served as the moderator of the focus group, and facilitated the focus group at a location within the high school building that was amenable to the participants. The focus group responses were audio recorded and transcribed by the researcher using Rev.com transcription software. The quantitative and qualitative data collection took approximately 2 months and occurred in February and March of 2023.

Procedures Used for Data Analysis

Quantitative Analysis

The data collected from the CTBS questionnaire, and the demographic questions were analyzed by using the QualtricsXM (2022) survey statistical analysis platform. Cluster analysis was the method used to identify if there were defined clusters in the data set or if the data were evenly distributed. Cluster analysis was used in an explanatory way to aggregate the data around demographic indicators and the mean score of the CTBS (QualtricsXM, 2022).

The CTBS questionnaire measures faculty members' beliefs regarding their levels of collective efficacy (Tschannen-Moran, & Barr, 2004). The collection of demographic data

provided descriptive information that was used to analyze and identify factors that may have influenced the participants' perceived levels of collective efficacy. Previous research, conducted primarily in elementary schools, indicates that when teachers perceive their districts as positively implementing PLCs, there is a higher level of teacher efficacy (Voelkel & Chrispeel, 2017). Given the gap in the research in rural high schools, the questionnaire was administered to high school teachers who, at the time of this study, taught in a Model PLC School. A focus group was created based on the number of responses received and the results of the cluster analysis. Discussion prompts were utilized to gather additional information to inform the results of the survey.

Qualitative Analysis

An analysis of data from the focus group of teachers was used to understand more deeply the data collected in the quantitative portion of this study. The rationale for this approach was to have the qualitative data expanded and to provide more depth to the quantitative data collected in the initial phase (Creswell & Creswell, 2018).

The focus group was recorded using the researcher's cell phone and a password-protected laptop, and the audio-recorded transcripts were transcribed using the Rev.com transcription service. Content analysis was used to code the qualitative data (Saldaña, 2021). "A code attributes meaning to each individual datum for later purposes of pattern, detection, categorization, theme, assertion or proposition development, theory building, and other analytic processes" (Saldaña, 2021, p. 6). Using open or emergent coding helped explain the quantitative data appropriately for this study. Coding inductively allowed for an open-minded analysis that allowed the researcher to discover themes rather than trying to fit data into preexisting themes

established a priori (Saldaña, 2021). Codes were then reduced to themes. Throughout the coding process, the researcher used memoing to document notes, ideas, and insights (Saldaña, 2021).

Chapter Summary

This mixed-methods explanatory sequential case study aimed to examine the relationship between teachers' perceptions of collective efficacy as a result of the implementation of PLCs, despite potentially limiting organizational structures and challenges inherent in their school. Utilizing quantitative and qualitative measures and collecting multiple and different data sets provided a more thorough and in-depth analysis of the research problem (Creswell & Creswell, 2018).

Chapter 4: Results

Introduction

This study focused on the perceptions of rural high school teachers working in one district recognized as exemplary in implementing a professional learning community framework. The purpose of this mixed-methods study was to examine the perceptions of singleton high school teachers working in rural districts that have implemented the PLC framework. The goal of the research was to assess if there was a relationship between teachers' perception of collective efficacy and the teachers' participation in a Model PLC School, despite potentially limiting organizational structures of their rural school. An answer to the following research question was sought:

How do rural high school teachers, who teach in a Model PLC School, perceive their collective efficacy?

Chapter 4 presents the results of this study based on a K-means cluster analysis of the responses from the Collective Teacher Belief Questionnaire and demographic questions followed by content analysis of a focus group discussion. This chapter has four sections. The first section of Chapter 4 provides an overview of the descriptive statistics of the sample population. The second section describes the quantitative analysis and results of the CTBS and demographic questionnaires. The third section describes the qualitative content analysis and results of the focus group discussion, and the final section provides a summary of Chapter 4.

Overview of Descriptive Statistics

There were 22 responses from 45 invitations sent to eligible teacher participants. Of the 22 responses, three were blank, and one survey response was removed because the respondent did not meet the established criteria for participation. The 18 completed and viable surveys represent a 40% response rate. Tables 4.1 through 4.8 display the results from the demographic questionnaire.

When reporting on certification areas, of the 18 respondents, the largest number of responses were from teachers in the certification areas in science and special education. There were five participants in each of those certification categories. Social studies, additionally, represented 16% of the participants and 11.11% were certified in English. Another 11.11% were certified in the special area category, which included Art, Business, Health, Family and Consumer Science, Library Media, Music, Physical Education and Technology. One teacher indicated a certification in world language, however, there were no teachers who indicated certifications in math. The results are summarized in Table 4.1.

Table 4.1

What Is Your Primary Area of Teaching Certification?

Certification Area	Frequency	Percent
English	2	11.11
Mathematics	0	0.00
Science	5	27.77
Social Studies	3	16.67
Special Areas (Art, Business, Health, Family & Consumer Science, Library Media, Music, PE, Technology)	2	11.11
Special Education	5	27.77
World Language	1	5.56
Other	0	0.00
Total	18	100.00

Table 4.2 summarizes what the teachers taught in the high school. Out of the 18 teachers, 17 were teaching within their certification area. One teacher with a certification in science indicated that they were working as a special education teacher and not as a science teacher. This participant did not indicate being also certified in special education. The respondents were asked to indicate if they were certified in multiple areas, which would be likely for at least some; however, all the teachers only provided one answer.

Table 4.2

What Are You Currently Teaching at Finley High School?

Content Area	Frequency	Percent
English	2	11.11
Mathematics	0	0.00
Science	4	22.22
Social Studies	3	16.67
Special Areas (Art, Business, Health, Family & consumer Science, Library Media, Music, PE, Technology)	2	11.11
Special Education	6	33.33
World Language	1	5.56
Other	0	0.00
Total	18	100.00

Of the 18 teachers that responded to the survey question, *what is your total number of years of teaching experience*, 13 (72.2%) reported having between 11 and 30 years of teaching experience. One teacher had 31+ years of experience. Most of the respondents had significant experience and were likely tenured. The participants' years of experience are listed in Table 4.3.

Table 4.3

What is Your Total Number of Years of Teaching Experience?

Years of Experience	Frequency	Percent
0–10 years	4	22.2
11–20 years	7	38.9
21–30 years	6	33.3
31+ years	1	5.6
Total	18	100.0

Examining the total number of years of teaching experience in the Finley School District indicated that 50% of the respondents had less than 10 years of teaching experience in the district. There were eight teachers, or 44.4%, who indicated that they had between 11 and 20 years of teaching experience in the district. Although Table 4.3 indicates that many of the respondents had a significant number of years of teaching experience, Table 4.4 indicates that a number of those years were not necessarily spent in the Finley Central School District.

Table 4.4

What Are Your Total Number of Years of Teaching Experience at Finley Central School

District?

Years of Experience	Frequency	Percent
0–10 years	9	50.0
11–20 years	8	44.4
21–30 years	1	5.5
31+ years	0	0.0
Total	18	100.0

A third question uncovered the number of years of teaching experience the respondents had specifically in Finley High School. Table 4.5 summarizes those results. Of the 18 participants, 12 indicated that they had 10 or less years of teaching experience in Finley High School. Although the respondents indicated (Table 4.3) that they had a significant number of years of teaching experience, Table 4.5 shows that most of their teaching time was not spent specifically in the study site high school.

Table 4.5

What Are Your Total Number of Years of Teaching Experience at Finley High School?

Years of Experience	Frequency	Percent
0–10 years	12	66.7
11–20 years	5	27.8
21–30 years	1	5.6
31+ years	0	0.0
Total	18	100.0

Table 4.6 summarizes the perception the teachers had regarding their membership in a PLC team. All 18 respondents indicated that they knew and recognized they were a part of a collaborative team.

Table 4.6

Are You a Member of a Professional Learning Community Team?

Response	Frequency	Percent
Yes	18	100

Table 4.7 highlights that 11 out of the 18 participants, or 61.1% were female and five, or 27.8% were male. Two respondents answered they preferred not to indicate their gender. There were only three response choices listed for this survey question. A nonbinary option was not offered as a response choice.

Table 4.7

Please Indicate Your Gender

Gender	Frequency	Percent
Female	11	61.1
Male	5	27.8
Prefer not to answer	2	11.1
Total	18	100.0

The final demographic question asked the participants to indicate their age. Most of the teachers were over 41 years old with 27% being 51 years or older, and 38.9% were between the ages of 41 and 50 years. Table 4.8 summarizes the responses to this question.

Table 4.8

What Is Your Age?

Age	Frequency	Percent
20–30 years	3	16.7
31–40 years	3	16.7
41–50 years	7	38.9
51+ years	5	27.8
Total	18	100.0

The first section of Chapter 4 presented the results from the demographic questionnaire the participants answered. The results provided information relating to gender, age, certification areas, content areas taught, years of experience, and level of participation in a PLC. A quantitative analysis and the respective results from the administration of the CTBS are presented in the next section.

Quantitative Results

Utilizing the CTBS, the 18 teacher participants answered the questionnaire containing 12 questions that applied a 9-point Likert scale for each question, with verbal gradations at 1 = *nothing*, 3 = *very little*, 5 = *some degree*, 7 = *quite a bit*), and 9 = *a great deal* (Tschannen-Moran and Barr, 2004). The questionnaire included two subscales that measure teachers' perceptions regarding the impact of instructional practices on achievement and the school's ability to influence student behavior. The questionnaire also provided an overall score for collective efficacy, which assesses teachers' perceptions of their ability to influence student achievement (Tschannen-Moran and Barr, 2004). The letters A through R in the figures represent each individual teacher's score arranged in order of completion of the questionnaire.

Figure 4.1 highlights the individual teacher scores reported for the instructional practice's subscale of the CTBS questionnaire (Tschannen-Moran & Barr, 2004). The results indicate an overall mean score of 7.01, with a minimum score of 4.83 and a maximum score of 9.00 (see also Table 4.9). A score of 7.0 is associated with a level of influence categorized as *quite a lot*.

Figure 4.1

Results of the Instructional Practices Subscale

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Instructional Practices	6.8	7.8	7.0	9.0	4.8	7.3	8.7	8.0	7.2	6.2	6.0	7.8	6.2	7.2	6.2	6.7	6.7	6.8
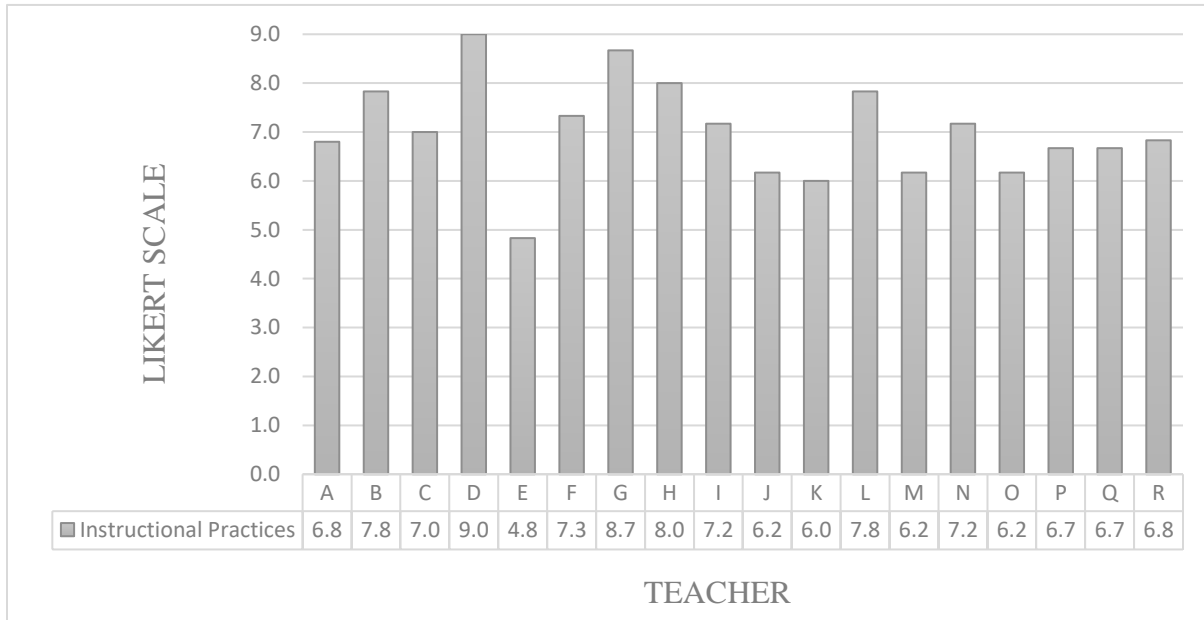
Individual teacher scores are reported for the subscale of student behavior in Figure 4.2. The mean score was 6.19, with a minimum score of 3.50 and a maximum score of 9.00 (see also Table 4.9). A score of 6.0 is associated with a level of influence categorized between *some degree* and *quite a lot*.

Figure 4.2

Results of the Student Behavior Subscale

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
■ Student Behavior	4.8	6.3	6.8	9.0	4.0	8.0	7.8	7.7	7.2	3.5	3.5	6.0	5.8	7.7	5.5	6.5	4.7	6.7
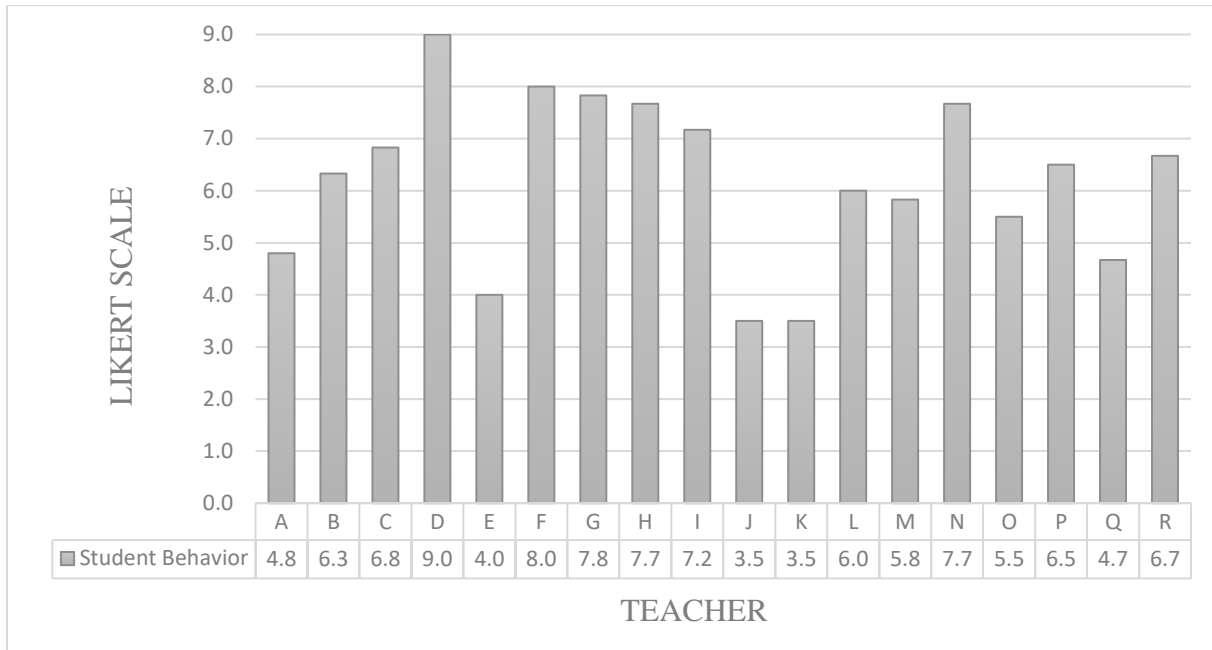
TEACHER

Figure 4.3 shows the results for each teacher's overall reported collective efficacy score. The mean score was 6.60. The minimum score was 4.42 and the maximum score was a 9.00 (see also Table 4.9). A score of 6.0 is associated with a level of influence categorized between *some degree* and *quite a lot*.

Figure 4.3

Results of the Collective Efficacy Scale

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
■ Collective Efficacy	5.8	7.1	6.9	9.0	4.4	7.7	8.3	7.8	7.2	4.8	4.8	6.9	6.0	7.4	5.8	6.6	5.7	6.8
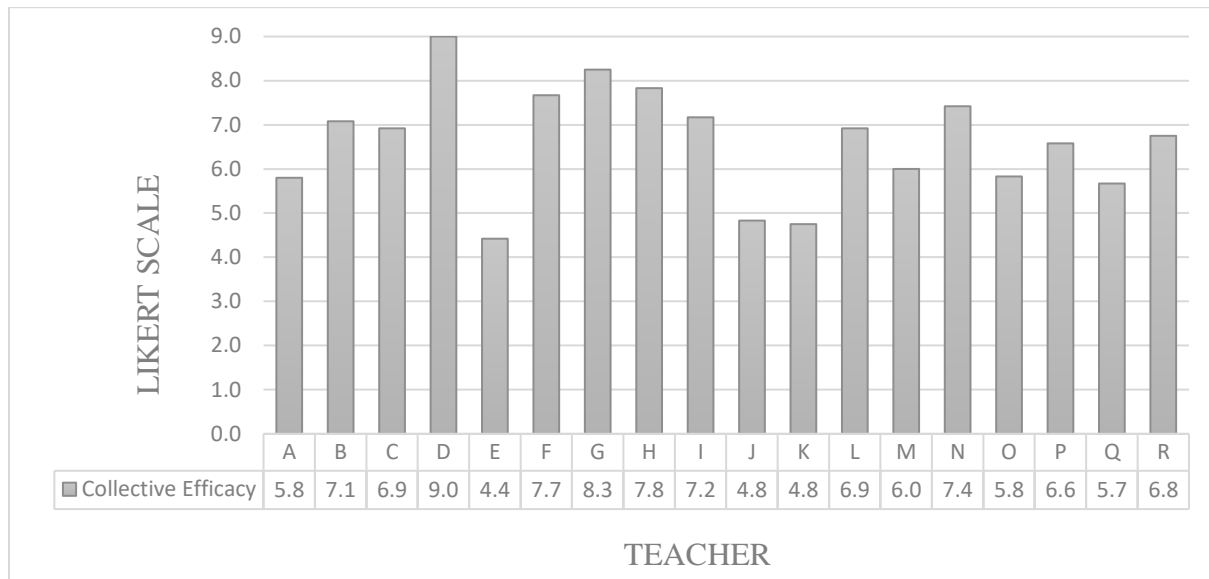
The overall results for individual teachers in all three categories of the CTBS

(Tschannen-Moran and Barr, 2004) are reported in Figure 4.4.

Figure 4.4

Overall Results of the Collective Teacher Belief Scale for the Participants

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Instructional Practices	6.8	7.8	7.0	9.0	4.8	7.3	8.7	8.0	7.2	6.2	6.0	7.8	6.2	7.2	6.2	6.7	6.7	6.8
Student Behavior	4.8	6.3	6.8	9.0	4.0	8.0	7.8	7.7	7.2	3.5	3.5	6.0	5.8	7.7	5.5	6.5	4.7	6.7
Collective Efficacy	5.8	7.1	6.9	9.0	4.4	7.7	8.3	7.8	7.2	4.8	4.8	6.9	6.0	7.4	5.8	6.6	5.7	6.8

TEACHER

■ Instructional Practices   ■ Student Behavior   ■ Collective Efficacy
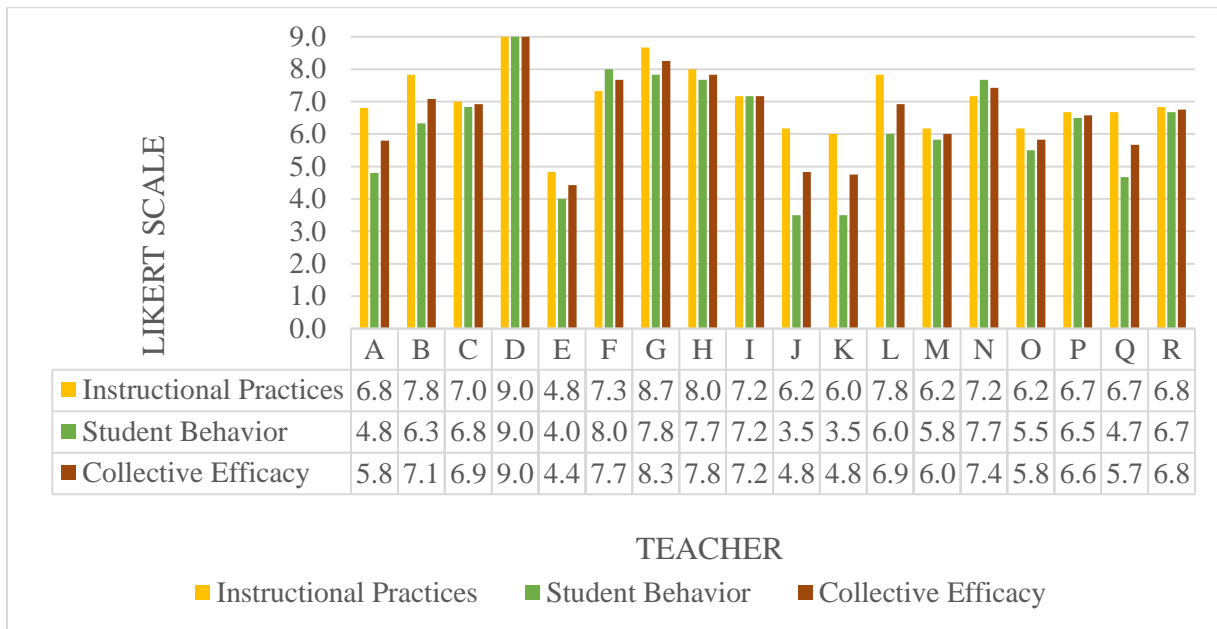
Table 4.9 displays the descriptive statistics for the overall results of the subscales on the

CTBS (Tschannen-Moran & Barr, 2004).

Table 4.9

Descriptive Statistics for the Subscales on the CTBS

	N	Minimum	Maximum	Mean	Std. Deviation
Instructional Practices	18	4.83	9.00	7.0185	1.01119
Student Behavior	18	3.50	9.00	6.1944	1.60905
Total Collective Efficacy	18	4.42	9.00	6.6065	1.24388

A K-means cluster analysis is the process of assigning each data point to a group, and

those data points get clustered based on similar features. This allows groups to be created with

information that has not been explicitly labeled in the original data. Clusters are created with the

data points that belong to the cluster with the nearest mean. The *K* in K-means clustering

represents the total number of groups or clusters (QualtricsXM, 2022). Using a K-means cluster

analysis with a three-factor solution, the following clusters are identified in Figure 4.5.

The distribution of data in Figure 4.5 indicates that the three variables (instructional

practices, student behavior, and collective efficacy) moved together. This indicates that the

teachers rated each subscale similarly. One subscale was not rated high, and the second subscale

rated low. Each teacher had overall ratings that were either collectively high or collectively low.

Figure 4.5

Final Cluster Center Distribution
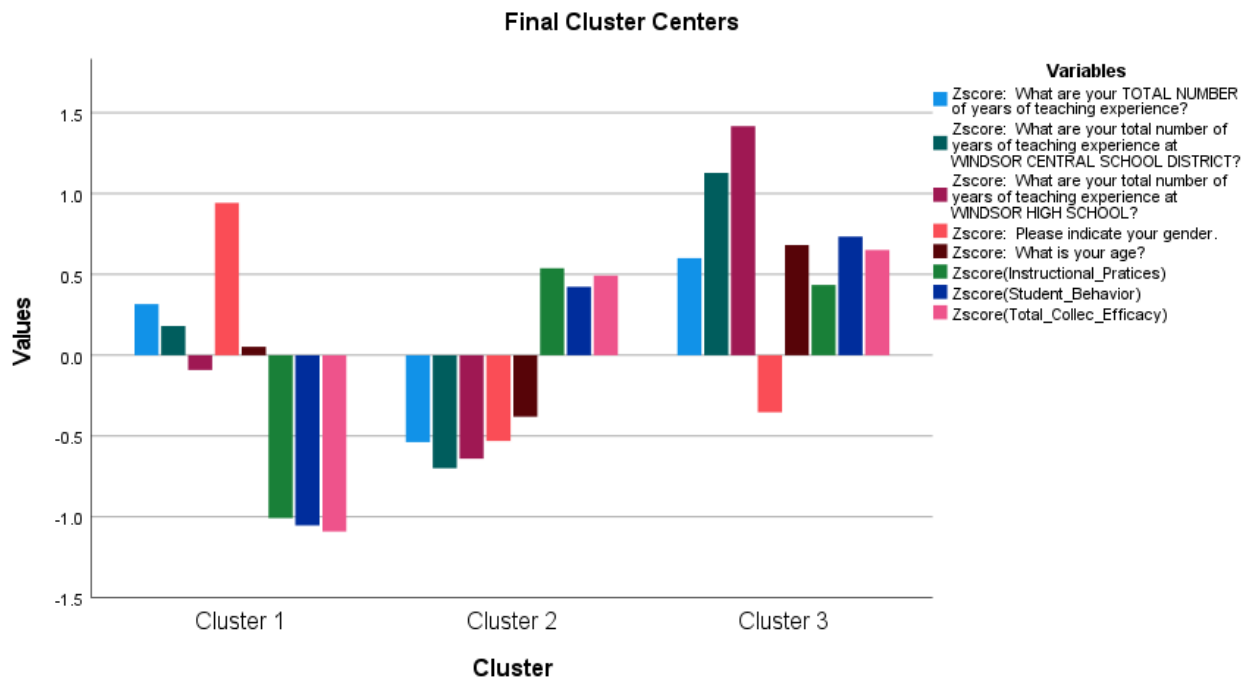
Additional data in the bar graph from Figure 4.5 indicated that the average score (5.25) of

the three scales in Cluster 1 was dissimilar to those in Clusters 2 or Cluster 3. However, Figure

4.6 shows that the average score of (7.21) of the three scales in Cluster 2 was comparable to the average score (7.45) of the three scales in Cluster 3.

Figure 4.6

Final Cluster Center Highlighting Three Scales
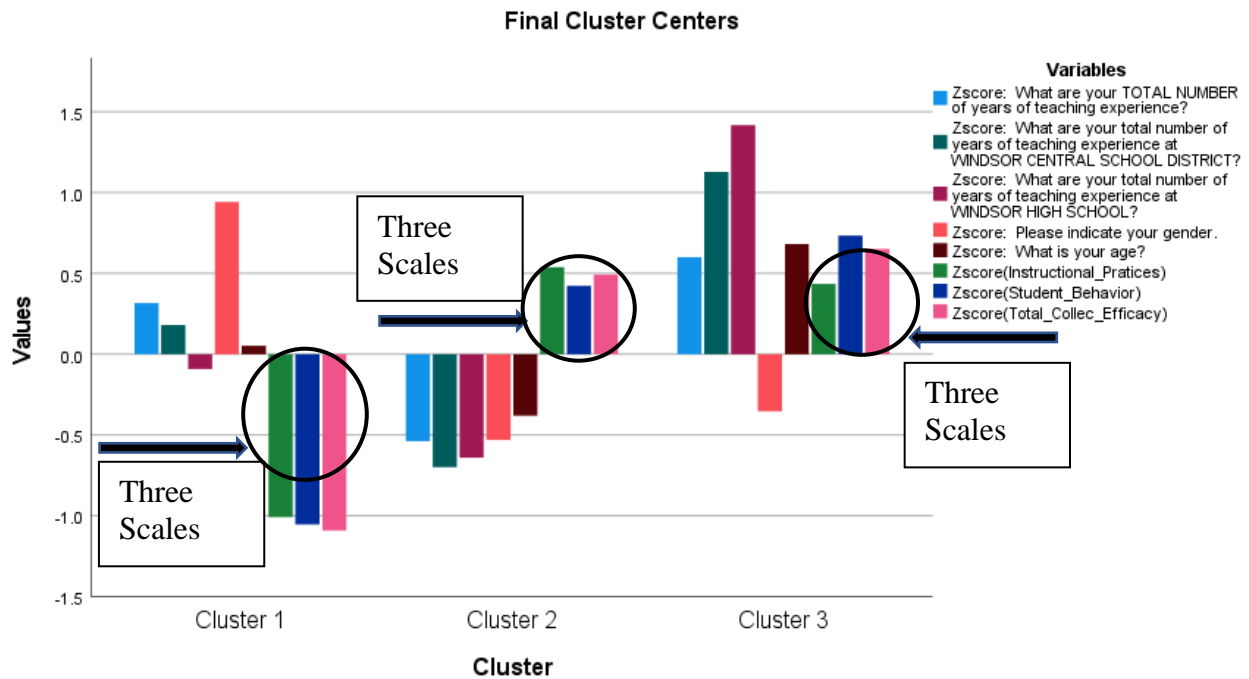
A Pearson correlation coefficient was calculated based on the relationship between instructional practices, student behavior, and collective efficacy. A strong positive correlation was found (r (16) = .792, $p < 0.01$) between instructional practices and student behavior; a strong positive correlation was found between instructional practices and collective efficacy (r (16) = .919, $p < 0.01$); and a strong positive correlation (r (16) = .969, $p < 0.01$) was found between student behavior and collective efficacy. The results of the Pearson correlation coefficient calculations are summarized in Table 4.10.

Table 4.10

Correlations Between the Three Scales

		Instructional Practices	Student Behavior	Total Collective Efficacy
Instructional Practices	Pearson Correlation	1.000	.792**	.919**
	Sig. (2-tailed)		.000	.000
	N	18	18	18
Student Behavior	Pearson Correlation	.792**	1	.969**
	Sig. (2-tailed)	.000		.000
	N	18	18	18
Total Collective Efficacy	Pearson Correlation	.919**	.969**	1.000
	Sig. (2-tailed)	.000	.000	
	N	18	18	18

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Table 4.11 summarizes the total number of individuals who were in each cluster as well as the gender distribution.

Table 4.11

Number of Cases in each Cluster Including Gender Distribution

Cluster	Frequency	Percent	Male	Female	Prefer Not to Answer
1	6	33.3	3	1	2
2	8	44.4	1	7	0
3	4	22.2	1	3	0
Total	18	100.0	5	11	2

Figure 4.7 is a scatterplot representation of the distribution of the individual teachers into one of the three clusters.

Figure 4.7

Scatterplot of Numbers in Each Cluster

Scatter Plot of Student_Behavior by Instructional_Pratices by Cluster Number of Case
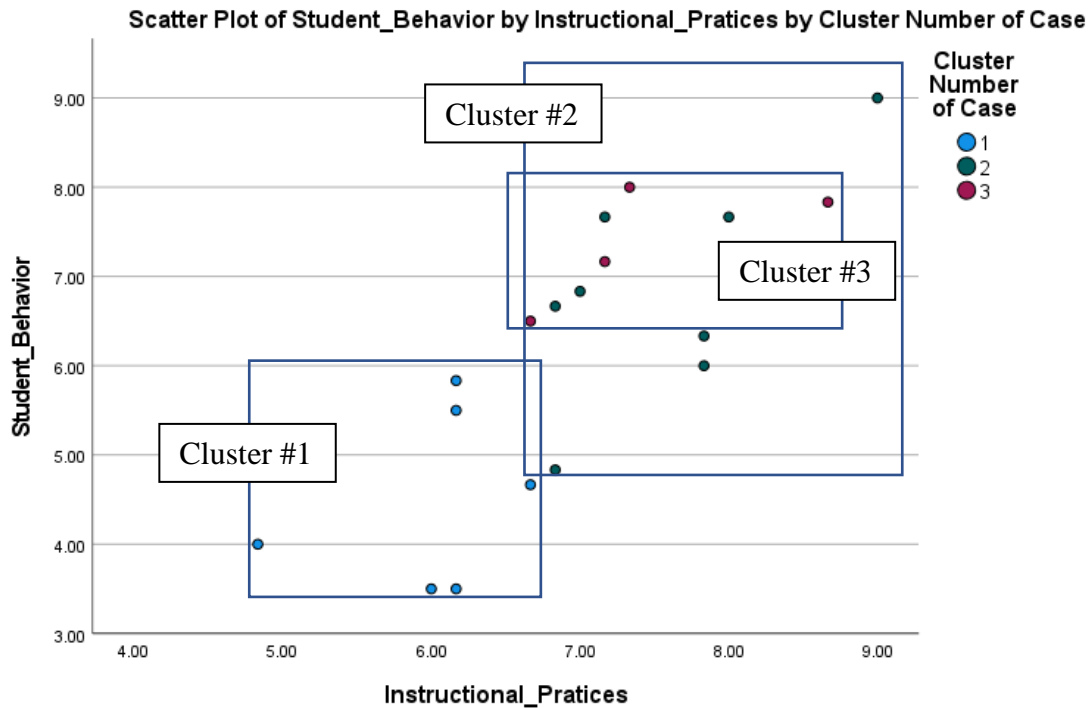
An additional examination of the data in Figure 4.8 indicates that an individual's gender may play a role in their perceived level of collective efficacy. All the male teachers, except for two and the individuals who preferred not to answer the gender question, (see also Table 4.11) fell into Cluster 1 and their scores on the instructional practices, student behavior, and collective efficacy scales were lower than the females' scores. Of the 11 females, 10 fell into Clusters 2 or 3, which reported higher scores on the scales.

Figure 4.8

Final Cluster Center Highlighting Gender
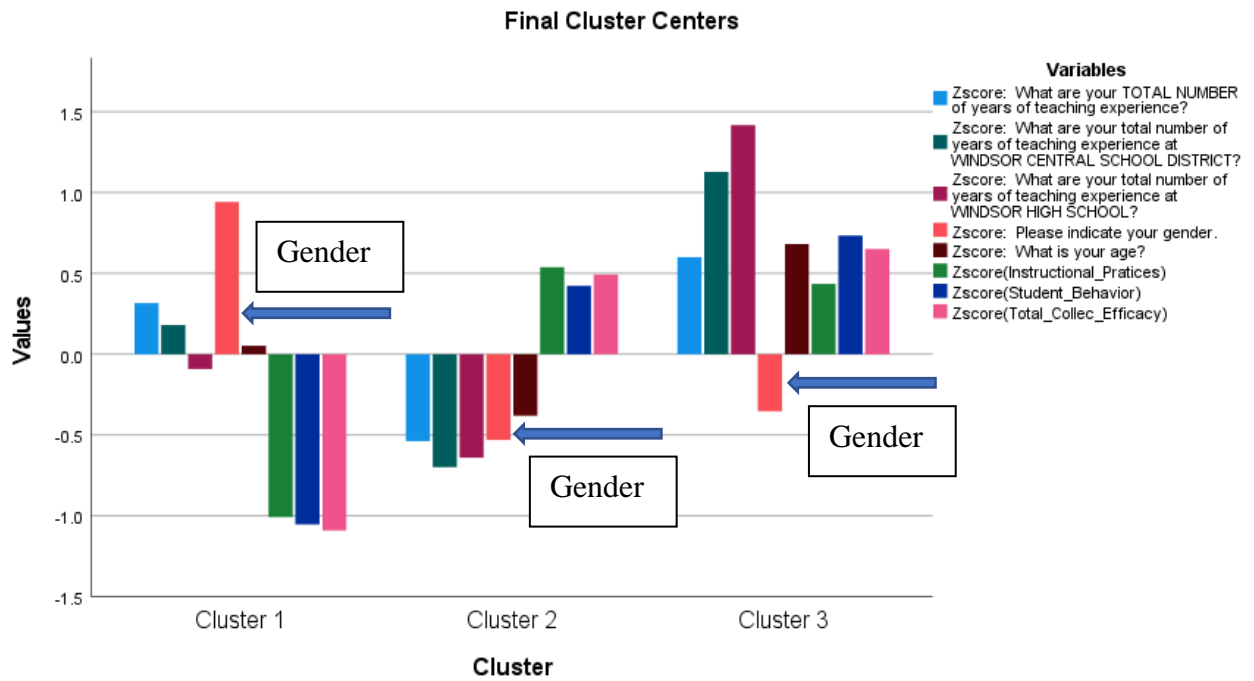
Using gender as an identified data point, Figure 4.9 displays the distribution of individuals who belonged to each cluster with the nearest mean.

Figure 4.9

Scatterplot of Gender Distribution

Scatter Plot of Student_Behavior by Instructional_Pratices by Please indicate your gender.
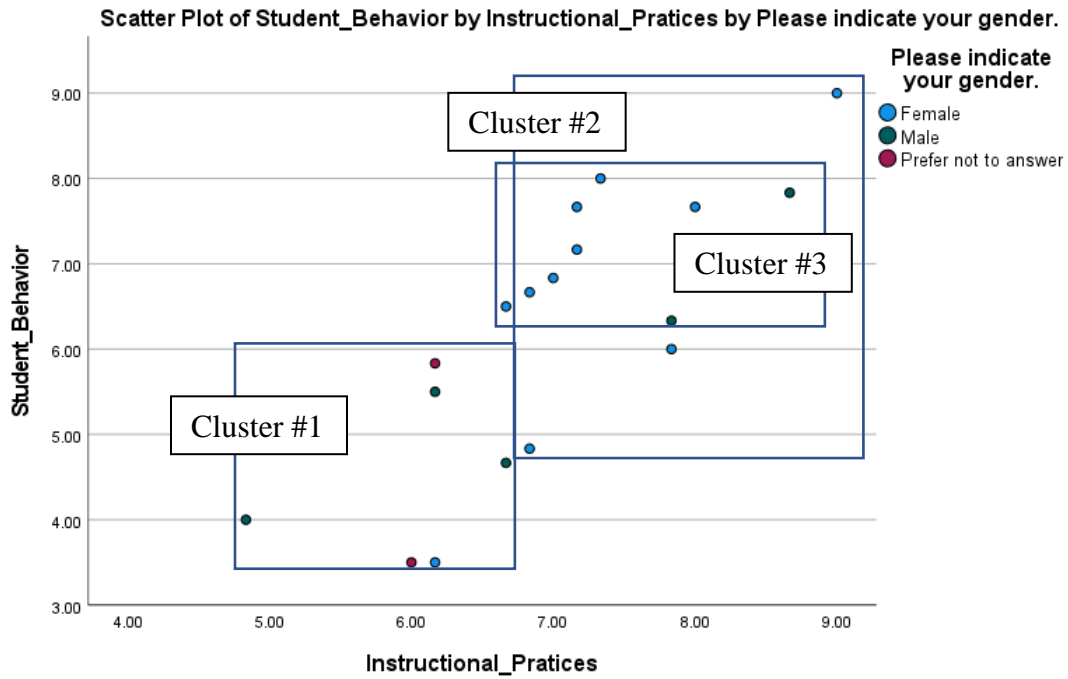
Table 4.12 lists the mean and standard deviation scores for the scales of instructional

practices, student behavior, and collective efficacy within each of the clusters shown in

Figure 4.9.

Table 4.12

Mean and Standard Deviation Scores of the Three Scales Within Each Cluster

Cluster		Instructional Practices	Student Behavior	Total Collective Efficacy
1	*Mean*	6.00000	4.50000	5.25000
	N	6	6	6
	SD	.61464	1.00554	.66249
2	*Mean*	7.56250	6.87500	7.21880
	N	8	8	8
	SD	.75033	1.25594	.92038
3	Mean	7.45830	7.37500	7.41670
	N	4	4	4
	SD	.85391	.68550	.71037
Total	*Mean*	7.01850	6.19440	6.60650
	N	18	18	18
	SD	1.01119	1.60905	1.24388

A one-way ANOVA was conducted comparing the scores on the scales of instructional practices, student behavior, and total collective efficacy to the specific cluster group. A significant difference was found between the clusters and the three scales of the CTBS. The difference for the subscale instructional practices was (F (2,15) = 8.761, $p < .05$); for the student behavior subscale it was (F (2,15) = 11.356, $p < .05$), and for the total collective efficacy overall scale it was (F (2,15) = 12.968, $p < .05$). Table 4.13 summarizes the results of the one-way ANOVA analysis.

Table 4.13

ANOVA Table of the Three Scales

			SS	df	MS	F	SD
Instructional Practices	Between groups	Combined	9.365	2	4.683	8.761	.003**
	Within groups		8.017	15	.534		
	Total		17.383	17			
Student Behavior	Between groups	Combined	26.507	2	13.253	11.356	.001**
	Within groups		17.507	15	1.167		
	Total		44.014	17			
Total Collective Efficacy*	Between groups	Combined	16.665	2	8.332	12.968	.001**
	Within groups		9.638	15	.643		
	Total		26.303	17			

**The mean difference is significant at the $p < 0.01$ level.

Tukey's HSD (honestly significant difference) test was used to determine the nature of the differences between the clusters. The analysis revealed that there was a significant difference in the scores on the instructional practices subscale between Cluster 1 and Cluster 2 ($M = -1.56$, $SD = .39$) and between Cluster 1 and Cluster 3 ($M = -1.45$, $SD = .47$); however, there was no significant difference between Cluster 2 and Cluster 3 ($M = .104$, $SD = .44$).

There also was a significant difference in the scores between Cluster 1 and Cluster 2 ($M = -2.37$, $SD = .58$) for the student behavior subscale as well as between Cluster 1 and Cluster 3 ($M = -2.87$, $SD = .69$). Again, there was no significant difference in the scores for the student behavior subscale between Cluster 2 and Cluster 3 ($M = -.500$, $SD = .66$).

There were similar findings on the total collective efficacy scale. A significant difference was found in the scores between Cluster 1 and Cluster 2 ($M = -1.96$, $SD = .43$) and between Cluster 1 and Cluster 3 ($M = -2.16$, $SD = .51$); however, there was no significant difference in

the scores between Cluster 2 and Cluster 3 ($M = -.197$, $SD = .49$) for the total collective efficacy

scale. Table 4.14 summarizes the results of the Tukey's HSD analysis.

Table 4.14

Multiple Comparisons Using Tukey's HSD

Dependent Variable	(I) Cluster Number of Case	(J) Cluster Number of Case	*MD* (I-J)	*SE*	*SD*	95% *CI*	
						Lower Bound	Upper Bound
Instructional Practices	1	2	−1.56250*	.39483	.003**	−2.5881	−.5369
		3	−1.45833*	.47192	.019**	−2.6841	−.2325
	2	1	1.56250*	.39483	.003**	.5369	2.5881
		3	.10417	.44770	.971	−1.0587	1.2671
	3	1	1.45833*	.47192	.019**	.2325	2.6841
		2	−.10417	.44770	.971	−1.2671	1.0587
Student Behavior	1	2	−2.37500*	.58345	.003**	−3.8905	−.8595
		3	−2.87500*	.69736	.002**	−4.6864	−1.0636
	2	1	2.37500*	.58345	.003**	.8595	3.8905
		3	−.50000	.66157	.735	−2.2184	1.2184
	3	1	2.87500*	.69736	.002**	1.0636	4.6864
		2	.50000	.66157	.735	−1.2184	2.2184
Total Collective Efficacy	1	2	−1.96875*	.43290	.001**	−3.0932	−.8443
		3	−2.16667*	.51742	.002**	−3.5106	−.8227
	2	1	1.96875*	.43290	.001**	.8443	3.0932
		3	−.19792	.49087	.915	−1.4729	1.0771
	3	1	2.16667*	.51742	.002	.8227	3.5106
		2	.19792	.49087	.915	−1.0771	1.4729

Note. *Tukey HSD; **The mean difference is significant at the 0.05 level.

A one-way ANOVA was also conducted comparing the scores from the 12 individual

questions on the CTBS. A significant difference was found on nine of the 12 individual

questions. Table 4.15 highlights those specific questions and their level of significance.

Table 4.15

ANOVA Table of Individual Questions

Question		SS	df	MS	F	SD
How much can teachers in your school do to produce meaningful student learning?	Between Groups	12.625	2	6.313	8.324	.004*
	Within Groups	11.375	15	.758		
	Total	24.000	17			
How much can your school do to get students to believe they can do well in schoolwork?	Between Groups	13.819	2	6.910	6.297	.010*
	Within Groups	16.458	15	1.097		
	Total	30.278	17			
To what extent can teachers in your school make expectations clear about appropriate student behavior?	Between Groups	8.917	2	4.458	2.424	.122
	Within Groups	27.583	15	1.839		
	Total	36.500	17			
To what extent can school personnel in your school establish rules and procedures that facilitate learning?	Between Groups	30.625	2	15.313	8.877	.003*
	Within Groups	25.875	15	1.725		
	Total	56.500	17			
How much can teachers in your school do to help students master complex content?	Between Groups	6.292	2	3.146	3.321	.064
	Within Groups	14.208	15	.947		
	Total	20.500	17			
How much can teachers in your school do to promote deep understanding of academic concepts?	Between Groups	10.069	2	5.035	4.001	.040*
	Within Groups	18.875	15	1.258		
	Total	28.944	17			
How well can teachers in your school respond to defiant students?	Between Groups	23.819	2	11.910	5.590	.015*
	Within Groups	31.958	15	2.131		
	Total	55.778	17			
How much can school personnel in your school do to control disruptive behavior?	Between Groups	37.042	2	18.521	10.305	.002*
	Within Groups	26.958	15	1.797		
	Total	64.000	17			
How much can teachers in your school do to help students think critically?	Between Groups	8.069	2	4.035	4.069	.039*
	Within Group	14.875	15	.992		
	Total	22.944	17			
How well can adults in your school get students to follow school rules?	Between Groups	49.042	2	24.521	11.692	.001*
	Within Groups	31.458	15	2.097		
	Total	80.500	17			
How much can your school do to foster student creativity?	Between Groups	7.278	2	3.639	2.950	.083
	Within Groups	18.500	15	1.233		
	Total	25.778	17			
How much can your school do to help students feel safe while they are at school?	Between Groups	23.528	2	11.764	5.965	.012*
	Within Groups	29.583	15	1.972		
	Total	53.111	17			

Note. *The mean difference is significant at the 0.05 level.

The previous section presented the results from the administration of the CTBS. The next section provides a qualitative content analysis and the results from the focus group discussion.

Qualitative Results

This section describes the data collected and analyzed from one focus group discussion. Six out of the 18 teacher participants who completed the CTBS questionnaire agreed to participate in the focus group. The six teachers in the focus group represented the content areas of ELA, social studies, special areas, and special education. The science and world language teachers self-selected not to participate in the focus group. The focus group discussion lasted approximately 60 minutes and took place at Finley High School. To guide the focus group discussion, a series of interview questions and prompts relating to PLCs and collective efficacy were asked of the participants.

The focus group discussion was audio recorded, and a transcript was generated utilizing Rev.com transcription software. Content analysis was used to code the qualitative data, and cycles of open coding were used to categorize the data and to discover themes relating to PLCs and the teachers' perceptions of their collective efficacy. The qualitative data provided information that explained and expanded the data of the qualitative portion of this study.

Throughout the coding process, a total of 109 separate codes emerged. Key chunks of information were narrowed further into 15 categories. The 15 categories were funneled down further into four themes and 10 subthemes. Table 4.16 provides a summary of the categories, themes, and subthemes.

Table 4.16

Focus Group Categories, Themes, and Subthemes

Categories	Themes	Subthemes
Barriers	1. Structures of a PLC	1a. Leadership and Expectations
Benefits		1b. Professional Development
Brainstorming		
Collaboration	2. Collaboration	2a. Teaming, Sharing Strategies, and Support
Consistency and Continuity		2b. Collective Responsibility
Data-Driven Data Analysis		2c. Data-Driven Collaborative Decision-Making
Expectations		2d. Student Centered
Focus		
Framework	3. Benefits	3a. Collegiality
Professional Development		3b. Improved Outcomes
Sharing Strategies		
Singletons	4. Challenges	4a. Singletons
Student Centered		4b. Lack of Buy-In
Teaming		

Theme 1: Structures of PLCs

When the participants in the focus group were asked how they would describe a PLC to someone unfamiliar with the concept, they readily referred to the framework or structures put into place in their district. Being a Model PLC School requires following the three overarching principles: (a) ensuring students learn, (b) having a culture of collaboration, and c) a focus on results. A teacher responded that part of being a PLC is that "all the PLCs . . . meet synchronously at the same time. As far as our PLC goes within the building, we meet on Mondays from 2:30 to 3:15, during PLC time." All of the focus group participants agreed that by working in a PLC, they were all part of a team, a community of people within the district, a team of teachers who got together and really got to know one another and the students. Two subthemes emerged under this theme and stood out as critical components of the PLC

framework. The subthemes were (1a) leadership and expectations, and (1b) professional development (Table 4.16).

Subtheme 1a: Leadership and Expectations. For this study, the definition of leadership was considered as the ability of the district's administrative team to influence or guide the work of the teachers in the high school. It was stated that, "without leadership, it would be pretend." The group indicated that the leaders served as role models and helped drive what they accomplished as a district in the PLC meetings. The superintendent's focus ensured that PLC time was meaningful and that established priorities were focused upon. The group elaborated on this concept by indicating that having a focus ensured that collaboration was specific to the needs of the students and addressed the areas in which the students were struggling. It helped eliminate tangents and conversations about things over which they had no influence or control. Examples offered included the leaders following the PLC framework by creating their meeting agendas in the PLC format; having norms, protocols, and expectations for meetings; and sticking to them. When describing the PLC framework further, one focus group participant said,

> Part of being a PLC involves answering four specific questions.
>
> - What do we want students to know?
> - How will we know if they know it?
> - What are we going to do if they don't learn it?
> - What will we do when they do learn it?
>
> Those are the questions our leadership is constantly harking back to and those are the questions we're trying to answer.

Another teacher stated, "our leaders really do care about what's going on with our kids."

Having a leadership team that established expectations and a focus for the PLC meetings was included as another reason for their success in the school. The participants referenced that the expectations were "just the way things were done" at Finley High School. A new teacher indicated that right from the start of orientation, it was made clear, "about the way things are done here, what we were expected to do, and what our roles were, knowing that the goal at Finley High School was the betterment of our students." The superintendent,

> was very, very straightforward when, during new teacher orientation, [it was] said [that] this is the bus and this is the way the bus is going, and if you're not going that way, then you need to go find yourself a different bus.

The group clarified that this statement was not perceived as negative, but that the work they were expected to perform was very important to the future of their students. They appreciated knowing what they were focusing on and where they were going.

With a specific focus, a focus group participant voiced that, "the administration could evaluate how a specific department was doing and determine if they had everything, they needed to be successful." Another positive mentioned was the training and professional development provided for PLCs during orientation and throughout the year. This was seen as very beneficial, and professional development was another conversation point for the group.

Subtheme 1b: Professional Development. With this study's focus group, professional development referred to the continued learning of up-to-date information, and the methods and practices related to their job and the PLCs. The group acknowledged that being immersed in the PLC process continually throughout the year was really the best professional development they received. They felt that some of the best professional development provided was offered by a colleague who was well versed in the framework. Receiving PLC professional development and

training from national presenters during an extensive orientation process was also seen as a key factor to their success, because they felt the training was done with fidelity. The focus group participants confirmed that, "they were trained quite a bit; there were lots of conferences." A veteran teacher acknowledged that "trainers were brought in; they gave us the material and taught us." Another teacher stated, "the professional development is continuous, reinforced, and the administration follows up on it; it's ongoing, [it's] not a 'one and done.'" There was consensus among the balance of the group that there were multiple opportunities for professional development and if they could not get it within the district, staff would be sent outside of the district for professional development.

A relatively new teacher expressed her appreciation for the extensive professional development she received as a new hire in her first year. She disclosed that she received professional development during orientation in August, and that there were half-day trainings and additional days dedicated to new hires throughout the school year. The group affirmed that no one could say that they did not understand the tenets of a PLC after all the professional development that was provided. Receiving professional development was seen as essential but the collaboration that occurred in the teams was viewed as another beneficial piece.

Theme 2: Collaboration

Although the benefits of professional development were discussed at length, the group dove deeper and talked about the meaning of collaboration beyond just a group of teachers coming together for a meeting. They shared that it was more than just getting together and talking about best practices. It was about a commitment to meeting regularly—not just when it was convenient. It was about having real, genuine conversations and collaborating with the whole community to help drive instruction. Prioritizing time to meet to discuss pacing, cross

discipline planning, and how to approach a problem were great opportunities to partner with someone else with the mindset of truly helping another person. A participant expressed, regardless of the content, "collaboration is so beneficial; the process is so beneficial, I don't know how people couldn't benefit from that." For the focus group participants, collaboration was a single word that could be used to describe the PLC process. They also shared that with collaboration came a sense of support for each other and the sharing of effective strategies with members of the team.

Subtheme 2a: Teaming, Sharing Strategies, and Support. Within the PLC framework, the concept of teaming is referred to as a group of individuals with a like-minded focus on collective goals and objectives (DuFour & Eaker, 1998). In addition to the appreciation for the leadership team, the professional development the teachers received, and the expectations that were set, the group also discussed the importance of teaming, sharing strategies, and supporting each other. They all agreed that working as a team and supporting their colleagues was beneficial. A teacher participant stated that, "having that support and ability to collaborate and a team to fall back on, I wouldn't want to be in a place that didn't have that." A second teacher said, "at least with a team you have someone to bounce ideas off of." Helping each other was a common thread throughout the conversation. Being surrounded by people every day that were open and willing to provide help with whatever was needed was seen as a critical piece to the process. A simple thing, such as covering classes for one another so that the PLC work could be done, was appreciated.

Sharing strategies within the team meetings was another important piece to the perceived success of their building. The group agreed that sharing ideas saved time. They provided examples of the types of questions that were asked when they were together in a meeting

discussing students and who was doing what for them. They shared the following questions as examples:

"How can we strengthen the shortcomings of our students"?

"How are we going to help them reach that goal"?

"I tried this, and it didn't work or I'm struggling with this, what should I do"?

"How did you do that? What new methods did you use? How did you question your kids?"

"What new technology did you use?"

"What are you using to engage the kids with technology?" "Why did you use X?"

"How do you question and reach your kids?"

"You have a really good rapport with student X in my room, can you share what has worked for you?"

"Can we try it this way or provide this type of accommodation for them?"

The focus group participants all agreed that it was about figuring things out and tackling issues and struggles together for the betterment of the students. The group mentioned that just coming together as a team to meet was not enough. True collaboration and genuine conversations had to take place for them to be more than a group of teachers meeting together. The group inferred that this type of work led to increased perceived levels of collective responsibility within the teams and, as a result, the topic emerged as a second subtheme.

Subtheme 2b: Collective Responsibility. In the context of this study, collective responsibility referred to the belief that individual members of a team were responsible for the decisions and actions of the whole team. For this work to be successful, the focus group affirmed that there must be a level of collective responsibility among the teachers and administrators. The participants voiced that at Finley High school, everyone worked together collectively to try and

help everyone succeed. They expressed a belief that if everyone was working for the betterment of the students, then helping each other was a requirement. The group shared that providing a little extra time to help one another ultimately helped a student.

A veteran teacher responded, "None of my results are my results; they are *our* results. It's not my kids, it's *our* kids." Another teacher stated, "we help each other because we're always looking out for the betterment of the students." The group explained that there was a belief in their school that the success of the students, teachers, and administrators was everyone's responsibility. "The leadership team will support anything needed to make that happen," claimed a teacher. The focus group purported they had been given the tools necessary to be successful and, as a result, the students were successful. They also indicated that reviewing and analyzing objective data was another critical component of their successful collaboration and effective decision-making.

Subtheme 2c: Data-Driven Collective Decision-Making. Data-driven collective decision-making is the capacity of a group of individuals to use data, information, and facts to make decisions and determine next steps. The focus group participants collectively agreed that they looked at data and always talked about data. One teacher summarized that when the teachers looked at data, they were always asking how they could help all students succeed. Another teacher stated, "PLC is definitely driven based on the data that we're getting."

A special education teacher shared that if a particular content department was analyzing data, they were expected to attend the meeting and contribute strategies to help the students with identified disabilities improve. She indicated that having those real conversations helped drive instruction, assessments, and curriculum. Although the group emphasized the importance of discussing data, they wanted to explain further that it was not just about the numbers.

"Conversations that are student centered are so important," stated a teacher. Others agreed that discussing data was a critical component but keeping the students' needs at the forefront of the conversation was even more important. Therefore, a student-centered focus was a fourth subtheme that emerged from the discussion.

Subtheme 2d: Student-Centered Focus. Like data driven decision-making in the context of this study, a student-centered focus referred to using individual student's interests and needs to inform and drive decisions. The group emphasized that discussing students who were at risk or focusing on students who were struggling to pass a particular exam or certain kids who were struggling all around was another hallmark of the PLC meetings. Not only were the conversations about academics, but they also discussed behaviors and the social-emotional well-being of the students. A teacher remarked, "It goes beyond PLC Monday. We keep track of kids; that's our first goal. If you have an issue with a kid, it is not uncommon to get an email from the other teachers to help funnel support for the student."

Because of this focus and the relationships formed with students, the participants expressed a strong sense of really knowing the students—not just on a surface level—but really knowing them. "Understanding their struggles, celebrating strengths, knowing what they know and don't know, and deciding what approach works best for them,' was an example offered by a focus group participant. When teachers really know their students and then look at the data, they can fine tune the interventions and support provided to those students.

Theme 3: Benefits

The focus group was specifically asked about the perceived and real benefits of PLC implementation in their rural high school. Overwhelmingly, the teachers in the group made positive comments about the work being done in their PLCs. The group stressed that the PLC

work contributed to the success of student achievement on New York State assessments over the past 9 years. Previously, the district was ranked 13 out of 15 districts in the region and, at the time of this study, the scores were placing the high school in first or second place in the region. A teacher commented, "we are in the top now, and we all look every year to see where we fell." Another teacher reflected and said, "our department is absolutely crushing it, we've been killing it. I don't know how else to say it, and I can attribute that to us doing PLC work."

Prior to the PLC work, the teachers all agreed that they knew roughly what they had to teach, but they could not speak in depth about the standards. After working as a PLC, it forced them, in a good way, to really dig deep into what they were teaching and why. "I don't see how people couldn't benefit from that; it is equally beneficial for all teachers regardless of their content," replied another teacher. The availability of resources was another benefit that they expressed. A special area teacher commented, "it's interesting to see all the tools I wish that I had had 26 years prior." The sharing of resources and time set aside for real conversations has led to a level of collegiality that the group had not experienced before.

Subtheme 3a: Collegiality. In this study, collegiality was attributed to the positive relationship(s) that were developed between the people who worked together toward a common goal. Right from the beginning of the conversation on collegiality, a teacher stated that, "not to have it would be like missing, you know, a hand, in a way, not having your professionals around you, working brains together, and being given all this enrichment." There was an indication that the members of the focus group would not want to work in a setting that did not have any collegiality.

Several teachers in the group affirmed that having people caring about each other, not having to work in isolation, and having the ability to partner with someone only strengthened

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their sense of collegiality. A new teacher stated, "having resources and working collectively as a team reduced my stress and pressure and allowed me to feel more effective." That sense of effectiveness, collegiality, and trust (collective efficacy) were reported by the group as being necessary components to improved outcomes for both the students and adults.

Subtheme 3b. Improved Outcomes. In the context of this study, improved outcomes referred to the measurable growth of specific components. In this study, the outcomes or components being referred to were related to academics, graduation rates, and social-emotional well-being. As a result of the improved student outcomes, the work done by the teachers in their PLCs was not perceived as a waste of time. A veteran teacher commented that, "some really good things happen here for the betterment of our students." The participants acknowledged that they believed everything being done was to help their students perform better academically, mentally, and emotionally. The focus group reported that they were seeing connections to student success in all realms of Finley High School. An experienced teacher went on to say, "The PLC has absolutely helped us with our test results and our students' success rate, which you know translates to college success."

Multiple teachers in the focus group also mentioned improved programming, improved opportunities, and increasing graduation rates because of the implementation of the PLCs. Others mentioned that it was not just about success in high school, but it was about success beyond high school. The teachers also shared that many of their graduates were experiencing success beyond the four walls of the high school. Despite the level of success and highlights reported by the focus group, they also discussed some of the challenges and hurdles they encountered throughout the PLC process.

Theme 4: Challenges

Throughout the focus group discussion, the participants spent very little time focused on the challenges of working within the PLCs, but one teacher commented that, "it's not always roses and sunshine, it can be difficult sometimes to deal with people who can't think outside the box." Sometimes there were roadblocks presented that needed to be navigated around. Many of the veteran teachers agreed that, previously, teachers used to sit in their classrooms by themselves, teaching whatever they wanted and walked out 30 years later. With a change in expectations, "some teachers struggled," reported a teacher. One of the teachers used the following analogy, "When you have been working as an 'independent contractor' for a while and then must switch to a 'large company' that transition can be hard for some." The group reported that the folks who struggled were often those who ended up being non-collegial, unhappy, and negative.

A few of the teachers mentioned that the nature of a rural school district made things difficult at times. Finding commonality among singleton teachers, a shortage of substitutes, and teaching multiple curricula were all hurdles that were mentioned. However, by collectively working together and with the support of the administration, the group felt there were some resolutions to some of the challenges.

Even though the results from the CTBS identified gender as a factor impacting perceived levels of collective efficacy, the group did not feel that was a significant issue, and they could not pinpoint any specific issue related to gender. The issue of singletons and the lack of buy-in from some teachers, the group believed, were still the biggest hurdles for a small rural district.

Subtheme 4a: Singletons. A singleton teacher is defined as the only person who teaches a specific course in a building or district. The teacher and course are considered a "stand-alone."

The group indicated that the very nature of a rural district means there will be a handful of singletons and that Finley High School was no exception. Several teachers said that the district worked hard to reduce the number of singletons—but they still existed.

The members of the focus group confirmed that, "being a singleton and working with other singletons could be a challenge." They reported that, "as a singleton and the only one who teaches a specific course, there were limited opportunities in the district to analyze data and bounce ideas off someone, unless you were seeking them out." One teacher in the group mentioned that one way she dealt with such a barrier was by asking to work with other similar singletons who taught the same content who were employed in a neighboring district. They would meet as a professional learning team through Zoom. She reported that she found this to be very beneficial for her and the teacher from the other district.

Subtheme 4b: Lack of Buy-In. For this study, a 'lack of buy-in' was referred to as an individual's unwillingness to support or participate in the PLC process. For individuals who had trouble with change and for those who believed it was impossible, they did just what they were told to do. The group reported that those individuals were often non-collaborative and had no buy-in. A few teachers indicated that these types of personalities were few, but those who did exist had been difficult to work with and typically were very unhappy. However, because of the success of the building, the teachers, and the improved student outcomes over the years, it was difficult for them to argue that the PLC process did not work.

Summary

This study focused on the perceptions of rural high school teachers working in one district that was recognized as exemplary in implementing a PLC framework. The purpose of this mixed-methods study was to examine the perceptions of rural high school teachers working

in a district that had implemented the PLC framework and to assess if there was a relationship between the teachers' perception of collective efficacy and PLCs—despite potentially limiting the organizational structures of their school.

Chapter 4 presented the quantitative results of the CTBS, based on a K-means cluster analysis, and the qualitative results based on a content analysis from a single focus group discussion. The data were collected from a group of teachers who worked in a rural high school identified as a Model PLC School. Collectively all data was used to answer the following research question:

How do rural high school teachers, who teach in a Model PLC School, perceive their collective efficacy?

The first section of Chapter 4 highlighted the demographic data from the 18 respondents who agreed to participate in this study. There was a fair representation of teachers from different content areas, age groups, and years of experience, overall, from in the Finley District and a varied difference of years of experience in the Finley High School. Of the 18 respondents, 11 were female, five were male, and two individuals who preferred not to answer the gender question. All the participants indicated that they knew and recognized that they were part of a collaborative team within their job descriptions.

The results from the CTBS questionnaire indicated that, overall, the group of teachers perceived their collective ability at a high level to influence student academic gains and student behavior. On a Likert scale of 0–9, the instructional practices subscale had a mean of 7.01. The mean for the student behavior subscale was 6.19, and the overall collective efficacy mean score was 6.60. Scores that fell between a 5 and 9 indicated a level of influence ranging from *some degree* to *quite a lot* to *a great deal*.

Utilizing the Pearson correlation coefficient, there was a strong positive correlation between the subscales of instructional practices, student behavior, and collective efficacy. This indicates that all the variables moved together. Not one teacher reported a high score in one area and a low score in one or more of the other areas. Further examination of the data indicated that an individual's gender may have played a role in their perceived level of collective efficacy. Utilizing a one-way ANOVA, a comparison of the scores on the scales of instructional practices, student behavior, and total collective efficacy to a specific cluster group was conducted. A significant difference was found between the clusters and the three scales of the CTBS. Cluster 1 (lower reported scores) contained many of the males, and Clusters 2 and 3 (higher reported scores) contained the majority of the females, indicating that the female teachers perceived themselves as having a larger positive collective ability to influence student outcomes.

For the qualitative portion of the study, six out of the 18 teachers agreed to participate in an hour-long focus group discussion. Analysis of the focus group responses revealed four themes: (a) structures of a PLC, (b) collaboration, (c) benefits, and (d) challenges. Ten subthemes were embedded within the four overarching themes. The respondents reported that the elements of leadership and expectations, and participating in professional development were all requirements necessary for a stable PLC framework. The conversations in the PLC teams that were focused on data analysis, student centered issues, and collective responsibility, provided the collaboration necessary for improved levels of collegiality among the faculty, and improved student outcomes—despite the challenges of singletons and a lack of buy-in from some teachers at Finley High School.

The analysis of the themes and subthemes that emerged provided further explanation of the quantitative results of the CTBS. The underlying theme throughout the focus group

discussion was the participants' adamant belief that a strong PLC framework and structure at

Finley High School allowed for teaming and collaboration that ultimately led to improved

student outcomes despite any challenges or struggles they might have encountered.

Chapter 5 discusses the implications of the results of the research presented in Chapter 4.

Chapter 5 also discusses any possible connections to previous or current research, the limitations

of this study, and recommendations for future research.

Chapter 5: Discussion

Introduction

The purpose of this mixed-methods study was to examine the perceptions of rural high school singleton teachers working in a district that implemented a PLC framework and to assess if there was a relationship between teacher perception of collective efficacy and PLCs, despite potentially limiting organizational structures of their school. Using the mixed-methods approach, an answer to the following research question was sought:

How do rural high school teachers, who teach in a Model PLC School, perceive their collective efficacy?

Social cognitive theory (Bandura, 1997), with its roots based on the assertion that people learn by observing, imitating others, and collaborating (Costlow & Bornstein, 2018), was the lens used to explore the constructs of the PLCs and the collective efficacy within a rural high school setting.

A brief synopsis of the results from the CTBS (Tschannen-Moran and Barr, 2004) indicates that the participants from Finley High School (a Model PLC School) reported a significant positive correlation between the variables of instructional practice, student behavior, and collective efficacy. Additionally, the results indicated that gender plays a role in the levels of perceived collective efficacy, a result which will be discussed in more detail later in Chapter 5. Furthermore, four themes and 10 subthemes emerged as important from the qualitative focus group. The first theme was structures of a PLC, with subthemes of (a) leadership and expectations and (b) professional development. The second theme was collaboration, with the

subthemes of (a) teaming, sharing strategies, and support; (b) collective responsibility; and (c) data-driven collaborative decision-making. The third theme was benefits, with the subthemes of (a) student-centered, (b) collegiality, and (c) improved outcomes. The fourth and final theme was challenges and included (a) singletons and (b) lack of buy-in as subthemes.

The remainder of Chapter 5 presents a more detailed discussion and interpretation of the results found in Chapter 4, and it is divided into four sections. The first section discusses the implications of the results from the CTBS (Tschannen-Moran and Barr, 2004) and the focus group discussion, as well as connections between the study and Bandura's (1997) social cognitive theory. The second section outlines the limitations of the study. The third section includes recommendations for future research, rural administrators, rural teachers, and professional development, and the final section provides a conclusion.

Implications of Findings

The initial part of this section will discuss the connection between the results of this study with Bandura's (1997) social cognitive theory. Most of the results are confirmed and supported by the tenets of Bandura's (1997) social cognitive theory. However, an alternate theory is also examined as a possible explanation for the distribution of the participants within Cluster 1. The analysis of the quantitative data collected from the CTBS and the qualitative data from the focus group discussion produced additional key findings and they are shared here. In addition to discussing the major findings of this study, this section also examines the connections between the results of this study with previous studies and literature.

According to Bandura (1997), the construct of efficacy, whether individual or collective, is deeply embedded within social cognitive theory. "Collective teacher efficacy is when teachers share the belief that, together, they can positively influence student learning over and above other

factors and make an educational difference in the lives of students" (Donohoo & Katz, 2017, p. 2). The social cognitive theory posits that individuals watch the behavior of others, observe the consequences (positive or negative) of that behavior, and then make decisions to inform their own behavioral choices (Costlow & Bornstein, 2018; Martin, 2014). This concept is referred to as reciprocal determinism and postulates that a person's behavior is influenced by their environment, and, in turn, the behavior of the individual impacts the environment (Bandura, 1997).

Bandura (1997) found that certain experiences shape efficacy beliefs (self and collective) and that collaboration within teams is one of those key experiences. Collaboration within teams of teachers is a fundamental principle of a PLC, and it is also critical to the development of collective efficacy and predictive of higher student achievement (Goddard et al., 2015). The focus group participants from this study shared collaboration's important and positive impact on their work and behavior. They explained that the act of working together in teams, sharing strategies, and supporting each other were major contributing factors to their success (an example of reciprocal determinism). These findings confirm and support the tenets of Bandura's (1997) social cognitive theory.

Social cognitive theory does not necessarily support the results from the quantitative portion of this study, so an alternate theory was explored as a possible explanation. The K-means clustering results produced a third and separate cluster that was identified based on gender. Several possible theories could explain why this cluster differed significantly; however, leader–member exchange theory (LMX) was viewed as a more viable option. LMX focuses on the relationships created between leaders and followers and suggests an in-group and an out-group within organizations (Northouse, 2022).

This theory purports that individuals in the in-group contribute more to the organization and receive more from the leadership team, while individuals in the out-group contribute less and receive less. Northouse (2022) also explained that relationships between a leader and the members of the in-group are categorized as trusting, respectful, and they involve reciprocal influence. Relationships within the out-group are notable for formal communication and are related only to tasks within the members' job descriptions. Out-group members also typically report lower levels of empowerment, and they generally just go to work, do their jobs, and go home. As an alternate hypothesis, the members in Cluster 1 may have believed they were in the out-group and reported lower levels of empowerment and collective efficacy. Certainly, additional research is needed; however, this theory provides a potential alternate explanation for the significant differences between the clusters.

The value of doing this study in a mixed-method format was getting more than one perspective and having multiple voices represented by the participants. If only the qualitative portion had been done, it is likely that only those participants who were deeply involved would have participated and would have only shared the positive aspects of a PLC. By doing the quantitative portion and administering the CTBS, the research discovered a third cluster of participants, which was based on gender. The questions that this study did not answer were related to why this minority group (consisting mainly of men from Cluster 1) rated their levels of collective efficacy lower. Did this group perceive themselves as being in the out-group? In other studies, would they land in the "out group", as defined by Northouse (2022)? If so, what is the source of the reluctance or resistance toward the PLC process?

An alternate hypothesis concerns the content taught by those in Cluster 1. Does gender act as a proxy variable for the type of content that the participants taught? Did the participants all

teach the same content? Were they required to use different instructional approaches and behavior management strategies based on whether they taught humanities, social sciences, physical sciences, or math? To uncover the answers to these questions, further research would need to be conducted within this cluster.

Quantitative Discussion

The participants were 18 teachers who all indicated they belonged to a PLC and who completed the CTBS. The scale was an instrument containing 12 questions that applied a 9-point Likert scale for each question, with verbal gradations at 1 = *nothing*, 3 = *very little*, 5 = *some degree*, 7 = *quite a bit*, and 9 = *a great deal* (Tschannen-Moran and Barr, 2004). Of those who completed the survey, 28% (five participants) were from the science certification area, and another 28% (five) were from the special education certification area. Broken down by gender, there were 11 females, five males, and two individuals who preferred not to answer the gender question. Of the 18 participants 71% (13) indicated they had between 11 and 30 years of overall teaching experience; however, 66.7% (12) indicated they had less than 10 years of experience in the Finley High School; 66% of the participants (12) were older than 41 years.

The CTBS contains two subscales (instructional practices and student behavior) and an overall collective efficacy scale. Results from the survey found that the mean score for the instructional practices subscale was 7.01, the mean score for the student behavior subscale was 6.19, and the mean score for the collective efficacy scale was 6.60. A score between 6.0 and 7.0 is associated with a level of influence categorized between *some degree* and *quite a bit*.

The findings indicated also that the group, overall, had a moderate belief in their ability to implement effective instructional practices and positively influenced student behavior, which influenced the reported collective efficacy results. In a historical review of the literature, several

studies reported similar findings, indicating a positive and significant relationship between PLCs and collective efficacy (Goddard et al., 2015; Gray et al., 2014; Lee et al., 2011; Moolenaar et al., 2012; Voelkel, 2019; Voelkel & Chrispeels, 2017). Additionally, the results of this study pointed out that although instructional practices and student behavior may be separate constructs within the CTBS, the respondents saw the interconnectedness of the two constructs based on their ratings of each.

Three different clusters were identified using a K-means cluster analysis with a three-factor solution and by embedding the demographic data points gathered. In Cluster 1, there were six participants (three males, one female, and two participants who preferred not to answer the gender question). Cluster 2 included eight individuals (one male and seven females), and Cluster 3 contained one male and three females, for a total of four participants. The clustering results and the distribution of the participants in the clusters provided data that were analyzed to explain the differences between the clusters.

An analysis of the three scales, using the Pearson correlation coefficient method, revealed that the scales had a significant positive correlation with one another. Because of the significant correlation, it was evident that all three scales moved together. Each teacher (within their questionnaire) rated the subscales similarly, that is, if one subscale was rated high, the other subscale was rated high. If one subscale was rated low, the other subscale was also rated low. Each teacher, overall, had ratings that were either collectively high or collectively low. The results of this analysis support similar findings from a study conducted by Voelkel (2019), who also discovered a significant correlation between PLCs and collective efficacy, suggesting that teachers' level of efficacy is higher when they perceive that they are working in an effective PLC model.

Further analysis revealed the mean score and standard deviation of the three scales within each cluster. In Cluster 1, the following mean scores and standard deviations were determined for the respective scales: instructional practices ($M = 6.00$, $SD = .61$); student behavior ($M = 4.50$, $SD = 1.00$); and teacher collective efficacy ($M = 5.25$, $SD = .66$). Results for Cluster 2 showed the following: Instructional practices ($M = 7.56$, $SD = .75$); student behavior ($M = 6.87$, $SD = 1.25$); and teacher collective efficacy ($M = 7.21$, $SD = .92$). Cluster 3 revealed the following scores: Instructional practices ($M = 7.45$, $SD = .85$); student behavior ($M = 7.3$, $SD = .68$); teacher collective efficacy ($M = 7.41$, $SD = .71$). As indicated, the mean scores and standard deviations for the three scales in Cluster 1 were significantly lower than the mean scores and standard deviations for the scales in Clusters 2 and Cluster 3. Mintzes et al. (2013) also conducted a study utilizing an efficacy questionnaire that found significant differences between groups of participants on all dimensions of the scale. Overall, the results indicated that throughout the study, the teachers' knowledge, skills, practices, levels of efficacy, and outcome expectancy grew significantly in one group over another group (Mintzes et al., 2013).

In this study, one-way ANOVA was conducted on the data from the three scales within each cluster. The analysis revealed a significant difference between the three scales and between some of the clusters. The nature of those differences was examined utilizing Tukey's HSD and revealed that Cluster 1 was significantly different from Cluster 2 and Cluster 3; however, Cluster 2 and Cluster 3 were similar and not significantly different from each other. Cluster 1 represented the minority group.

To explore these differences, further examination of the data distribution within the clusters revealed that gender was a determining factor. Cluster 1 was a more gender-diverse group, while Clusters 2 and 3 were predominantly female participants. These findings, combined

with the Pearson correlation coefficient analysis results, which determined a strong positive correlation between the three scales, indicated that, overall, the females rated their levels of collective efficacy higher than the males or the participants who preferred not to answer the gender challenge. A second finding also indicated that years of experience did not significantly impact overall collective efficacy. These results contradict the findings from a study by Shoulders and Krei (2015) that also examined rural high school teachers' perceived levels of efficacy. Shoulders and Krei (2015) indicated a significant difference between years of experience and efficacy in instructional practices and classroom management. The study also reported that teachers with more years of experience were more efficacious in instructional practices and classroom management (Shoulders & Krei, 2015). It was also reported that gender was not a significant factor impacting efficacy when relating to student engagement, instructional strategies, and classroom management (Shoulders & Krei, 2015). Given the discrepancies in the results, additional research related to these factors is warranted at the rural high school level.

Qualitative Discussion

The qualitative data provided information that helped explain and expand the data of the quantitative portion of this study. Data from one focus group were analyzed, revealing four themes and 10 subthemes. The first theme, structures of a PLC, had subthemes: (a) leadership and expectations and (b) professional development. The second theme, collaboration, had subthemes: (a) teaming, sharing strategies, and support; (b) collective responsibility; and (c) data-driven collaborative decision-making. The third theme, benefits, had subthemes: (a) student-centered, (b) collegiality, and (c) improved outcomes, and the fourth and final theme, challenges, included subthemes: (a) singletons and (b) lack of buy-in.

Structures of a PLC

The participants indicated that a significant factor contributing to their success was the overall structures that were in place in their high school, expanding on the results found by Tichnor-Wagner et al. The Tichnor-Wagner et al. (2016) results indicated that effective high schools had specific procedures and protocols: "They include frequent opportunities for formal collaboration, shared goals centered on universal high expectations, structured opportunities for participatory leadership, and deliberate supports to help students engage and achieve in academics" (p. 602).

All the teacher participants agreed that as part of a PLC, they were all part of a team and a community of people within the district. The group reported that being a successful Model PLC School required following the three overarching principles of a PLC: (a) ensuring students learn, (b) having a culture of collaboration, and (c) focusing on results, which is in agreement with DuFour et al. (2016) who stated that the overall success of a PLC is impacted by the level of understanding, implementation, and buy-in of the three principles by teachers and administrators. When describing the PLC framework further, one teacher participant said,

> Part of being a PLC involves answering four specific questions: What do we want students to know? How will we know if they know it? What are we going to do if they don't learn it? What will we do when they do learn it? Those are the questions our leadership is constantly harking back to [us], and those are the questions we're trying to answer.

Leadership from the administration was indicated as another contributing factor to the level of success at Finley High School. The participant's statement is supported by a study conducted by Olivier and Huffman (2016) who found that with the emerging implementation of

PLCs, it is important to note that the successful development and sustainability of the PLCs are largely dependent upon the level of support given by district and building-level administrators (Olivier & Huffman, 2016). This study's focus group communicated that the leaders served as role models and drove the work done in the district. It was stated that, "without leadership, it would be pretend." The group indicated that the superintendent's focus ensured that PLC time was meaningful, and they focused on established priorities. A teacher participant elaborated and stated that the superintendent "was very, very straightforward during new teacher orientation . . . said 'this is the bus, and this is the way the bus is going and if you are not going that way, then you need to go find yourself a different bus.'"

Additional studies support these findings as well. Tichnor-Wagner et al. (2016) reported that school administrators play a pivotal role in promoting a learning culture in effective schools by implementing specific strategies. A study conducted by Horton and Martin (2013) indicated that districts with support and guidance from the central office administration and the building-level administration experienced greater effectiveness within the PLC framework.

Collaboration

Collaboration was the second theme that emerged from this study's focus group discussion. In addition to acknowledging the importance of the leadership team, the group also discussed the importance of collaboration, teaming, sharing strategies, and supporting each other. Regardless of the content, one teacher expressed, "Collaboration is so beneficial; the process is so beneficial, I do not know how people could not benefit from that." This expands on the work done by Goddard et al. (2015), which examined the direct and indirect relationships between the constructs of leadership, collaboration, and collective efficacy. Their results indicated a strong and positive relationship between instructional leadership, levels of teacher collaboration, and

collective efficacy (Goddard et al., 2015). This supports the reports given by the focus group participants.

Sharing strategies was the second important piece to the perceived success of their students and building. The focus group members affirmed that for this work to be successful, there had to be a level of collective responsibility among the teachers and administrators. The participants voiced that at Finley High School, everyone worked together collectively to try and help everyone succeed. This supports earlier research from Vescio et al. (2008, 2015) that found teachers were more willing to examine their practices through collaborative structures, such as lesson sharing, collectively examining data, and focusing on student learning and continuous teacher learning.

Additional findings from this study are also corroborated by the studies done by Vescio et al. (2008, 2015). The focus group participants discussed the importance of having a student-centered focus and using data to collectively make decisions as critical pieces to the PLC process. The group reported that collaboration through close-knit teams, supporting each other, sharing instructional strategies, and using data to collectively make decisions were key factors supporting the CTBS questionnaire results. A study conducted by Moolenaar et al. (2012) found that close teacher learning networks cultivate collective efficacy beliefs, strong collective efficacy beliefs bolster student achievement, and strong collaborative relationships between teachers also support student achievement.

Benefits

Overwhelmingly, many of the focus group teacher participants shared the benefits of working in a PLC and commented positively about the work done in their PLCs. Multiple teachers mentioned improved programming, improved opportunities, and increased graduation

rates because of the implementation of PLCs. They also emphasized that the PLC work contributed to the success of student achievement on New York State assessments over the past 9 years. Many teachers acknowledged that having people who cared about each other, not working in isolation, and being able to partner with someone only strengthened their sense of collegiality. A new teacher stated, "having resources and working collectively as a team reduced my stress and pressure and allowed me to feel more effective." Findings from a study conducted by Gray et al. (2014) found that this type of collegiality can only happen if teachers believe they can rely on one another and share information openly and honestly without fear of judgment. This supports the findings from this study, where the participants described their colleagues as open, honest, competent, and reliable.

The group reported this sense of effectiveness, collegiality, and trust as necessary components to improved outcomes for the students and adults. Findings from this study are corroborated by the results from Voelkel and Chrispeels (2017) and Voelkel (2019), which indicated that when teachers perceive their districts as positively implementing PLCs, there is a higher level of teacher efficacy. In other studies, conducted by Diaconu et al. (2012) and Doğan and Adams (2018), they found evidence that teachers who participate in comprehensive PLCs have improved instructional practices, have an improved knowledge base, and they incorporate new strategies relative to their content.

Challenges

Goddard et al. (2015) found that providing an opportunity for high levels of collaboration is often difficult in rural high schools because of the limitation of organizational structures. The participants spent very little time focused on challenges, but one teacher commented, "It is not always roses and sunshine; it can be difficult sometimes to deal with people who cannot think

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outside the box." Being a singleton (the only one who teaches a specific course in the building or district) and lacking buy-in from some of the other teachers were reported as two specific challenges to the effective and sustainable implementation of a PLC. The focus group members confirmed that "being a singleton and working with other singletons could be a challenge." They added that the very nature of a rural school district sometimes made things difficult. Finding commonality among singleton teachers, having a shortage of substitute teachers, and teaching multiple curricula were all hurdles that were mentioned. These findings are comparable to those reported by Goddard et al. (2015) who also found that rural high school teachers often work in isolation, and they do not belong on a collaborative team because of their singleton status.

Limitations

This section describes the study's limitations that may have impacted the results and findings. Because all of the participants were identified based on their experience in a Model PLC School, this produced sampling bias. The results may not represent teachers with little or no experience with PLCs, which is a relevant consideration, especially for rural high school teachers who often have little to no exposure to a PLC framework (Voelkel, 2019). Future studies may focus on this population.

Given this study was conducted in a rare Model PLC School in a rural district, along with the small sample size, particularly for the focus group, and voluntary response sampling method, generalizations are very limited to other rural schools. Of the 45 high school teachers initially identified, only 18 consented to completing the CTBS questionnaire, and of those 18, only six were willing to participate in the focus group discussion. A third limitation is that all the participants came from the same rural high school. Given the uniqueness of its designation, researching only one Model PLC School in a rural community gives limited variability. Caution

should be used when drawing conclusions or making recommendations based on the results of this study.

There were also limitations identified with the demographic questions. The gender question did not offer additional options beyond male, female, and preferred not to answer. There was not a non-binary option provided. More options may have helped with further desegregating of the data in that category. Additionally, the question about certification areas and content areas taught was too broad. The teachers may have had multiple certifications. A more specific question asking for more distinction (e.g., which high school classes and grade levels assigned) would have allowed for a more in-depth analysis regarding the impact of the content area on the perceived levels of collective efficacy.

A final limitation of this study was that there were not any participants from Cluster 1 who participated in the qualitative focus group. The results from the quantitative K-means clustering identified that gender was a significant factor impacting the levels of collective efficacy, and those individuals fell into Cluster 1. However, the focus group participants did not discuss gender because all the participants came from Clusters 2 and 3. Having the ability to discuss the topic of gender with the individuals identified in Cluster 1 would have provided additional information to inform the research.

Recommendations

Given the complexities and limited research on the topic, education reform, particularly the implementation of PLCs in rural high schools, requires further investigation. With 44% of New York State school districts identified as rural and over 300,000 students attending schools in rural locations, continued research could benefit a significant number of students (National Center for Education Statistics [NCES], 2013). The findings of this study, with its strengths and

limitations, lead to several recommendations for future research, consideration for rural administrators and teachers, and opportunities for professional development.

Future Research

Based on the quantitative results of this study, gender was identified as a significant factor impacting the perceived levels of collective efficacy. Future research should include a deeper investigation into the topic of gender differences to reveal factors that may be influencing those differences. In this study, no individuals agreed to participate in the focus group from the cluster where gender was identified as a contributing factor. This may have been the result of the small sample size. In future studies, having a larger sample size, particularly with a focus group, may elicit a more diverse group of participants who could provide further insight into the factors (including gender) impacting PLC implementation in rural high schools. Because there was no answer choice of non-binary offered for the gender question, and gender was identified as a significant factor, additional research is warranted in this area.

The content area being taught is another topic that needs further exploration. Does gender act as a proxy variable for the type of content that the participants teach? Do the participants all teach the same content? Additional studies may be able to provide valuable information and examine if there are differences between the types of instructional practices and behavior-management strategies used by the teachers who teach humanities, social sciences, physical sciences, or math. If there are differences, does that impact teacher collaboration and ultimately perceived levels of collective efficacy? This information could provide administrators with knowledge that could support different collaborative groupings of teachers based on the results.

The teachers in this study reported that leadership played a significant role in the successful implementation and sustainability of PLCs. Including administrators in future studies

could provide an opportunity to supplement the research by studying factors that impact administrators' behavior. Studies conducted by Goddard et al., (2015) and Voelkel and Chrispeels (2017) support a significant correlation between PLC implementation and collective teacher efficacy, and teachers who reported higher levels of collective efficacy positively affected student achievement. A more thorough knowledge base of factors and practices required of administrators in a PLC could have positive implications for thousands of students.

Rural Administrators

Studies do not exist that report teachers working in isolation produce students with higher achievement levels. There is research supporting that students who attend schools with teacher and staff collaboration, teaming, and strategy sharing, have higher levels of achievement (Gray et al., 2014; Moolenaar et al., 2012). With this information and a better understanding of the relationship between these constructs, administrators in rural settings may want to explore further the implementation of the tenets of PLCs. Successful implementation and sustainability of a PLC in small districts could help reduce the achievement gap between rural and suburban students.

With the knowledge that effective leadership significantly affects the successful implementation of a PLC, districts and their administrators may first want to explore the options of credible professional development in PLCs, especially in rural settings. Although research on PLCs supports improved instructional practices, which lead to improved student achievement (Jones et al., 2013b), the framework and practices are challenging to implement and sustain. It is important to have a thorough understanding of the main principles of a PLC before trying to implement the practices. Quality professional development for administrators could be a critical first step. With quality professional development that leads to a thorough understanding of true

PLCs, leaders, at any level (district, elementary, or high school), could positively influence many students. For any rural administrator who is committed to improving student outcomes, investing the needed resources into the implementation of quality and effective PLCs is paramount.

Rural Teachers

Working in a rural district can have drawbacks, including working in isolation, limited access to resources, and quality professional development (Donohoo, 2016). The data gathered through this focus group discussion supports the idea that those challenges can be mitigated or reduced. The participants shared the positive implications of collaboration, teaming, and the sharing of strategies and professional practices on the success of their students. High-functioning collaborative teams report greater collective efficacy, which is often correlated with higher student achievement. All teachers, but rural teachers especially, are encouraged to examine their current practices and consider ways to collaborate and share teaching practices with colleagues. This should occur if their building or district adopts the tenets of a PLC or not.

Professional Development

Donohoo (2016) found that effective and quality professional development can significantly influence teachers' practices and beliefs, which could ultimately impact their levels of collective teacher efficacy. Understanding that the effective implementation of PLCs can positively impact teachers' levels of collective efficacy, which, in turn, can positively affect student achievement, has the potential to purposefully drive future professional development and reform initiatives (Goddard et al., 2015; Moolenaar et al., 2012; Voelkel, 2019; Voelkel & Chrispeels, 2017).

Districts must submit a professional development plan regularly, and a thorough review of the contents should be considered as a part of that submission. This study found that gender

significantly impacts levels of collective efficacy. Differentiation of professional development should be considered to mitigate factors relating to those discrepancies. Content area was suggested as an alternate possible hypothesis that could impact teachers' level of perceived collective efficacy. There needs to be further exploration into the potential differences in instructional practices and behavior modification strategies required in the different content areas being taught.

Conclusion

Professionals in the field of education have long recognized the positive impact of PLCs in improving schools and student learning (DuFour et al., 2008), and PLCs have been a widely adopted approach to school reform. For several decades there has been a push to utilize PLCs to transform schools; however, the framework and practices are challenging to implement and sustain (Voelkel, 2019). Many studies have addressed the constructs of PLCs and collective efficacy in elementary schools in suburban and urban areas, yet few have focused on rural high schools (Lomos et al., 2011).

The purpose of this mixed-methods study was to examine the perceptions of rural high school teachers working in districts that have implemented the PLC framework and to assess if there was a relationship between the teachers' perception of collective efficacy and the PLCs, despite potentially limiting organizational structures of their school. This study was significant because a further understanding of the relationship between collective efficacy, PLCs, and teachers in a rural high school setting could provide information to help develop the necessary components to realize the full potential of this reform movement in high school settings and provide additional research to the field.

This study presented a variety of analyses and data that recorded how teachers in one rural high school, designated as a Model PLC School, perceived their levels of collective efficacy. The results from the quantitative portion suggested that the participants had *quite a lot* of belief in their ability to implement effective instructional practices and positively influence student behavior. As a result, this affected the reported higher overall perceived levels of collective efficacy for the group. However, further analysis of the quantitative data revealed that the females in this study rated their levels of collective efficacy higher than the males or the individuals who did not identify their gender. Additional data determined that years of teaching experience did not significantly impact overall collective efficacy.

The qualitative portion of this study, which included a focus group discussion, provided additional insight into the participants' involvement in a PLC in their high school. The group reported that despite some of the challenges (e.g., having singleton teachers and a lack of buy-in by a few teachers) inherent in a small rural high school, there were many benefits of working in a building that had implemented a PLC framework. They reported that improved collegiality and support for each other were immeasurable; however, the enhanced programming, improved achievement levels, and increased graduation rates were the most satisfying for the teacher participants.

The participants also reported that they related their success to several factors. This included having a strong leadership team that understood and promoted the tenets of a true PLC. Without this, they expressed that their work would not be possible. Being on a team of teachers who are expected to collaborate, support each other, and share strategies based on data and student-centered needs is the hallmark of a successful PLC.

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Recommendations were offered in the areas of future research, considerations for rural administrators and rural teachers, and potential opportunities for professional development. Additional research needs to be conducted concerning the areas of gender and content matter to understand further how these constructs may impact the successful implementation of a PLC. Professional development is another point of consideration for administrators and teachers. Without relevant, meaningful, and ongoing professional development on PLCs, it is unlikely that districts, buildings, teachers, and students will benefit from the positive impact a PLC can provide.

It is evident that adherence to the overarching principles of an effective PLC, relevant professional development, effective leadership, and teacher buy-in, are critical pieces to the success of this framework. The results of this study indicate that, overall, the teachers from Finley High School had perceived higher levels of collective efficacy because of their work within a PLC. Despite the positive findings of this study, there continues to be limited research that supports successful education reform efforts at the secondary level—especially in rural settings. As a result, additional and continued investigation in this area is warranted.

Based on the results of this study and findings from previous literature, the impact of PLCs on teachers' collective efficacy and student achievement remains positive. Rural administrators are encouraged to explore the implementation of PLCs.

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Superintendent's Email Approval

RE: Seeking your approval

External

Inbox

Sat, Nov 26, 8:18 AM (1 day ago)

Jason Andrews ███████████████-csd.org>

to me

> **Warning:** This email originated from outside of St. John Fisher University. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Happy Thanksgiving!

I am happy to support you with this research and give my approval for you to conduct research at our high school.

Thanks!
Jason

From: Feinman, Eileen <ef02064@sjfc.edu>
Sent: Friday, November 25, 2022 11:58 AM
To: Jason Andrews < ████████████████-csd.org>
Subject: Seeking your approval

[EXTERNAL EMAIL] This email has been received from an external source. Please use extra caution before opening attachments or following links.

Hello Jason,

I am writing as a follow up to our conversation a couple of months ago where we discussed the possibility of me conducting research at the high school in ▮▮▮▮▮▮. This research is related to my doctoral program at St. John Fisher University in Rochester, NY. Below, please find a copy of the abstract from my proposal for your review. I plan on using the Collective Teacher Belief Scale along with some demographic questions and doing a focus group with individuals who are willing to do so. The questionnaire will take approximately 10 minutes to complete, and the focus group will last 60 minutes and will be conducted in the district. Obviously, participation will be voluntary, and confidentiality will be kept throughout the study. I will be using a pseudonym to identify the District and the High School. I would look to do the study in mid to late January.

I am currently working on my IRB application and need your approval in writing to conduct the study. If you could simply respond to this email indicating that you give your approval, that would be great. If you have any questions or need additional information before approving, please don't hesitate to let my me know.

With much appreciation,
Eileen

ABSTRACT:

The implementation of professional learning communities (PLCs) has been recognized as a strategy for sustained substantive school improvement, and it has been adopted by many schools. Research indicates that teachers who perceive their schools as positively implementing PLCs have higher levels of collective efficacy. Much of the research on PLCs and collective efficacy has been conducted at an elementary school level in suburban and urban areas. The research on the successful implementation of PLCs in a high school setting located in a rural area is not as extensive as those in elementary schools and in suburban and urban areas. Using surveys and focus groups, this mixed-methods explanatory sequential case study will examine the relationship between collective efficacy, PLCs, and teachers in a rural high school setting designated as a Model PLC.

Collective Teacher Belief Scale Questionnaire

Collective Teacher Beliefs

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the *current* ability, resources, and opportunity of the teaching staff in your school to do each of the following.

	None at all		Very Little		Some Degree		Quite A Bit		A Great Deal
1. How much can teachers in your school do to produce meaningful student learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can your school do to get students to believe they can do well in schoolwork?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. To what extent can teachers in your school make expectations clear about appropriate student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. To what extent can school personnel in your school establish rules and procedures that facilitate learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. How much can teachers in your school do to help students master complex content?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can teachers in your school do to promote deep understanding of academic concepts?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can teachers in your school respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How much can school personnel in your school do to control disruptive behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can teachers in your school do to help students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How well can adults in your school get students to follow school rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. How much can your school do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can your school do to help students feel safe while they are at school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

For office use only.

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Appendix C

Demographic Questions

1. What is your primary area of teaching certification?

2. What are you currently teaching at Finley High School?

3. What are your total number of years of teaching experience?

4. What are your total number of years of teaching experience at Finley Central School?

5. What are your total number of years of teaching experience at Finley High School?

6. Are you a member of a professional learning community team?

7. Please indicate your gender.

8. What is your age?

9. Are you willing to participate in a focus group discussion?

Appendix D

Focus Group Discussion Prompts for Teachers

My name is Eileen Feinman and I want to thank you for agreeing to participate in a focus group today. I am a doctoral student at St. John Fisher University, and the purpose of this focus group is to learn more about the relationship between collective efficacy and professional learning communities for rural high school teachers. Throughout the discussion, I will ask several questions to the whole group, however there may be times when I pose follow-up questions to the whole group or to specific individuals. I anticipate that the focus group will last approximately 60 minutes.

Please be assured that everything you say will remain confidential. Your name will not be associated with any specific comment(s). With your permission, I will be recording this focus group discussion for the purpose of transcription and taking notes during our conversation. The recording and notes will be stored securely and destroyed 3 years after this study has been completed.

To have an open and honest conversation, I would ask that we respect everyone's opinion, and that we commit to honoring the confidentiality of what is shared here today. Are there any questions before we begin?

1. Tell me about your experiences with professional learning communities in the high school.
   - How would you describe the PLC process to a new colleague?
   - Are there expectations established for the work to be conducted in your PLC?
   - What are the benefits and drawbacks of professional learning communities in a rural high school?
   - What role does leadership play in the successful implementation of professional learning communities in a rural high school?
   - Given your New York State assessment results over the past 9 years, do you feel that PLCs have contributed to the success of student achievement?

2. What professional development have you received regarding professional learning communities?
   - Who provided the professional development? Is it ongoing, or was it a one-time event?
   - If you received professional development, was it effective? Why or why not?

3. What does collaboration look like for you and your team?
   - If you identify as a singleton high school teacher, do you view that as an obstacle to your ability to collaborate with other teachers? Why or why not?
   - Do you believe that this collaboration improves student learning? Why or why not?
   - Do you believe that collaborating in a professional learning community has influenced your levels of collective efficacy? Why or why not?

4. Overall, do you believe professional learning communities are equally beneficial for all teachers? Why or why not?

5. Is there anything else you would like to tell me about PLCs as you have experienced them in the high school?

Appendix E

Statement of Informed Consent

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St. John Fisher College Institutional Review Board

Statement of Informed Consent for Adult Participants

Examining the Construct of Collective Efficacy in Rural High School Teachers Working in a Model Professional Learning Community School

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SUMMARY OF KEY INFORMATION:

- You are being asked to be in a research study examining your perceptions of collective teacher efficacy as a result of teaching in a rural high school that is designated as a model professional learning community. As with all research studies, participation is voluntary.
- The purpose of this study is to research the perceptions of high school teachers working in a rural setting, regarding the impact of professional learning communities on their levels of collective efficacy. This research study aims to answer the following overarching research question: How do rural high school teachers who teach in a model professional learning community school perceive their collective efficacy?
- Approximately 45 teachers will take part in this study. The results will be used for the completion of a dissertation.
- As a teacher, if you agree to take part in this study, the initial phase of this study will require the completion of an on-line survey that will take no more than 20 minutes to complete. After completing the survey, you will be asked if you are also willing to take part in a focus group discussion to be held at a later day and time. Depending on the number of responses received there may be the possibility of multiple focus groups however, there will be at least one. The focus group(s) will consist of 8-10 people and would last for 60 minutes. I
- If you choose not to participate in a focus group discussion, your participation will then be complete after finishing the survey. If you are willing to participate in a focus group discussion of 8-10 people, it will require an additional 60 minutes. The focus group discussion will take place at the Finley (pseudonym) High School on an agreed upon day and time.

- We believe this study has no more than minimal risk. You may not directly benefit from this research; however, we hope that your participation in the study may provide knowledge that will contribute to the study of professional learning communities in a rural high school setting.

DETAILED STUDY INFORMATION:

You are being asked to be in a research study examining your perceptions of collective teacher efficacy as a result of teaching in a rural high school that is designated as a model professional learning community. The first phase of this study is being conducted online using the Qualtrics online platform and then focus group discussions will be conducted in person at the Finley (pseudonym)High School at an agreed upon day and time.

The researcher conducting this study is Eileen M. Feinman. The faculty research mentor is Dr. Michael Wischnowski, Professor at St. John Fisher University. You were selected as a possible participant because you are currently teaching in a rural high school that has been designated as a model professional learning school. Please read this consent form and ask any questions you have before agreeing to be in the study.

PROCEDURES:

If you agree to be in this study, you will be asked to complete a one-time, on-line questionnaire consisting of 12 questions that you will rate on a scale of 1 (indicating 'nothing') to a rating of 9 (indicating 'a great deal'). The survey will take no more than 20 minutes to complete. The questions are related to your perceptions of collective teacher efficacy as a result of working in a rural high school that has implemented the framework of a professional learning community. Demographic questions are also included in this portion. After you have completed the questionnaire, you will be asked if you are willing to voluntarily participate in a focus group discussion with 8-10 other teachers. Depending on the number of responses received there may be the possibility of multiple focus groups but at a minimum there will be at least one.

If you choose not to participate in the focus group(s), your participation in this study will be complete after finishing the survey. If you agree to participate in the focus group discussion, they will be conducted by the researcher at the Finley (pseudonym) High School at a day and time to be determined.

If you agree to participate in the focus group discussion you will be asked for your consent to be audio recorded during that discussion and allow for the recording to be transcribed for coding purposes. There is no alternative to audio recording.

COMPENSATION/INCENTIVES:

Everyone who returns the completed quantitative questionnaire will receive a $10.00 gift card and an opportunity to enter their name in a drawing to win an additional $100.00 gift card. The individuals who participate in the focus group will receive an additional $10.00 gift card.

CONFIDENTIALITY:

The records of this study will be kept private, and your confidentiality will be protected. In any sort of report the researcher might publish, no identifying information will be included. Because this study involves the use of focus groups, please be advised that although the researcher will take every precaution to maintain confidentiality of the data, the nature of focus groups prevents the researcher from guaranteeing anonymity. The researcher would like to remind participants to respect the privacy of your fellow participants and not repeat what is said in the focus group to others.

Identifiable research records will be stored securely and only the researcher will have access to the records. All data will be kept in a locked filing cabinet in the researcher's office or on a password-protected laptop. All study records with identifiable information, including approved IRB documents, tapes, transcripts, and consent forms, will be destroyed by shredding and/or deleting after 3 years. Any audio recordings that are made, will only be accessible by the researcher. The audio recordings will be recorded and transcribed using transcription software. The recordings and transcription documents will be destroyed after 3 years.

VOLUNTARY NATURE OF THE STUDY:

Participation in this study is voluntary and requires your informed consent. Your decision whether or not to participate will not affect your current or future relations with St. John Fisher University and you may also withdraw from this study at any time without penalty.

CONTACTS, REFERRALS AND QUESTIONS:

The researcher conducting this study is Eileen M. Feinman. If you have questions, you are encouraged to contact the researcher at 585-797-7318 or ef02064@sjfc.edu. The faculty resource mentor for the researcher is Dr. Michael Wischnowski, Professor at St. John Fisher University. He can be reached at 585-385-5265 or mwischnowski@sjfc.edu.

The Institutional Review Board of St. John Fisher University has reviewed this project and consent has been obtained from the Finley (pseudonym) High School. For any concerns regarding this study/or if you feel that your rights as a participant (or the rights of another participant) have been violated or caused you undue distress (physical or emotional distress), please contact the SJFC IRB administrator by phone during normal business hours at (585) 385-8012 or irb@sjfc.edu.

STATEMENT OF CONSENT:

Electronic Consent: Clicking on the "Agree" button below indicates that:
• I have read the above information.
• I voluntarily agree to participate.
• I am at least 18 years of age.

If you do not wish to participate in the study, please decline participation by clicking on the "Disagree" button below." Please keep a copy of this informed consent for your records.

Audio recording/transcription:

If you agree to participate in the focus group discussion you will be audio recorded during that discussion and the recording will be transcribed for coding purposes. There is no alternative to audio recording.

Please keep a copy of this informed consent for your records.

Appendix F

Initial Email to Potential Participants

Dear_____:

Professional learning communities have long been recognized as an effective strategy that positively impacts student learning and the improvement of schools, however, the framework and practices are challenging to implement and sustain, particularly in high schools in rural districts. Teachers who perceive their districts as successfully implementing PLCs report higher levels of collective efficacy, which are correlated with higher levels of student learning.

To gain a better understanding of the relationship between these two constructs I am conducting a research study as part of a dissertation toward an EdD in Executive Leadership through St. John Fisher University. The purpose of this study is to research the perceptions of high school teachers working in a rural setting, regarding the impact of professional learning communities on their levels of collective efficacy.

I am doing the research in a high school setting in a rural district because it is an understudied area. As a rural high school teacher working in a building that is recognized as a Model Professional Learning Community, I am asking that you consider participating in this study.

The initial stage of this study is the completion of a 12-item questionnaire that will take approximately 10 minutes to complete. For the second stage of the study, I will ask those who have completed the questionnaire if they are willing to participate in a focus group discussion that will last 60 minutes. The questionnaire will be administered on-line, and the focus group (consisting of 8-10 people) will be conducted in your district at a location to be determined. As a token of appreciation, if you agree to complete the questionnaire you will receive a $10 gift card and your name will be entered into a drawing with the chance of winning an additional $100 gift card. If you also agree to participate in the focus group, you will receive a second $10 gift card as well.

This email is for informational purposes only. A second email will follow that will contain the informed consent form and the actual questionnaire. I appreciate your willingness to consider participating.

Sincerely,

Eileen M. Feinman
Doctoral Candidate, Executive Leadership
St. John Fisher University, Rochester, NY