Collective Teacher Efficacy, the Dimensions of Professional Learning Communities, and the Link to Achievement in High-Poverty Elementary Schools

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ALEXANDRA MARSHALL

M.Ed., Georgia Southern University, 2021
B.S.Ed., University of Georgia, 2014

This dissertation, "Collective Teacher Efficacy, the Dimensions of Professional Learning Communities, and the Link to Achievement in High-Poverty Elementary Schools," by Alexandra Marshall, is approved by:

Dissertation Committee Chair

Michael J. Bochenko. Ed.D.
Associate Professor of Leadership, Technology, & Workforce Development

Dissertation Committee Research Member

April L. Strevig, Ed.D.
Assistant Professor of Leadership, Technology, & Workforce Development

Committee Member

Barbara J. Radcliffe, Ph.D.
Associate Professor of Teacher Education

Committee Member

Megan Mitchell, Ed.D.
Assistant Professor of Leadership, Technology, & Workforce Development

Associate Provost for Graduate Studies and Research

Becky K. da Cruz, J.D., Ph.D.
Associate Provost for Graduate Studies & Research
Professor of Criminal Justice

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ABSTRACT

The purpose of the study was to understand the complex relationships between collective teacher efficacy (CTE) beliefs, the dimensions of professional learning communities (PLCs), and academic achievement in high-poverty elementary schools in southeast Alabama. High-poverty schools with high student achievement were categorized as outlier schools, and those with low achievement were categorized as non-outlier schools. The study followed a mixed-methods, convergent design. Data collection utilized a three-part survey including the Teacher's Collective Efficacy Scale Short Form (CES-SF) (Goddard, 2002), the Professional Learning Community Assessment-Revised (PLCA-R) (Hipp & Huffman, 2010), and open-ended questions. No significant difference in collective teacher efficacy was identified between the two groups; however, qualitative data revealed that teachers from outlier schools saw student achievement data as evidence of collective efficacy, while teachers from non-outlier schools placed higher value in relationships. There was a significant difference between the two groups in shared vision and values and relationships, with the two dimensions being more prominent in outlier schools. Significant relationships were identified between individual dimensions of PLCs and CTE in both groups. Discussion of the key results explained possible cause for discrepancies between quantitative and qualitative results and how results could guide leaders of high-poverty schools.

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Chapter I

Introduction

The reading and math achievement of students with a low-socioeconomic status (low-SES) in the United States has historically been significantly lower than that of their more privileged peers (U.S. Department of Education, 2022). In fact, the United States has been reported to have the widest distribution in achievement amongst low and high SES students when compared to other countries (Chmielewski & Reardon, 2016). The income achievement gap, defined as the disparity in academic achievement between students from households of lower and higher socioeconomic status, is not a new issue, as evidence of this plight dates back to the 60's (Coleman et al., 1966). Reardon (2018) argued that the income achievement gap has indeed widened over the last 50 years, surpassing the gap between the achievement of Black and White students. The U.S. Department of Education has used the National Assessment of Education Progress (NAEP) tests to monitor student progress and report comparisons of students' academic achievement across the nation since 1969 (U.S. Department of Education, 2024a). NAEP assessment data acknowledges students of different socioeconomic status by differentiating two groups: those who are eligible for the National School Lunch Program (NSLP) and those who are not. Eligibility requirements for the NSLP change yearly but are based on household size and income. Recent reporting from the NAEP assessments reveals an achievement gap between students eligible and not eligible for the NSLP in all

11 academic subjects assessed by the tests (U.S. Department of Education, 2022). The 2022 assessment data revealed a significant difference between the student groups amongst fourth-graders in math (-26) and reading (-28) achievement (U.S. Department of Education, 2022).

Several programs have been employed to combat the income achievement gap. The Elementary and Secondary Education Act (ESEA), passed by congress in 1965, addressed providing more funding to schools serving large populations of low-SES students (Caffrey, 2023). A significant part of this law was Title I. Title I is a federal program which facilitates providing funds to local education agencies (LEAs) (Phillips, 2021). The intended purpose of the program is to provide all children access to "a fair, equitable, and high-quality education" (U.S. Department of Education, 2024b). Overall, the program aims to close the achievement gap between advantaged and disadvantaged students (Phillips, 2021). Advocates for the Title I program had high hopes that additional financial assistance for schools would help break the cycle of poverty, and the burden of monitoring and allocating the funds was placed on the U.S. Department of Education (Jennings, 2011). Over time, restrictions and accountability have become more stringent. Today, the amount and allocation of funds is dependent on the number of students qualifying for Title I aid, who are identified through eligibility for the free or reduced-price lunch program. Approximately 65 percent of public schools were eligible for Title I aid in the 2021-2022 school year (U.S. Department of Education, 2024b). The ESEA, now amended to be called Every Student Succeeds Act (ESSA), provides states with the flexibility to create plans explaining how they will uphold the law (U.S. Department of Education, 2017). The efficacy of the program has been subject of debate;

however, many agree any progress has not been nearly sufficient to close the gap between economically advantaged and disadvantaged students, and there is great difficulty in trying to accurately measure the effects (Borman & D'Agostino, 2011).

Research indicates the income achievement gap is evident as soon as children begin their academic journeys (Chmielewski & Reardon, 2016). This is because challenges related to living in a low-SES household or community can have a multitude of effects on a child that may impact their ability to be successful in school (Pendola et al., 2022; Williams et al., 2022). Pendola et al. (2022) identified several indicators of neighborhood poverty associated with student achievement such as unemployment rates, food desert status, and persistent poverty. Living in poverty has been associated with social, behavioral, and mental health problems (Williams et al., 2022). The physical and emotional stress created by conditions in the home carries into the school environment. Furthermore, a lack of resources, connections, or opportunities for enrichment may also hinder students academically (Curran, 2017; Wages, 2018). This poses a significant challenge for educators.

One factor known to improve students' academic achievement within schools is quality professional development for teachers (Brendefur et al., 2022; Bruno et al., 2021). This fact is recognized by ESSA, as the law requires schools to provide research-based, on-going professional development (U.S. Department of Education, 2017). Unfortunately, there are barriers that prevent LEAs and schools from implementing effective, long-term professional development. Many principals and teachers express that a lack of funding and time is to blame for this issue (Adams, 2014; Zimmerman & May, 2003). These barriers may be especially evident in schools with tight budgets, such as

Title I schools. Receiving additional funds has not been sufficient to meet the needs of schools serving disadvantaged students (Borman & D'Agostino, 2011). Additionally, staff members of these schools are more likely to experience burnout (Madigan & Kim, 2021). These challenges, in addition to the high-level of accountability placed on Title I schools, can cause professional learning opportunities to be sparse. Some researchers suggested these schools should overcome the barriers by using resources they already have, rather than waiting for funding for something new (Steeg & Lambson, 2015). One resource all schools have is their staff. Though funding may not be available for new programs or external trainers, schools may choose to focus on improving practices regarding data analysis, collaboration, and goal setting.

One popular model for promoting continuous professional learning is the idea of schools as professional learning communities (PLCs) (Keenan, 2022). The idea of viewing schools as PLCs arose in contrast to the principles of the factory model, which encouraged schools to follow prescribed methods and follow a rigid system (DuFour & Eaker, 1998). The PLC model has grown in popularity partly due to its association with improved student achievement (Burns et al., 2018). The characteristics of PLCs alternatively pave a path for continuous learning and intentional improvement. Hord (1997) and DuFour and Eaker (1998) each outlined dimensions that defined professional learning communities. DuFour and Eaker's (1998) dimensions included shared vision, vision, and values, collective inquiry, collaborative teams, action orientation and experimentation, continuous improvement, and results orientation. Hord's (1997) dimensions included shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, supportive structures, and

supportive relationships. Both descriptions of the dimensions of PLCs align with Rushing and Pendola's (2023) findings related to trends in leadership amongst principals in some of Alabama's challenged schools. These principals, whose challenged schools exceeded expected achievement levels, expressed a focus on good practices, deep relationships, and targeting long-term success. The principals of outlier schools also expressed that they placed more value in professional development, stating that it aided in teacher retention and improving scores. The sentiment was not shared by principals of non-outlier schools, who did not relate teacher development to improving scores.

Another benefit of PLCs is the relationship between the model and improving collective teacher efficacy (CTE) beliefs (Anderson & Olivier, 2022; Salas-Rodríguez & Lara, 2023), which is why some authors stress the importance of more research in this area (Anderson & Olivier, 2022; Goddard et al., 2004; Moosa, 2021; Salas-Rodríguez & Lara, 2023; Moosa, 2021) suggested more research be done to investigate the relationships between the development of collective efficacy beliefs and the dimensions of PLCs. Existing studies have revealed a positive relationship between collective teacher efficacy and overall student achievement (Bandura, 1997; Goddard et al., 2000; Moosa, 2021). Most interestingly, some research indicates that high levels of CTE may be more influential on student achievement than socioeconomic status (Goddard et al., 2000; Erdogan et al., 2022). This finding is debated by those who believe the impacts of SES are stronger (McCoach & Colbert, 2010; Moolenaar et al., 2012). The relationships between the dimensions of PLCs, CTE, school SES, and academic achievement are not yet fully understood.

Statement of the Problem

Poverty is an especially pervasive issue in the south (U.S. Census Bureau, 2023), and low-SES students are significantly underperforming in the state of Alabama (U.S. Department of Education, 2022). The U.S. Department of Education (2022) reported significant gaps between Alabama's fourth-grade students who were eligible and not eligible for the NSLP by providing the difference between average scaled scores for each student group on the NAEP tests. Gaps were reported amongst fourth-grade students in the subjects of reading (-24), math (-23), and science (-28) (U.S. Department of Education, 2022). The same gaps were evident amongst eighth-grade students, suggesting a persistent plight for this sub-population of students. Some schools serving high populations of low-SES students exceed expected achievement, while others perform as predicted, or worse. As previously discussed, existing research explains how the impacts of poverty in the home or community can have devastating impacts on students' success in the classroom (Pendola et al., 2022; Williams et al., 2022). Teachers are at the frontlines of this crisis in education and may experience additional adversity in the workplace because of it. Teachers serving this marginalized group of students are more likely to have adverse experiences in the workplace and experience burnout or emotional exhaustion (Van Eycken et al., 2024). Teachability perceptions, the extent to which a teacher believes students are able to be taught content or skills are also an issue in schools serving low-SES students (Van Eycken et al., 2023). Teachability perceptions tend to be lower in schools serving low-SES students (Van Eycken et al., 2023), and the issue has been associated with poor academic performance in students (Agirdag, 2018). This research suggests these negative experiences and beliefs of teachers may have an impact

on student achievement, which highlights the need for more research to be done in the context of high-poverty schools.

While educators are not able to change students' circumstances in the home or community, more can be done to improve their educational experiences (Desimone et al., 2013). This study aims to investigate how improving collective teacher efficacy beliefs and fostering the dimensions of PLCs may help high-poverty schools improve student achievement. Positive collective efficacy beliefs and promoting the dimensions of PLCs may combat these challenges and improve the culture and climate of a school (Anderson & Olivier, 2022). Such beliefs may have the power to improve student achievement in challenging settings, such as high-poverty schools. More research needs to be done to better understand the relationship between CTE, the dimensions of PLCs, and student achievement in high-poverty schools (Anderson & Olivier, 2022; Goddard et al., 2004; Moosa, 2021; Salas-Rodríguez & Lara, 2023).

Purpose of the Study

The purpose of the study is to understand the complex relationships between collective teacher efficacy beliefs, the dimensions of professional learning communities, and academic achievement in high-poverty elementary schools in southeast Alabama. This research employed a convergent design in order to identify key relationships between the variables using both quantitative and qualitative methods concurrently (Creswell & Plano Clark, 2018). First, this study will examine the difference in levels of collective teacher efficacy and the dimensions of PLCs in outlier and non-outlier schools. Next, the study will examine how the dimensions of PLCs are related to collective teacher efficacy in both groups. Finally, this study will provide an understanding of how

collective efficacy beliefs and the dimensions of PLCs are fostered in high-poverty schools. Overall, differences will be explained by gaining a contextual understanding of how these factors interact to impact student achievement.

Research Questions

The overarching goal of this study is to examine the relationships between collective teacher efficacy, the dimensions of professional learning communities, and student achievement in high-poverty schools, and explore how these beliefs and competencies are fostered. The following research questions guided the inquiry:

1. To what extent does collective teacher efficacy differ between outlier and non-outlier schools?
2. To what extent do the dimensions of professional learning communities (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, relationships, and structures) differ between outlier and non-outlier schools?
3. To what extent do relationships exist between individual professional learning community dimensions (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, relationships, and structures) and collective teacher efficacy in outlier and non-outlier schools?
4. How do school protocols or qualities that impact collective teacher efficacy or the dimensions of professional learning communities differ in outlier and non-outlier schools?

Significance of the Study

Existing research indicates both collective teacher efficacy beliefs (Bandura, 1997; Erdogan et al., 2022; Goddard et al., 2000) and the dimensions of PLCs (Anderson & Olivier, 2022) may have positive impacts on academic achievement. Unfortunately, scholars disagree regarding the impact of collective efficacy beliefs in high-poverty schools, and some argue high-poverty schools have lower levels of collective teacher efficacy beliefs than low-poverty schools (Anderson & Olivier, 2022). While some researchers argue CTE beliefs have a greater effect than school SES (Erdogan et al., 2022; Goddard et al., 2000), others have claimed school SES is more closely related to student achievement (McCoach & Colbert, 2010; Moolenaar et al., 2012). These debates invite further examination into high-poverty schools that outperform the rest, and what aspect(s) of their cultures may be crucial to this success.

Not only will this study address the aforementioned discrepancy, but it will add valuable context by including the dimensions of PLCs. Considering the dimensions of PLCs provides insight regarding the development or barriers to CTE beliefs in high-poverty schools. This knowledge will allow leaders to take intentional, informed steps to improve CTE beliefs in a way that could aid in the progress of improving academic outcomes for low-SES students in Alabama. Furthermore, this information could inform district leaders and administrators of PLC dimensions most leverageable to making long-term improvements to school-level collective efficacy beliefs and academic achievement. This study would address gaps in research, as Moosa (2021) argued a study considering CTE and the dimensions of PLCs was not obtainable in research. Finally, the study will address the recommendations of researchers to analyze best professional development

practices in high-poverty schools (Moore et al., 2011), PLC dimensions using mixed methods (Anderson & Olivier, 2022), and professional development's impact on efficacy beliefs with mixed methods (Salas-Rodríguez & Lara, 2023).

Theoretical Framework

This study seeks to examine the relationships between collective teacher efficacy, the dimensions of PLCs, and student achievement, and to understand how these beliefs and competencies are fostered in high-poverty schools. Several theories were essential to the foundation of this study. Maxwell (2013) used a metaphor to describe the role of theory in research, stating "theory is a coat closet" (p. 43). The author explained how theory acts as "coat hooks" in a study, providing order and reason for the collection and interpretation of data. Three theories guided study: self-efficacy, collective efficacy, and social learning theory.

Bandura's (1997) theories of self-efficacy beliefs and collective efficacy beliefs are closely related but clearly defined. While self-efficacy relates to an individual's beliefs regarding their own competencies, collective efficacy refers to common beliefs, held by a group, of their shared competency. Social learning theory, also discussed by Bandura (1971), explains how individuals learn as part of a social group. This theory compliments the idea of schools as professional learning communities, and how an environment can shape how individuals behave or what they value. Bandura's (2001) discussion of social cognitive theory also explained how an individuals' personal agency operates in the context of sociostructural networks. This theory builds on social learning theory to emphasize the act of reflecting on one's actions to promote desired outcomes. These theories frame the problem which the study seeks to address. The study will

examine how schools operate in relation to the dimensions of PLCs, and how these unique environments shape the beliefs and behaviors of the educators who are a part of them. The relevance of these beliefs and behaviors lies in the potential impact on student achievement.

Summary of Methodology

This mixed methods study employed a convergent design. In this core design, the researcher designs and implements quantitative and qualitative methods concurrently. The purpose of this design is to use both types of data in a way that is complementary to the research problem (Creswell & Plano Clark, 2018). This study specifically utilized the questionnaire variant, placing emphasis on quantitative data (Creswell & Plano Clark, 2018).

A convergent design was the most appropriate design for this study for several reasons. Collective teacher efficacy and the dimensions of PLCs are best measured through a quantitative instrument. Using a survey to collect data was most effective when addressing a large population; however, survey results could not fully answer the research questions included in this study. Examining the relationships between CTE, PLC dimensions, and academic achievement was only the first step. An additional goal of the study was to understand what experiences in schools contribute to fostering the dimensions of PLCs. Data useful to gaining this understanding was best collected through open-ended questions. Creswell and Plano Clark (2018) explained pragmatism commonly guides mixed methods research. The authors explained that under this worldview there is focus on research questions and multiple types of data to answer them, rather than the

methods themselves. Overall, the use of mixed methods provided the needed depth and complexity to answer the given research questions.

Delimitations

Delimitations are boundaries in a study which are predetermined by the researcher. Several delimitations impacted this study. This study was limited by time. Data collection took place during a period of approximately one month in the spring of 2025. This study was limited to Title I, high-poverty elementary schools in a region of southeast Alabama. This limited the study to include eight schools. The sample only included teachers from these schools. The sample was further narrowed to teachers who were in at least their second year of teaching at their current school. This sample size was limited; however, the use of mixed methods ensured that data collected was meaningful.

Definition of Terms

Several terms used in the study can take various meanings. This study will assume the following definitions:

Collective teacher efficacy: A group's common beliefs regarding their shared ability to achieve their goals, specifically amongst the teachers at a given school (Bandura, 1997; Goddard et al., 2004).

Professional learning communities: Schools that operate in a capacity which acknowledges all members need to engage in ongoing learning and are marked by a goal of continuous improvement (Hord, 1997). The dimensions of professional learning communities, outlined by Hord (1997) include shared and supportive leadership, shared vision and values, collective learning and application, shared personal practice, relationships, and structures.

High-poverty schools: Title I schools recognized as "high-poverty" by the Alabama State Department of Education in State Report Card data in the 2022-2024 or 2024-2025 reporting years (Alabama State Department of Education, 2023).

Academic achievement: A given school's report card score awarded by the Alabama State Department of Education, which is calculated through students' achievement levels on the Alabama Comprehensive Assessment Program (ACAP) test, growth on the ACAP test, and attendance (Alabama State Department of Education, 2023).

Outlier schools: High-poverty schools scoring an A or B on Alabama's State Report Card in the 2022-2024 or 2024-2025 reporting years (Alabama State Department of Education, 2023). The use of the term "outlier" in this study was inspired by Rushing and Pendola's (2023) research in Alabama.

Non-outlier schools: High-poverty schools scoring a C or D on Alabama's State Report Card in the 2022-2024 or 2024-2025 reporting years (Alabama State Department of Education, 2023). The term "non-outlier" was inspired by Rushing and Pendola's (2023) research in Alabama.

School protocols: Routine, policies, or procedures school staff members engage in to conduct regular operations

Organization of the Study

Chapter one included the introduction, statement of the problem, purpose of the study, research questions, significance of the study, summary of the theoretical framework, summary of the methodology, definition of terms. Chapter two will provide a synthesis of literature related to the theoretical framework and variables included in the

study. The review will address the impacts of poverty, the development and impact of collective teacher efficacy, and the dimensions and impacts of professional learning communities. Chapter three will provide an overview of the study, a detailed explanation of methodology, data collection procedures, and data analysis procedures. Chapter four will report the results of quantitative and qualitative data analysis. Finally, chapter five will provide a discussion of results, recommendations, limitations, and recommendations for future research.

Chapter II

Literature Review

The first chapter of this study established the research problem and purpose of the study. The deficit in achievement between elementary students living in poverty and their more privileged peers in Alabama is profound and requires further research and action to address (Pendola et al., 2022; U.S. Department of Education, 2022). This study seeks to identify and understand relationships between collective teacher efficacy (CTE), the dimensions of professional learning communities (PLCs), and academic achievement in high-poverty elementary schools. CTE beliefs and the dimensions of PLCs were selected as a focus of the study due to existing evidence indicating the potential these factors have in addressing the problem and calls for further research regarding the relationships between these factors (Anderson & Olivier, 2022; Goddard et al., 2004; Moosa, 2021; Salas-Rodríguez & Lara, 2023). This literature review will summarize existing knowledge regarding factors that will be investigated in the study.

Self- Efficacy

Albert Bandura (1997), a social psychologist, was the first to coin the term "self-efficacy." His theories and definitions are still considered influential in the field of education. Self-efficacy is defined as a collection of beliefs regarding how an individual perceives their ability to perform tasks effectively (Bandura, 1997). The theory of self-efficacy is relevant in discussion pertaining to that of teachers and students. This study

will specifically focus on the beliefs of teachers and how schools operate as social contexts that foster such beliefs (Phillipson et al., 2013). Self-efficacy theory acknowledges how different individuals have different capabilities; however, it places emphasis on how one believes they may use these capabilities. Self-efficacy does not only address knowledge and motivation, but also "cognitive, social, emotional, and behavioral subskills" (Bandura, 1997, p. 37). Self-efficacy beliefs are multidimensional. Individuals may have different levels of self-efficacy beliefs related to different areas of their lives. Bandura explained these beliefs could be constructed through several avenues.

Bandura's (1997) four sources of self-efficacy are enactive mastery experiences, vicarious experience, verbal persuasion, and physiological and affective states. Enactive mastery experiences, the strongest source of self-efficacy beliefs, occur when an individual overcomes a challenge successfully or otherwise performs effectively (Bandura, 1997). In contrast, vicarious experiences occur when an individual uses another's achievement as a reference point to determine the adequacy of their own (Bandura, 1997). For example, an individual may compare their performance to a group to determine their relative position or superiority. Verbal persuasion occurs when the words of others impact how one perceives their own abilities. Verbal persuasion is particularly beneficial to sustaining preexisting self-efficacy beliefs (Bandura, 1997). Finally, physical and affective states include how stress and tension, or lack thereof, impacts one's perception of their ability to complete a task successfully (Bandura, 1997). The theory of self-efficacy is also discussed in education in regard to student and teacher success (Bozkurt et al., 2021; Jentsch et al., 2023). Further discussion of current research related to teacher self-efficacy will be featured later in this chapter. This theory is

foundational to Bandura's (1997) theory of collective efficacy, which is essential to this study. Social learning theory ties these concepts together.

Social Learning Theory

Bandura's (1971) social learning theory asserted that patterns of behavior originate from direct experience. Further, Bandura claimed one's behaviors and learning processes can be attributed to models and environmental factors. This is not to say cognitive control does not play a role in behavior and learning, but that human behavior is strongly influenced by one's perception of anticipated consequences. Humans' interpretation of the social world around them impacts how they choose to behave. Wulfert (2024) explained how social learning theory seeks to explain how patterns of behavior develop, are maintained, and how they are altered. The theory has practical applications for explaining behavior in a variety of environments (Kretchmar, 2024).

Social learning theory (Bandura, 1971) is strongly related to Bandura's (1997) concept of collective efficacy. Collective efficacy, similarly to self-efficacy, relates to beliefs surrounding the ability to perform tasks successfully. Collective efficacy specifies how an individual perceives the abilities of a group which they are a member of (Bandura, 1997). Pillars of social learning theory such as modeling, reinforcement, community support, and observational learning contribute to the formation of collective efficacy beliefs.

Collective Efficacy

The concept of collective efficacy is an extension of self-efficacy theory. Bandura (1997) differentiated collective efficacy from self-efficacy by acknowledging the importance of social settings and communal efforts. Collective efficacy is defined as a

group's common beliefs regarding their shared ability to achieve their goals (Bandura, 1997). This theory has gained attention due to researchers' suggestions towards an association with student achievement (Erdogan et al., 2022; Goddard et al., 2000; Moosa, 2021; Tschannen-Moran & Barr, 2004).

Though collective efficacy is rooted in self-efficacy, the self-efficacy of individuals only plays a small role. Goddard et al. (2004) explained how organizational agency operates similarly to personal agency, and that an individual's personal development contributes to collective efficacy. Collective efficacy is more than a compilation of individual abilities (Bandura, 1997). Collective efficacy is impacted by many factors including knowledge, competencies, organization, leadership, and social interactions. All of these factors can impact the quality of unified effort because of how they foster beliefs. Collective efficacy beliefs are important to organizations because they can influence goals, resource management, effort, and strategy. The concept of collective efficacy has been a popular topic in the field of education. Goddard et al. (2004) argued educational researchers should view collective efficacy as a concern. Collective teacher efficacy specifies the collective efficacy beliefs amongst the faculty of a school (Goddard et al., 2004). Schools require collective effort to operate, and the social context impacts success (Tschannen-Moran et al., 1998). Though collective efficacy beliefs differ between various individuals within a group, they can be contagious. Attitudes and opinions can spread through communication and culture. Bandura (1997) suggested high or low collective teacher efficacy could have a cyclical effect. For example, low collective teacher efficacy could result in negative student outcomes, leading to the poor student outcomes causing decline in collective teacher efficacy. These findings laid the

foundation for research regarding collective teacher efficacy in schools. Educators need to understand how collective teacher efficacy impacts an ultimate goal of schools- student academic achievement.

The Impact of Poverty on Students

The widening income achievement gap has been acknowledged for decades (Coleman et al., 1966; Reardon, 2018). Countless researchers have sought to understand or explain why this gap exists (Curran, 2017; Pendola et al., 2022; Wages, 2018; Williams et al., 2022). The following section addresses how factors related to living in poverty had detrimental impacts on students academically, socially, and emotionally. This research helps explain not only the link between poverty and education, but why socioeconomic status has been named such a strong predictor of academic achievement (Wages, 2018).

Environmental Factors Impacting Student Academic Achievement

Many environmental factors contribute to childhood poverty (Curran, 2017; Pendola et al., 2022; Wages, 2018; Williams et al., 2022). For example, food insecurity, or the condition of not having consistent access to food, can result in negative long-term effects (Williams et al., 2022). Food deserts are areas where the available stores limit individuals' access to obtain healthy, affordable food. Food deserts are often a cause of food insecurity. Pendola et al. (2022) reported that food desert status had a significant, negative effect on student achievement ($r = -0.21$, $p < .001$). The impacts of food insecurity are not limited to academic achievement, but also include mental, physical, and behavioral health problems (Williams et al., 2022). All of these facts may impact the decision for schools to solely identify students in poverty by free-and-reduced lunch

status. This is an ineffective strategy due to the complex nature of poverty (Pendola et al., 2022). Other factors, such as unemployment, may impact children through their impact on adults. In recent studies, unemployment has had a negative impact on student achievement (Pendola et al., 2022). Wages (2018) suggested unemployment in a family could limit a student's ambitions, connections, or opportunities. Limited income can also result in limited opportunities. Families experiencing poverty are less likely to be equipped to prioritize educational out-of-school activities. Curran (2017) identified a lack of extracurricular, out-of-school activities to significantly attribute to the achievement gap in kindergarten. These activities ranged from in-home play with books or puzzles to participation in extracurricular activities like visiting the library. These simple experiences contribute to a foundation for learning. While these environmental factors can have a direct impact on academic success, they can also be detrimental to a child's social-emotional health (Duncan et al., 2016; Lee & Zhang, 2022; Wages, 2018). Poverty can have dynamic implications for students.

Environmental Factors Impacting Students Socially and Emotionally

In addition to the direct impact on academic achievement, aspects of poverty can also impact students' social and emotional health (Duncan et al., 2016; Lee & Zhang, 2022; Wages, 2018). Poor social and emotional health may cause behaviors negatively impacting students' experiences in the school environment. Lee and Zhang (2022) stated approximately 20 percent of children experiencing poverty had an elevated risk for difficulties related to social and emotional wellbeing. The authors attributed these challenges to the conditions of poverty hindering self-regulation, causing low self-esteem, and creating persistent states of stress. Lee and Zhang sought to determine the

impact of relative poverty on social and emotional health, specifically between students experiencing absolute or relative poverty. The absolute poverty line was defined by the federal government, while relative poverty was defined by societal standards. The results of the study indicated that students experiencing relative poverty not only had more social and emotional problems than those in absolute poverty or not experiencing poverty, but these difficulties increased with age. Unemployment is an element of poverty impacting multiple facets of a child's wellbeing. The economic stress created by unemployment can cause marital conflict, interrupted parenting, neglect, and otherwise unideal living conditions (Wages, 2018). The financial stress may limit the families access to resources, which increases the emotional stress. Wages (2018) explained how living in chronic stress had serious consequences; for example, students may resort to inappropriate external behaviors such as fighting or arguing. Students may also suffer from depression, anxiety, or social withdrawal. Duncan et al. (2016) explained how chronic stress may even hinder the development of the brain. The timing and duration of poverty also plays a role. Persistent poverty or recurring seasons of poverty has been proven to cause more severe social and emotional consequences (Lee & Zhang, 2022). Research clearly demonstrated how the nature of poverty can have detrimental impacts on the whole child.

Teacher Self-Efficacy

Bandura's (1997) definition of self-efficacy can be applied to teachers. Schools exist as social contexts where teachers develop a sense of efficacy regarding their practices (Phillipson et al., 2013). Teacher self-efficacy not only includes beliefs surrounding the performance of a task, but the question of the consequences of

successfully performing the task (Tschannen-Moran et al., 1998). Teachers must not only believe that they can teach, but that students will experience positive outcomes. The creation of a productive learning environment relies significantly on the self-efficacy of the teacher (Bandura, 1997). Tschannen-Moran et al. (1998) stated teacher self-efficacy was a motivational construct. Self-efficacy beliefs could have many impacts on one's behavior and aspirations. High self-efficacy was linked to higher goals and higher effort (Phillipson et al., 2013). Bandura (1997) claimed teachers with a high sense of self-efficacy had positive impacts on students through creating mastery experiences, supporting their interests, and promoting self-directedness. The theorist further stated those performing poorly may not lack skill or knowledge but lack the efficacy beliefs to use these resources properly. Bandura's (1997) assumption suggested teachers must have strong self-efficacy beliefs to best apply their knowledge and skills as educators. Phillipson et al. (2013) explained strengthening these beliefs has proven to positively impact classroom management and instruction. This connection was partly attributed to how self-efficacy beliefs promoted continued commitment to development and innovation within the profession. For example, teachers may be more engaged and willing to apply new strategies in the classroom. Teacher self-efficacy beliefs may be impacted by personal competence and external influences (Tschannen-Moran et al., 1998). The process of developing a strong sense of self-efficacy is critical and, fortunately, self-efficacy beliefs are not static (Bandura, 1997). Teachers' self-efficacy may improve over time through positive influences and experiences (Bandura, 1997).

Sources of Teacher Self-Efficacy

Bandura (1997) explained individuals acquire self-efficacy through four sources: verbal persuasion, vicarious experiences, mastery experiences, and effective states. Current research has identified some ways these sources present in school environments (Alanoglu, 2022; Anderson & Olivier, 2022; Bruno et al., 2021; Jentsch et al., 2023; Menon & Lefteri, 2021; Nichols, 2022; Pearman et al., 2021; Ryan & Hendry, 2023). Three commonly discussed sources of teacher self-efficacy are pre-service teacher preparation programs, professional development, and perceptions of leadership in the workplace.

Pre-service Teacher Education Programs. Current research indicates teacher preparation programs primarily impact pre-service teachers' self-efficacy through providing field experiences (Nichols, 2022; Pearman et al., 2021). Field experiences occur when pre-service teachers work in a school with a collaborating teacher to gain classroom experience. Pearman et al. (2021) surveyed 114 faculty members involved in teacher education. The researcher reported university faculty acknowledged field experiences as the most prominent influence on self-efficacy development for pre-service teachers. Responses from the faculty members reflected that the pre-service educators demonstrated their self-efficacy through confidence, commitment, ability to meet challenges, innovative thinking, and facilitation of support for others. The results emphasized the importance of the opportunity for application of skills and foundational knowledge learned in coursework. Nichols (2022) surveyed 200 pre-service educators to determine if their self-efficacy beliefs evolved from the beginning to the end of their preparation programs. The study highlighted that pre-service teachers reported

significantly improved self-efficacy in professional competencies covered by their preparation program, also acknowledging the value in observation. The pre-service teachers reported significant improvements in their self-efficacy beliefs regarding decision making, instructional practices, and classroom management. Bandura's (1997) sources of self-efficacy aligned with the field-experience portions of the program by serving as vicarious and enactive mastery experiences. Improvement in self-efficacy beliefs was not evident in areas that students did not engage in or observe during field experiences (Nichols, 2022). For example, students did not report improvement in parent communication. Field experience, paired with feedback and reflection, allows the teacher candidates to become more confident in their decision-making skills (Pearman et al., 2021). Self-efficacy beliefs developed during enrollment in teacher preparation programs precede the beliefs that will develop throughout a teacher's career.

Professional Development. Professional development is frequently acknowledged as a source of self-efficacy beliefs in teachers (Anderson & Olivier, 2022; Bandura, 1997; Bruno et al., 2021; Ryan & Hendry, 2023). Professional development is one way schools invest in their teachers. Professional development can help schools reach goals by training teachers to implement a specific program, to use research-based strategies, or even to complete administrative tasks. Because educators' knowledge significantly impacts student outcomes, professional development promotes effective instruction and teacher self-efficacy beliefs (Bruno et al., 2021). Though varying states and districts may have different requirements, many teachers are required to participate in some kind of continued learning (Anderson & Olivier, 2022). Bruno et al. (2021) studied secondary special education teachers and identified a positive relationship between the amount of

professional development a teacher received and their reported self-efficacy. Many teachers attribute gains in work related self-efficacy to professional development (Ryan & Hendry, 2023). Professional development is most effective when the methods and content are differentiated for specific groups of educators at schools (Bruno et al., 2021). School leaders can differentiate professional development by implementing professional learning communities (PLCs), as they are especially effective in improving teacher self-efficacy (Anderson & Olivier, 2022). PLCs are strategically formed groups of educators who work together to achieve a shared professional development goal. Anderson and Olivier (2022) attributed the creation of shared values and goals during PLCs to improved collective teacher efficacy (CTE). Professional development has been credited with creating collaborative cultures that make educators more confident in their abilities (Ryan & Hendry, 2023). PLCs typically work together over an extended period of time and seek to monitor continuous improvement. Continuous progress and monitoring can create opportunities for mastery and vicarious experiences (Bandura, 1997). Overall, professional development specifically supports the improvement of work-related self-efficacy by allowing educators to reflect on and become aware of their ability to refine practices (Jentsch et al., 2023).

Perceptions of Leadership in the Workplace. Several factors influencing one's perception of the workplace can also impact their work-related self-efficacy (Alanoglu, 2022; Jentsch et al., 2023; Menon & Lefteri, 2021). Creating a work environment for educators that both encourages growth and inhibits undue stress requires careful balance (Jentsch et al., 2023). One must consider leadership styles, potential stressors, and job satisfaction to foster an environment which promotes professional self-efficacy. Menon

and Lefteri (2021) described how leadership styles within schools could impact teachers' development of self-efficacy. The researchers suggested that school leaders should address Bandura's (1997) four sources of self-efficacy to empower teachers. For example, leaders could use positive feedback, or verbal persuasion, to promote self-efficacy beliefs amongst members of their staff. Educators' sense of job satisfaction and stress could be related to self-efficacy. Jentsch et al. (2023) found levels of stress and high job satisfaction to be related to self-efficacy. Participants in the study who positively rated their administration were less likely to report issues with stress or poor job satisfaction. Another component of school leadership is instructional leadership. Instructional leadership is defined by specifically leading educators in educational activities, rather than just administrative tasks. Alanoglu (2022) conducted a meta-analysis to examine the relationship between principals' instructional leadership and teachers' self-efficacy. The analysis, including 24 studies, included a sample size of 9,178 teachers. Alanoglu reported a positive correlation between principal instructional leadership and teacher self-efficacy ($r = 0.39$). The researcher explained how principal instructional leadership improved self-efficacy beliefs surrounding instructional strategies, student engagement, and behavior management. Strong leadership demonstrates shared responsibility and investment in the ultimate goal: student achievement. While individuals each have unique experiences, factors such as leadership may impact the overall culture of a school.

This section explained how pre-service teacher education programs, professional development, and perceptions of leadership in the workplace all play a role in creating the culture that can promote or dampen teacher self-efficacy beliefs. While the beliefs of

individuals are powerful, shared beliefs and self-efficacy perceptions contribute to collective efficacy beliefs of a group. Self-efficacy is foundational to the collective efficacy (Bandura, 1997).

The Context of Collective Teacher Efficacy

Collective teacher efficacy (CTE) has become a popular topic in education since being recognized as associated with student achievement (Erdogan et al., 2022; Goddard et al., 2000; Moosa, 2021; Tschannen-Moran & Barr, 2004). Other, perhaps interrelated benefits of CTE include improved teacher wellbeing (Cleary et al., 2023). The following sections address these topics, in addition to some factors associated with improving CTE beliefs.

Collective Teacher Efficacy and Student Achievement

Collective teacher efficacy is often associated with professional beliefs and behaviors resulting in improved student achievement (Bandura, 1997; Goddard et al., 2000). Goddard et al. (2004) stated that collective efficacy amongst school staff members establishes norms which empower individuals to achieve communal goals. Collective efficacy beliefs impact the inner workings of a school community by shaping how educators respond to challenges, collaborate, and plan for the future (Bandura, 1997). For example, collective teacher efficacy may be evident in school culture through shared language or instructional strategies (Donohoo et al., 2018). These shared beliefs enhance the efforts of educators. Bandura's (1997) early research contributed to the establishment of a connection between collective teacher efficacy and student achievement. The theorist employed path analysis to track the impact of elements of student bodies, teaching longevity, prior academic achievement, and collective teacher efficacy on academic

achievement. Bandura concluded that collective teacher efficacy had a causal relationship with reading and math achievement. Goddard et al. (2000) conducted a study modeled after Bandura's work. The researchers not only examined the relationship between collective teacher efficacy and student achievement, but also validated an instrument: the Collective Teacher Efficacy Scale. The results affirmed Bandura's claims by identifying collective teacher efficacy as a significant predictor of reading and math achievement in urban elementary schools. Additionally, Erdogan et al. (2022) explained that collective teacher efficacy was an essential part of a school's culture. The researchers found that collective teacher efficacy was significantly related to school mean achievement when considering national test scores in Turkey, surpassing the impact of other factors such as school socioeconomic status. Collective teacher efficacy may be a significant predictor of achievement in schools serving low-income students (Goddard et al., 2000). Overall, existing literature has highlighted the importance of collective teacher efficacy through indicating a positive impact on student achievement. Promoting collective teacher efficacy in a school promotes student success; therefore, stakeholders should prioritize fostering collective teacher efficacy (Goddard et al., 2000).

Collective Teacher Efficacy and Wellbeing

Aside from the direct impact on student achievement, collective teacher efficacy can positively impact schools in other ways. Cleary et al. (2023) discussed how collective teacher efficacy was linked to psychological capital. Psychological capital refers to an overall positive state of development impacting one's ability to perform in the workplace regardless of stress or situations requiring adaptation. Cleary's meta-analysis acknowledged interplay between psychological capital and collective teacher efficacy.

The researcher suggested that the themes of optimism and resilience impact teacher wellbeing, reducing burnout. Burnout and emotional exhaustion are often cited as reasons causing teachers to leave the profession. This may be heightened for teachers working in low-SES schools (Van Eycken et al., 2024). Van Eycken et al., (2024) found that teachers at high-SES schools were less likely to leave their positions than teachers at low-SES schools. The researchers identified that teacher efficacy beliefs were also associated with lower intentions to transfer. These findings relate to those of Sorensen and Ladd (2020). In their study of middle-school ELA and math teachers, the researchers found schools with more concentrated poverty to have higher rates of teacher turnover. Qadach et al. (2020) highlighted the relationship between collective efficacy and teacher turnover. After conducting the study including 1700 educators, the researchers identified a negative correlation between collective teacher efficacy and intent to leave the school. The discussion argued principals' instructional leadership specifically contributed to collective teacher efficacy, creating a shared vision. This is congruent with the previously discussed study by Alanoglu (2022) that contributed to the explanation of how teachers' perception of the workplace promoted self-efficacy beliefs. Additionally, Sorensen and Ladd's (2020) study of North Carolina teachers also highlighted how an increased turnover rate led to a statistically significant reduction in both reading and math achievement. This connection only adds more cause for stakeholders to promote collective teacher efficacy in schools.

Influencing Collective Teacher Efficacy

Teachers' perceptions of collective efficacy can be impacted by many factors within schools (Bandura, 1997; Bozkurt et al., 2021; Salloum, 2022; Strahan née Brown

et al., 2019). Bandura (1997) stated that some factors include level of knowledge and competency amongst a given group. The theorist explained that leadership, group structures, strategies, and social interactions play a role. These foundational ideas align with current research. Strahan née Brown et al. (2019) conducted an illustrative case-study to examine teachers' beliefs regarding fostering collective efficacy in their profession. The researchers reported identifying four themes: communication, learning, supporting roles, and stress management. Explanations and sub themes associated with these themes connected each of them to leadership. This is similar to the findings of Salloum (2022) regarding collective teacher efficacy and instructional program coherence. Salloum identified that instructional coherence was essential to the development of CTE. The researcher explained that instructional coherence consisted of common instructional frameworks, supportive working conditions, and appropriately allocated resources, and that school leadership strongly impacts these elements. These findings were supported by the study by Bozkurt et al. (2021), which investigated the impact of school culture on teacher collective efficacy. The researchers surveyed teachers regarding CTE and school culture. Beliefs surrounding school culture were measured through the Instructional Leadership Scale and the Organizational Culture Scale. Results indicated a statistically significant effect of beliefs around instructional culture on CTE. The researchers asserted that this connection created an indirect relationship between principal leadership and student achievement. Furthermore, organizational culture had an impact on collective teacher efficacy. Items surveyed to measure organizational culture related to the assertions of Salloum (2022) and Strahan née Brown et al. (2019) regarding

common goals and vision. Indicators of organizational culture were categorized as teaching culture, collegiality, leadership, teacher cooperation, and development culture.

Professional Learning Communities

Many researchers and authors have contributed to the body of knowledge regarding professional learning communities (PLCs) that exists today (DuFour & Eaker, 1998; Hord, 1997; Senge, 1990). Peter Senge (1990) was an early influencer with the idea of learning organizations. Senge's work has influenced frameworks in both corporate leadership and education to promote more lively, creative environments (Hughes & Kritsonis, 2006). Hord (1997) is known as an early leader in work related to PLCs, presenting the concept as a solution aimed to improve student learning. DuFour and Eaker (1998) are also credited with being prominent leaders in the professional learning community movement, specifically in education. In response to the failures of school reform initiatives, DuFour and Eaker (1998) proposed PLCs as "the most promising strategy for sustained, substantive school improvement" (p. xi). The authors explained how other reform strategies failed to address the complex task because of a lack of focus, clarity, and perseverance. Since the development of this framework, PLCs have become a popular topic in schools and literature (DuFour et al., 2016; Hord, 1997; Hudson, 2024). PLCs do not have a universal definition (Bolam et al., 2005). DuFour and Eaker (1998) defined each term in "professional learning communities" in order to explain the intentionality behind their word choice. In this context, a "professional" is an individual who has not only received advanced training in their field but is also expected to maintain up-to-date expertise regarding their craft. The authors explained that the term "learning" should represent ongoing curiosity and persistent action. The authors

purposefully chose the word "community," rather than organization, in order to place importance on shared values rather than structural efficiency. Hord (1997) referred to such schools as "change-ready schools," explaining how literature provided encouragement regarding these structures and that more understanding was needed.

The Dimensions of Professional Learning Communities

Multiple authors have prescribed their own definitions of how PLCs should operate within schools (DuFour et al., 2016; DuFour & Eaker, 1998; Hord, 1997). The flexibility of the model is an asset as the framework can be adapted to the unique needs of schools (Bolam et al., 2005). DuFour et al. (2016) argued the term PLC had been used so widely that it had lost its meaning in some cases. The researchers insisted that while some schools implement PLCs as a program, this was not the intention of the model. Rather, DuFour et al. (2016) explained that PLCs are "a process of conducting schooling that has a profound impact on the structure and culture of a school" (p. 37). While the qualities of PLCs may be manifested differently in different schools, there are foundational qualities that frame the concept. Hord (1997) also acknowledged the differing understanding of PLCs as popularity of the model spread. Hord (1997) and DuFour and Eaker (1998) described PLCs by outlining dimensions intended to provide schools insights into needed transformation. The dimensions explained by DuFour and Eaker (1998) included: shared missions, vision, values; collaborative teams; collective inquiry; action orientation and experimentation; commitment to continuous improvement; and results orientation. Hord's (1997) dimensions included shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, supportive structures, and supportive relationships. While the lists of dimensions

differ in organization, there are many shared themes amongst the two. The following sections will provide a summary of each of the dimensions of PLCs first as described by DuFour and Eaker (1998), then by Hord (1997). These dimensions are listed in Table 1.

Table 1

The Dimensions of PLCs

DuFour and Eaker (1998)	Hord (1997)
Share Mission, Vision, and Values	Shared and Supportive Leadership
Collective Inquiry	Shared Values and Vision
Collaborative Teams	Collective Learning and Application
Action Orientation and Experimentation	Shared Personal Practice
Continuous Improvement	Supportive Structures
Results Orientation	Supportive Relationships

Shared Mission, Vision, and Values. DuFour and Eaker (1998) explained that a common vision and set of values is the "sine qua non" of PLCs (p. 24). These authors asserted all individuals in a PLC must not only share beliefs, but envision and seek the same outcome. DuFour and Eaker defined "mission" as answering the question, "Why do we exist?" and "vision" as answering, "What do we hope to become?" The authors argued that "values" detail "how" to make the shared vision into a reality. These commonalities in understanding intend to provide something all educators can reference and strive towards (Hudson, 2024). The concept of these shared images does not negate the visions of individuals, but rather establishes the importance of a collective vision (Hughes & Kritsonis, 2006). While these principles should be expressed by leadership, they should be deeply embedded into the community (DuFour & Eaker, 1998).

Collective Inquiry. DuFour and Eaker (1998) defined collective inquiry as a collaborative cycle of questioning, experimenting, and reflecting. This characteristic suggests educators included in a PLC should never be satisfied with the current state but be collectively

seeking new ideas for improvement (Hughes & Kritsonis, 2006). This desire is the "engine of improvement, growth, and renewal" in a PLC (DuFour & Eaker, 1998). Beddoes et al. (2020) argued a group of educators should act similarly to a successful sport coaching staff, using constant self-reflection to ensure that knowledge and skills evolve as the "game" evolves. The importance of this dimension lies in the fact that collective inquiry causes a group to be able to make meaningful change (DuFour & Eaker, 1998).

Collaborative Teams. DuFour and Eaker (1998) made a strong distinction between team learning and team building, arguing that the first is more important to promoting continuous improvement. The idea of collaborative teams does not refer to social or "bonded" groups, rather a professional willingness to work together towards a shared vision (Beddoes et al., 2020; DuFour & Eaker, 1998). While each individual has their own responsibility, the teams must work together with mutual accountability (Beddoes et al., 2020). Team learning focuses on the renewal of the organization (DuFour & Eaker, 1998), and this collaborative environment connects knowledge and attitudes to promote improved practice (Hudson, 2024).

Action Orientation and Experimentation. The term "action orientation and experimentation" defines itself. This dimension of PLCs provides that successful organizations cannot tolerate inaction and are characterized by a willingness to use experimentation for learning (DuFour & Eaker, 1998). This dimension is strongly related to collective inquiry as teams must work together to reflect, execute strategic plans, and make frequent adjustments (Beddoes et al., 2020); furthermore, this dimension speaks to the importance of shared beliefs, since they lead to change in practices (Hudson, 2024).

In order to sustain a culture that supports action orientation and experimentation, individuals must be equipped to tolerate undesired results (DuFour & Eaker, 1998). Failure is a possibility, but mistakes should be opportunities for the PLC to learn (Hughes & Kritsonis, 2006).

Continuous Improvement. DuFour and Eaker (1998) explained how discomfort with present conditions and the desire to evolve should characterize a PLC. The authors specified that this process of innovation should not be viewed as a task, but rather a permanent posture. This "way of life" should reach each individual involved (Hughes & Kritsonis, 2006). For this to be possible, each individual must be willing to constantly examine their craft, and do so purposefully (Beddoes et al., 2020). DuFour and Eaker (1998) compared the dimension of continuous improvement to a lifestyle rather than a "fad diet." It is important that student data is involved in this process; however, researchers warn that data should not become the sole focus of a PLC (Hudson, 2024).

Results Orientation. The final dimension of PLCs, as defined by DuFour and Eaker (1998), asserts that the previous five dimensions should be cultivated with results in mind rather than intentions. Hughes and Kritsonis (2006) argued that the other dimensions of PLCs are "hollow unless they can be linked to results" (p. 9). Bolam et al. (2005) explained that the purpose of PLCs is to "enhance staff effectiveness as professionals, for the ultimate benefit of students" (p. 10). In the end, the practices of teachers are related to student outcomes (Hudson, 2024), and the overall goal of a PLC is to enable a school to meet the national educational goals (DuFour & Eaker, 1998). A focus on desired results can increase focus and bring simplicity to decision-making (Beddoes et al., 2020). In order to be results oriented, a PLC should be able to define what students should learn,

how learning will be evaluated, and how the team will respond to student difficulty (Hughes & Kritsonis, 2006).

Shared and Supportive Leadership. Shared and supportive leadership is the first dimension of professional learning communities described by Hord (1997). A key point of Hord's (1997) description of shared and supportive leadership in a school was the relationship between the staff and the principal. The author argued that principals should grow professionally alongside staff, assuming that all members of the community have room for improvement. This dimension is characterized by a distribution of power, responsibility, and authority amongst a staff (Hipp & Huffman, 2010). This dimension includes the idea that school leaders should share the burden of leadership, allowing for decision making to be equally distributed (Hipp & Huffman, 2010; Hord, 1997). As previously discussed, the leadership of principals may be especially impactful in challenged schools (Rushing & Pendola, 2023).

Shared Values and Vision. Hord (1997) explained that the staff should not only participate in developing a shared vision and set of values but be involved in putting these ideals into practice on a regular basis. These values and visions should place an emphasis on student achievement and cause staff to hold high-expectations (Hipp & Huffman, 2010; Hord, 1997), which is similar to the shared mission, vision, and values dimension as described by DuFour and Eaker (1998). Hord (1997) explained that the belief that all students are capable of learning is a critical component of this dimension. Overall, description of the dimension asserts that the shared values and vision should guide all decision making within the school community (Hord, 1997).

Collective Learning and Application. Collective learning and application, originally called collective creativity (Hord, 1997), places an emphasis on consistent collaboration (Hipp & Huffman, 2010). Hord (1997) referred back to Senge's (1990) description of learning organizations when defining this dimension. Both concepts stressed the importance of an environment where individuals of differing levels work together to problem solve and apply new ideas (Hord, 1997; Senge, 1990). Collective learning and application means that individuals should collaboratively share information, seek information, plan and apply new strategies, and solve problems with the intent to create better learning opportunities for students (Hipp & Huffman, 2010). This dimension summarizes and combines DuFour and Eaker's (1998) description of collaborative teams and collective inquiry.

Shared Personal Practice. While shared personal practice may come naturally when applying collective learning and application (Hord, 1997) or collective inquiry (DuFour & Eaker, 1998), the distinction of this dimension is notable. Hord (1997) explained that sharing "personal classroom practices" was a condition that provided significant support to a learning community (p. 25). Hipp and Huffman (2010) related this dimension to coaching and mentoring systems, in addition to informal peer observations to provide feedback. This process supports the improvement of the individual, and the community as a whole (Hord, 1997).

Supportive Conditions: Structures. Hord (1997) originally named the supportive condition of structures as physical conditions. Generally, supportive structures include resources, facilities, and systems of communication (Hipp & Huffman, 2010). The practical components of this dimension were not described in the dimensions listed by

DuFour and Eaker (1998). Hord's (1997) description of this dimension explained how details such as the size of a school, physical distance between staff members, and time allowed to meet could impact how a school operated as a professional learning community. Financial resources, physical materials, staffing, and time can play major roles in the operation of a school (Hipp & Huffman, 2010). Time restrictions have been blamed as a barrier for schools (Adams, 2014; Riggins & Knowles, 2020; Zimmerman & May, 2003).

Supportive Conditions: Relationships. The supportive condition of relationships, previously called "people capacities (Hord, 1997), relates strongly to a school's culture. These relationships support Hord's (1997) previously described dimensions. For example, shared personal practice and collective learning could not function without trust and respect amongst individuals (Hipp & Huffman, 2010). Without these positive relationships, individuals may not be willing to accept feedback (Hord, 1997). Hipp and Huffman (2010) stated that recognition and celebration, risk-taking, and unified efforts were also critical attributes of the dimension. While elements of this dimension are evident in the descriptions of DuFour and Eaker's (1998) dimensions, it is stressed as independently as by Hord (1997).

Inhibitors and Facilitators of Professional Learning Communities

Efficient and effective PLCs require concentrated efforts (Hudson, 2024). DuFour and Eaker (1998) warned that even after taking the needed steps to make a school into a PLC, even more work must be done to sustain change. Existing literature has pointed to several facilitators, sometimes known as enabling conditions, promoting successful PLCs (DuFour & Eaker, 1998; Gray et al., 2016; Hudson, 2024). Some research suggests these

structures should proceed implementation (Gray et al., 2016). Bolam et al. (2005) identified four key enabling factors of PLCs: "optimizing resources and structures; promoting individual and collective learning; specifically promoting and sustaining the PLC; and leadership and management" (p. iv). A strong leader, or principal, is a commonly discussed enabling condition as this individual is charged with fostering enabling conditions (Bolam et al., 2005; DuFour & Eaker, 1998; Gray et al., 2016; Riggins & Knowles, 2020). It is imperative that PLCs are continuously monitored and evaluated to ensure procedures are effective (DuFour et al., 2016). Ongoing evaluation has been recommended to identify weak dimensions or strands (Burns et al., 2018).

There are also factors known to inhibit the implementation and efficacy of PLCs (Adams, 2014; Bolam et al., 2005; Riggins & Knowles, 2020; Zimmerman & May, 2003). Bolam et al. (2005) explained how issues amongst staff members made a negative impact on such efforts. For example, schools experiencing high teacher turnover or including those resistant to change were less successful. Issues arise when teachers work in isolation (Riggins & Knowles, 2020). A lack of resources or adequate facilities has also been cited as an issue impeding PLCs or other professional development (Adams, 2014; Bolam et al., 2005; Zimmerman & May, 2003). Finally, some schools operating under strict compliance monitoring, such as Title I schools, may struggle to truly operate as PLCs due to pressure and standardization of practices (Hardy & Melville, 2019).

DuFour and Reeves (2016) warned educators about a model to avoid, calling it "PLC Lite." This model reflects poor habits many schools fall into, possibly due to the pressure imposed by compliance monitoring. DuFour and Reeves reported stale practices such as using "uninformative assessments," neglecting to analyze student data, and

reusing old materials and strategies without analysis to denote this negative state. Riggins and Knowles (2020) asserted that schools must be willing to conduct an honest and humble self-evaluation to avoid the trap of PLC lite. The researchers suggested that schools must face real evidence to ensure there is a commitment to student learning, non-negotiable time to do the work, balanced leadership, and a thorough plan to maintain progression.

The Impact of Professional Learning Communities

The implementation of professional learning communities has been associated with student achievement in current research (Burns et al., 2018; Çopur & Demirel, 2022). Furthermore, the previously described dimensions of PLCs have been associated with student achievement, specifically in elementary school mathematics (Burns et al., 2018). The association between PLCs and student achievement is often justified with the assumption that meaningful, ongoing learning improves beliefs, strategies, and attitudes that impact student achievement (Hudson, 2024). Despite the existence of research connecting PLCs to academic achievement, some researchers have argued that few empirical studies used quantitative data to support this connection (Hudson, 2024; Nadelson et al., 2012) Hudson (2024) stated much of existing research consists of the "subjective opinions of teachers and school leaders" (p. 651). Some existing empirical studies have failed to identify an association between the implementation of PLCs and student achievement (Hurley et al., 2018; Moulakdi & Bouchamma, 2020; Nadelson et al., 2012). Some of this has been explained by the suggestion that the effects of PLCs are more evident as the community matures (Bolam et al., 2005; Moulakdi & Bouchamma, 2020). The limited amount of research and unclear relationships has caused some

researchers to suggest more research to be done in order to better understand the efficacy of PLCs (Burns et al., 2018) and possible mediating factors (Liu & Yin, 2024).

Discussion around PLCs has also mentioned other benefits outside of student achievement (Bolam et al., 2005; Liu & Yin, 2024; Owen, 2016) Another benefit of PLCs is the impact this structure has on self and collective efficacy beliefs among teachers. Anderson and Olivier (2022) argued school leaders seeking to improve collective efficacy beliefs amongst their staff should take implementing PLCs into consideration; furthermore, some research indicates that the impact on student achievement associated with PLCs is actually explained by an increase in collective teacher efficacy (Liu & Yin, 2024). Studies have shown that engaging in PLCs has led to an improvement in teacher wellbeing (Owen, 2016). Teachers engaged in PLC processes have reported a "reinvigorated passion for teaching" and a "sense of accomplishment and meaning" about their work (Owen, 2016). Overall, existing literature suggests that PLCs are a worthwhile endeavor when it comes to creating a framework to sustain improvement (Bolam et al., 2005).

Chapter Summary

The review of literature addressed information relevant to the theoretical framework, research problem, and provided an explanation for the cause for inclusion of each variable included in this study: collective teacher efficacy, the dimensions of professional learning communities, and academic achievement in high-poverty schools. Furthermore, the review provided in this chapter highlighted established connections between collective teacher efficacy and factors such as student achievement (Erdogan et al., 2022; Goddard et al., 2000; Moosa, 2021; Tschannen-Moran & Barr, 2004) and

teacher wellbeing (Cleary et al., 2023). The review further explained how professional learning communities have been associated with improved student achievement (Burns et al., 2018; Çopur & Demirel, 2022), acknowledging that more research needs to be conducted in order to confirm this connection (Hudson, 2024; Nadelson et al., 2012). By analyzing literature relevant to both topics, areas of debate and gaps became apparent. For example, some researchers argued that school SES impacted student achievement more than CTE beliefs. Existing research suggested a need for studies considering both CTE and the dimensions of PLCs (Moosa, 2021) and mixed methods studies investigating the factors (Anderson & Olivier, 2022; Salas-Rodríguez & Lara, 2023). The study aims to address these gaps, specifically investigating the impact of these factors in high-poverty schools.

The following chapter will provide a detailed explanation of how the study was conducted. The chapter will address the research design, participants, data collection, data analysis, and limitations of the study. The fourth chapter will provide detailed results. Finally, chapter five will provide an analysis of results and recommendations for practice and future research.

Chapter III

Methodology

This chapter provides detailed description and explanations regarding the methodology used in this study. First, the chapter will review the purpose of the study and the research questions guiding the inquiry. Next, there is a thorough discussion of the research design, including the setting, participants, and details about the quantitative and qualitative components. Data collection is explained in detail including instrumentation. Finally, the section discusses data analysis for each research question and limitations of the study.

Purpose and Research Questions

This mixed methods study addresses the gap in research involving collective teacher efficacy (CTE), the dimensions of professional learning communities (PLCs), and academic achievement in high-poverty elementary schools. The following research questions served to guide the study:

1. To what extent does collective teacher efficacy differ between outlier and non-outlier schools?
2. To what extent do the dimensions of professional learning communities (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, relationships, and structures) differ between outlier and non-outlier schools?

3. To what extent do relationships exist between individual professional learning community dimensions (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, relationships, and structures) and collective teacher efficacy in outlier and non-outlier schools?
4. How do school protocols or qualities that impact collective teacher efficacy or the dimensions of professional learning communities differ in outlier and non-outlier schools?

Research Design

This mixed methods study followed a convergent design. Creswell and Plano Clark (2018) explained this core design begins with the researcher designing both the quantitative and qualitative components at the start of the study. Both types of data are collected and analyzed concurrently. Quantitative and qualitative data are analyzed independently, and results are synthesized to identify similarities and differences. The overall intent behind this design is to obtain complementary data, allowing for the benefits of qualitative and quantitative research (Creswell & Plano Clark, 2018). A convergent design was the most appropriate design for this study for several reasons. Obtaining a comparable overview of collective teacher efficacy and the dimensions of PLCs was most efficiently done through the use of a quantitative instrument. Using a survey to collect data is also most effective when addressing a large population; however, closed-ended survey questions could not fully answer the research questions included in this study. The qualitative component, open-ended questions, aided in providing a deeper understanding of the "why" behind the quantitative results.

The independent variables included in the quantitative component of the study included collective teacher efficacy and the dimensions of professional learning communities. As previously discussed, collective teacher efficacy is a group's common beliefs regarding their shared ability to meet their goals (Bandura, 1997). Six dimensions of PLCs, outlined by Hord (1997), were evaluated, including shared and supportive leadership, shared value and vision, collective learning and application, shared personal practice, relationships, and structures. All independent variables were assessed using likert-scale items, which will be further discussed in the instrumentation section. All independent variables were measured at the interval level.

The dependent variable included in the quantitative component of the study was academic achievement. Individual schools' academic achievement were represented through report card scores assigned from the state of Alabama. Schools received numeric grades on the traditional 0-100 grading scale in addition to a letter grade such as an A, B, C. D, or F. This score was calculated using achievement on the ACAP assessment, student growth on the ACAP assessment, and attendance rates. This variable was measured at the nominal level, as schools were grouped as outlier or non-outlier schools.

Setting and Participants

The population affected by the research problem in this study included teachers in public, high-poverty, Title I elementary schools in Alabama. Elementary schools were defined as schools serving students from kindergarten to fifth-grade. Primary and intermediate schools were considered elementary schools as they met the guidelines. The population included teachers who were in at least the second year working at their current school.

The sample included a selection of eight schools in a southeast region of Alabama. The researcher utilized maximum variation sampling in order to include the most equal representation of outlier and non-outlier schools as possible. The study included four outlier schools. These schools were deemed high-poverty by the state of Alabama and received an "A" or "B" on the state report card. The study also included four non-outlier schools, which were deemed as high-poverty but scored a "C" or "D" on the state report card. All teachers in the schools who were in at least the second year working at their school were eligible to participate.

Data Collection

This section will provide an outline of procedures followed for each strand of the study. Prior to taking any steps in the research process, the researcher applied for and obtained Institutional Review Board (IRB) approval (Appendix A). Data collection included using Goddard's (2002) Teacher's Collective Efficacy Scale Short Form and the PLCA-R (Hipp & Huffman, 2010), adding a few additional items for clerical purposes. The researcher contacted principals by email to inquire about distributing surveys. Once fully approved, the researcher sent surveys to participants through email. The email explained the purpose of the survey and provided information relevant to confidentiality and informed consent. The email included a link to the survey, which was hosted by Qualtrics. The researcher monitored survey responses and communicated with principals and participants to provide reminders, ensuring a sufficient amount of data was collected. This portion of data collection took approximately one month.

Instrumentation

The survey sent to participants of the study included a quantitative and qualitative component. The quantitative component consisted of a combination of two surveys, the Teacher's Collective Efficacy Scale Short Form (CES-SF) (Goddard, 2002) and the Professional Learning Community Assessment-Revised (PLCA-R) (Hipp & Huffman, 2010). The qualitative component consisted of open-ended questions. The survey provided to participants through Qualtrics is included in Appendix B. The following sections will provide information pertinent to instrumentation: the validity and reliability of each component.

Quantitative Component. The first instrument the researcher utilized was the Teacher's Collective Efficacy Scale Short Form (CES-SF) created by Goddard (2002). The original, longer version of the instrument included 21 items. The short form includes only 12 items. Participants rated items on the survey using a 6-point Likert scale ranging from "strongly agree" to "strongly disagree."

The CES-SF was deemed a valid and reliable instrument through rigorous testing (Goddard, 2002). Validity refers to the ability of an assessment to accurately measure the intended subject. Goddard (2002) reported that scores from the original 21-item scale and the 12-item scale were highly correlated (r = .98), suggesting shortening the instrument did not negatively impact the validity. Reliability refers to an assessment's ability to produce consistent results over time. The CES-SF was determined to have high internal consistency (alpha = .94) (Goddard, 2002).

The second instrument used to develop the survey was the Professional Learning Community Assessment-Revised (PLCA-R) by Hipp and Huffman (2010). Hipp and

Huffman (2010) designed the instrument to provide schools a way to gauge a sense of their function as a PLC. The researcher contacted the research group to obtain permission to use the survey prior to data collection. The researcher used a portion of the original instrument. Items omitted from the survey were largely addressed through the qualitative component, using open-ended questions.

The instrument was assessed for reliability, indicating consistency within each dimension. Hipp and Huffman (2010) reported Cronbach Alpha reliability coefficients for each dimension (n = 1209): shared and supportive leadership (.94), shared values and vision (.92), collective learning and application (.91), shared personal practice (.87), supportive conditions (.82), and supportive structures (.88). The researchers additionally reported a one-factor solution (.97).

Qualitative Component. The qualitative component of the survey consisted of open-ended questions. The survey included a total of seven open-ended questions, with one question corresponding with each dimension of PLCs included on the survey and collective teacher efficacy. The open-ended questions were written in order to gain insight regarding school protocols and policies related to the dimensions of PLCs and collective teacher efficacy beliefs. The open-ended questions are included in the survey shown in Appendix B.

Data Analysis

Data analysis procedures were designed to ensure all research questions were sufficiently answered. Intentionally designed procedures helped ensure the researcher accessed quality data and produced meaningful results. The researcher utilized the R

statistical software package to conduct the quantitative data analysis. The following sections will explain the procedures for each research question.

The Mann-Whitney U test was conducted to answer the first and second research question, and Spearman's rank correlation was used to address the third research question. Descriptive statistics were reported for outlier and non-outlier groups for collective teacher efficacy and the dimensions of professional learning communities (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, supportive conditions, and supportive structures). Prior to conducting statistical analysis, the researcher assessed the data for statistical assumptions. This included assessing first for outliers, missing data, appropriate sample size, and normality. Nonparametric tests were chosen due to the data's failure to meet the assumption of normality. Descriptive statistics included mean (M), standard deviation (SD), and sample size (N). For the first two research questions, the researcher reported the test statistic for the Mann-Whitney U (U), the standardized test statistic (z), and the probability value (p). For the third research question, the researcher reported Spearman's rho (r_s) and the probability value (p).

Answering the fourth research questions required analysis of written responses to the open-ended questions from survey respondents. The researcher used a systematic approach in order to identify patterns and themes within the data. First, the researcher organized all qualitative data into a single document. The document included a page for each survey question with columns separating responses from the outlier and non-outlier group. The researcher used this document to perform "manual" coding, using strategies outlined by Saldaña (2021). In order to code the data manually, the researcher used color

coding, notes in the margins, and other flexible methods which evolved during the coding process. This included looking for patterns, repeated words or phrases, positive vs. negative statements, and other trends. As the data was combined and formatted, the researcher engaged in "pre-coding." This process involved writing memos and identifying portions of data that appeared to be important to support the second phase of coding. Next, the researcher utilized in vivo coding, paying attention to the exact words used by participants. These codes were further analyzed to identify themes and patterns, specifically those providing insight to relationships identified in the quantitative data. Provisional coding, or coding using a preexisting list of anticipated codes, was also used during this phase (Saldaña, 2021). Provisional codes included terms related to collective teacher efficacy and the dimensions of professional learning communities. The final stage focused on analyzing how responses from the two groups were similar or different. The researcher narrowed down to themes and patterns that highlighted how the two groups compared.

Chapter Summary

This chapter provided a detailed explanation of the methodology used in the study. The chapter outlined the research questions, research design, participants, instrumentation, data collection, and data analysis. All of the described components aligned with the research questions which inquired about the relationships between collective teacher efficacy, the dimensions of professional learning communities, and academic achievement in high-poverty elementary schools. The chapter explained the approach of using a mixed methods, convergent design. The chapter described how surveys distributed to participants would collect quantitative and qualitative data.

Chapter IV

Results

This mixed methods study examined the relationships between collective teacher efficacy, the dimensions of professional learning communities, and achievement in high-poverty elementary schools. The researcher utilized the R statistical analysis software package to analyze the quantitative results and thematic analysis to analyze the qualitative results. This chapter will provide a thorough report of the results including demographics, descriptive statistics, statistical analysis, and qualitative results.

Quantitative Results

The survey was distributed to a total of 216 teachers from outlier ($N = 115$) and non-outlier ($N = 101$) schools. A total of 111 surveys were returned which was equivalent to a 51.39% response rate. Of the returned surveys, the researcher utilized 94 to analyze the first research question and 69 for the remaining research questions. The following sections will provide a summary of the descriptive statistics for the data used from each section, including the number of responses used for analyses.

Descriptive Statistics

As discussed in chapter 3, the researcher administered a three-part survey to participants. The first part of the survey was Goddard's (2002) collective teacher efficacy scale, which included 12 Likert-scale items. The sum of these items produced a score representing the individuals' perception of collective efficacy at their school. The second

part of the survey was the Professional Learning Community Assessment-Revised by Olivier et al. (2010). This portion, divided into six sections for each dimension, produced a rating of each dimension of PLCs. The third part of the survey included open-ended questions. The qualitative results will be discussed later in this chapter. The following sections will provide a summary of the descriptive statistics derived from each quantitative part of the survey.

Collective Teacher Efficacy Scale (Goddard, 2002). This portion of the survey was completed by teachers from outlier schools ($N = 40$) and teachers from non-outlier schools ($N = 54$). Teachers from outlier schools reported slightly higher collective efficacy ($M = 44.18$, $SD = 8.11$) than teachers at non outlier schools ($M = 41.26$, $SD = 9.20$). Respondents rated each item using a Likert-scale ranging from strongly disagree to strongly agree. Negatively worded items (e.g., "If a child doesn't want to learn, teachers here give up") were reverse scored. Results from both reverse scored items (#4, 5, 8, 10, 11, and 12) and regularly scored items should be interpreted so that higher scores reflect higher levels of collective efficacy. Scores for each item by group are displayed in Table 2 and Figure 1 provides a visual representation of the difference between the mean rating for each item by group.

Table 2

Mean Collective Teacher Efficacy Scores by Group

Item	Category	Outlier Schools	Non-outlier Schools
1. Teachers in this school are able to get through to difficult students.	GC+	4.54	4.17
2. Teachers here are confident they will be able to motivate students.	GC+	4.34	4.28
3. Teachers in this school really believe every child can learn.	GC+	5	4.63
4. If a child doesn't want to learn, teachers here give up.	GC-	4.03	3.83
5. Teachers here don't have the skills to produce meaningful student learning.	GC-	4.31	4.24
6. These students come to school ready to learn.	TA+	3.67	3.26
7. Homelife provides so many advantages the students here are bound to learn.	TA+	2.44	2.53
8. Students here just aren't motivated to learn.	TA-	2.41	2.39
9. The opportunities in this community help ensure that these students will learn.	TA+	3.15	3.28
10. Learning is more difficult at this school because students are worried about their safety.	TA-	3.90	3.60
11. Substance abuse in the community makes learning difficult for students here.	TA-	2.49	2.17
12. Teachers in this school do not have the skills to deal with student disciplinary problems.	GC-	3.82	3
Mean Sum:		44.18	41.26

Note. The "category" column indicates which items were related to group competence (GC) or task analysis (TA) and if the item was positively (+) or negatively (-) worded.

Figure 1

Mean Collective Teacher Efficacy Scores by Group

The Dimensions of PLCs

Teachers from outlier schools (N = 30) reported higher levels of overall PLC qualities (M = 171.57, SD = 24.32) than teachers from non-outlier schools (N = 39) (M = 157.34, SD = 28.24). Table 3 displays the mean scores for each dimension of PLCs by group.

Table 3

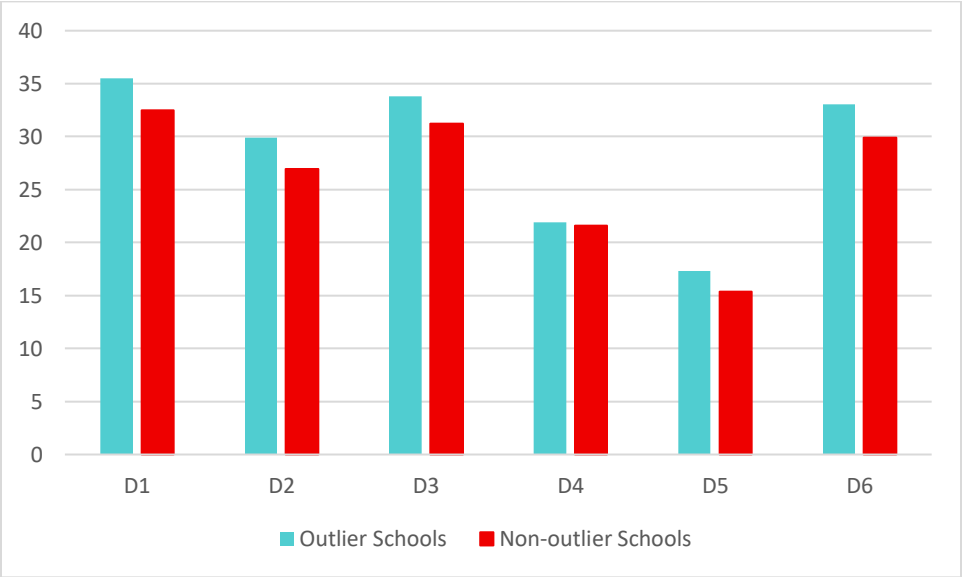
Professional Learning Community Dimension Ratings by Group

	Outlier Schools	Non-outlier Schools
Shared and Supportive Leadership	M = 35.53, SD = 6.48	M = 32.46, SD = 6.95
Shared Values and Vision	M = 29.93, SD = 4.99	M = 26.97, SD = 5.46
Collective Learning and Application	M = 33.80, SD = 4.75	M = 31.21, SD = 5.81
Shared Personal Practice	M = 21.93, SD = 4.82	M = 21.62, SD = 4.00
Relationships	M = 17.33, SD = 2.67	M = 15.36, SD = 3.10
Structures	M = 33.03, SD = 4.87	M = 29.92, SD = 6.02

Teachers from outlier schools reported higher levels for each dimension of PLCs. Figure 2 provides a visual representation of mean scores for each dimension by group.

Figure 2

Professional Learning Community Dimension Ratings by Group



Assumption Tests

Data were examined for assumptions of parametric tests including outliers and normality. The researcher examined boxplots and used R to identify significant outliers. No significant outliers were identified in the data. The researcher examined Q-Q plots and utilized the Shapiro-Wilk Normality test to assess the data for normality. Table 4 presents the result for each variable by group, in addition to the skewness and kurtosis. The results indicated that much of the data failed to meet the assumption of normality.

Table 4

Normality of Each Variable by Group

Variable	Group	Skewness	Kurtosis	Shapiro-Wilk
Collective Teacher Efficacy	Combined	-0.60	3.07	$W = 0.97$, $p = 0.01$
	Outlier	-0.51	0.35	$W = 0.93$, $p = .14$
	Non-outlier	-0.88	0.62	$W = 0.93$, $p = .011$
Shared and Supportive Leadership	Outlier	-0.51	-0.35	$W = 0.96$, $p = .27$
	Non-outlier	-0.68	1.01	$W = 0.92$, $p = .01$
Shared Values and Vision	Outlier	-0.22	-1.14	$W = 0.94$, $p = .09$
	Non-outlier	-0.59	1.55	$W = 0.88$, $p < .001$
Collective Learning and Application	Outlier	-0.35	-0.95	$W = 0.93$, $p = .05$
	Non-outlier	-0.48	0.84	$W = 0.89$, $p = .001$
Shared Personal Practice	Outlier	-0.56	0.27	$W = 0.91$, $p = .02$
	Non-outlier	0.29	-1.06	$W = 0.91$, $p = .004$
Relationships	Outlier	-0.39	-1.40	$W = 0.84$, $p < .001$
	Non-outlier	-0.32	-0.06	$W = 0.93$, $p = .02$
Structures	Outlier	0.13	-1.40	$W = 0.91$, $p = .02$
	Non-outlier	-0.32	0.02	$W = 0.95$, $p = .09$

Research Question 1: To what extent does collective teacher efficacy differ between outlier and non-outlier schools?

The researcher employed a Mann-Whitney *U* test to examine the difference in CTE between teachers from outlier and non-outlier schools. This method of analysis was selected because the data violated the assumption of normality per the Shapiro-Wilk normality test (W = 0.97, $p = 0.01$); therefore, it was not appropriate to perform analysis using ANOVA. The results of the Mann-Whitney U test showed no significant difference in CTE between teachers from outlier and non-outlier schools ($U = 896.5$, $z = -1.41$, $p = .16$).

Research Question 2: To what extent do the dimensions of professional learning communities (shared and supportive leadership, shared values and vision, collective

learning and application, shared personal practice, relationships, and structures) differ between outlier and non-outlier schools?

The researcher employed a Mann-Whitney *U* test to examine the difference in each dimension of PLCs between teachers from outlier and non-outlier schools. This test was performed because assumptions for ANOVA were not met. As previously discussed, only data for one dimension, structures, was considered normal per the Shapiro-Wilk normality test ($W = 0.98$, $p = 0.26$), so the Mann-Whitney *U* was used for all dimensions for consistency. The results indicated that there was a significant difference in shared values and vision ($U = 388.5$, $z = -2.38$, $p = .02$) and relationships ($U = 378$, $z = -2.51$, $p = .01$) between the two groups. No significant difference was identified in shared and supportive leadership ($U = 429.5$, $z = -1.89$, $p = .06$), collective learning and application ($U = 436.5$, $z = -1.80$, $p = .07$), shared personal practice ($U = 533.5$, $z = -0.63$, $p = .53$), or structures ($U = 439.5$, $z = -1.77$, $p = .08$). A summary of these results is displayed in Table 5.

Table 5

Professional Learning Community Dimension Difference by Group

	Mann-Whitney *U*	*z*	*p*
Shared and Supportive Leadership	429.5	-1.89	.06
Shared Values and Vision	388.5	-2.38	.02*
Collective Learning and Application	436.5	-1.80	.07
Shared Personal Practice	533.5	-0.63	.53
Relationships	378	-2.51	.01*
Structures	439.5	-1.77	.08

**Significant results*

Research Question 3: To what extent do relationships exist between individual professional learning community dimensions (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice,

relationships, and structures) and collective teacher efficacy in outlier and non-outlier schools?

As previously stated at the beginning of the chapter, much of the data violated the assumption of normality; therefore, the researcher utilized Spearman's Rank-Order test to answer the third research question instead of Pearson's *r*. Spearman's Rank-Order was employed separately to examine the relationships between the dimensions of PLCs with CTE in outlier and then non-outlier schools. Moderate, positive relationships were identified between most dimensions and CTE in both groups. The results are displayed in Table 6.

The most evident relationship was between CTE and structures in outlier schools ($r_s = .57$, $p < .001$). The weakest relationships were equal to $r_s = .39$. This was between CTE and relationships in outlier schools ($r_s = .39$, $p = .03$) and non-outlier schools ($r_s = .39$, $p = .01$). There was also a weak relationship identified in outlier schools between CTE and collective learning and application ($r_s = .39$, $p = .01$).

Table 6

Spearman's Rank-Order Correlation of CTE and PLC Dimensions by Group

	Outlier Schools		Non-outlier Schools	
Dimension	r_s	p	r_s	p
Shared and Supportive Leadership	.46	.01	.45	.004
Shared Values and Vision	.47	< .001	.49	.001
Collective Learning and Application	.25	.18	.39	.01
Shared Personal Practice	.52	< .001	.48	.002
Relationships	.39	.03	.39	.01
Structures	.57	< .001	.46	.003

Qualitative Results

Responses from the open-ended questions (OEQs) were analyzed using a strategic approach as described by Saldaña (2021). The researcher coded the data manually, beginning with precoding and moving to in vivo coding. Finally, the researcher analyzed the codes to identify themes in the data and tied them to provisional codes, or terms relating to collective teacher efficacy and the dimensions of professional learning communities as appropriate. The following sections provide a detailed description of the findings from each of the open-ended questions pertaining to the fourth research question.

Research Question 4: How do school protocols or qualities that impact collective teacher efficacy or the dimensions of professional learning communities differ in outlier and non-outlier schools?

The first open-ended question asked participants, “In your opinion, what is the best evidence of the effectiveness of your school’s staff?” Teachers from outlier schools provided responses with a common theme- student achievement. Some respondents vaguely referred to student data, while others provided specific examples such as test scores, ACAP scores, state report card scores, and standards mastery. A few of these responses also mentioned meeting with colleagues to review this data. The focus was measurable student achievement. Teachers from outlier schools overwhelmingly cited relationships as the best evidence of staff effectiveness. Specifically, there was a theme of positive working relationships between staff members. The respondents frequently used the term “relationships” or mentioned “working together.” A few responses similarly

mentioned a positive environment or climate. Table 7 provides sample responses from both groups of participants.

Table 7

Sample responses from OEQ 1- Collective Teacher Efficacy

	Outlier Schools	Non-outlier Schools
In your opinion, what is the best evidence of the effectiveness of your school's staff?	"Our growth from year to year on benchmark assessments" "Student success! Students are competent on their grade level" "A's on the state report card" "ACAP scores" "Students growing academically, observed informally through regular data meetings"	"Our ability to work together through any situation" "The staff is always ready to help each other and it is apparent when you see how the students and staff react to each other" "School staff (teachers) work together to get teaching and learning done..." "We work well together"

The next open-ended question asked participants, "How do staff members have opportunities for leadership/input towards decision making?" Responses from the two groups were fairly similar. Generally, teachers from both groups reported there were opportunities given to provide input. Only two respondents from each group suggested that there were not opportunities available. A few trends differentiated the groups. Teachers from outlier schools more frequently discussed in-person opportunities to provide input. These respondents mentioned meetings, conversations, and participating in committees. Several of these teachers also highlighted the role of the principal, stating that one-on-one conversations were available when needed. While teachers from non-outlier schools also mention these things, many also mentioned the use of digital

communication such as emails or surveys. Table 8 provides sample responses from each group.

Table 8

Sample responses from OEQ 2- Shared and Supportive Leadership

	Outlier Schools	Non-outlier Schools
How do staff members have opportunities for leadership/input towards decision making?	"Our principal is very open to suggestions" "We have a leadership team, committees, and our school is open to ideas from anyone!" "More casually though meetings and conversations" "During weekly meetings and data-driven meetings"	"Surveys, messages, emails, meetings" "Our leadership sends us surveys and we discuss these in grade-level meetings" "Responding to questionnaires" "My principal always asks for our opinion on things she feels we deserve to voice our opinion on. She creates Google Forms for us to vote on different things."

The third open-ended question asked participants, "How does your school promote common goals or beliefs amongst staff members?" A theme derived from the responses of outlier school teachers was consistency through systemized structures. These teachers used terms like "constantly," "weekly," and "monthly" to describe the frequency of which goals and beliefs were discussed. Many responses also cited specific structures such as common goals, mission statements, and school-wide norms. Respondents explained these structures were promoted through emails, meetings, signage, and even on student desks in one case. In contrast, respondents from non-outlier schools provided much more vague existence of goals. Responses did not include specific examples of intentional communication, but rather general understanding. For example,

"communication between staff promotes unity." More examples of responses from both groups are included in Table 9.

Table 9

Sample responses from OEQ 3- Shared Values and Vision

	Outlier Schools	Non-outlier Schools
How does your school promote common goals or beliefs amongst staff members?	"School goals are developed by a team of teachers, leaders, and stakeholders to promote common goals that align with the success of the school and promote student learning and safety." "We have a mission statement and our principal constantly supports and encourages our goal: student achievement!" "We have shared school-wide norms that are posted in every classroom, hallway, and on every student desk, and are repeated on the announcements every morning." "Goals are discussed at least monthly at grade level data meetings"	"By focusing on why we're here in the first place." "Discuss values and ideas in meetings" "Our leadership has a gift of finding and hiring like minded individuals who work well together and this promotes common beliefs." "We begin each year with a goal in mind and a theme that carries throughout the school year."

The fourth open-ended question asked participants, "When do staff members at your school work together to solve problems or try new strategies?" Overall, the responses from the two groups of teachers were similar. Teachers from both groups cited regularly scheduled events such as RTI (response to instruction) meetings, grade level planning meetings, staff meetings, and those alike. Despite these similarities, a unique theme was identified within the responses from teachers from outlier schools. These

responses also included discussion of organic, need-based meetings. This theme was not identified in responses in the non-outlier group. All responses referred to specific times in the school's schedule. Examples of the verbiage used by each group are included in Table 10.

Table 10

Sample responses from OEQ 4- Collective Learning and Application

	Outlier Schools	Non-outlier Schools
When do staff members at your school work together to solve problems or try new strategies?	"....if necessary in a special called meeting involving those needed to solve the problem" "when a student is not making improvement" "RTI meetings mainly. Also during grade levels, data meetings, and common planning." "Behavior concerns and academic concerns. This is usually during our planning periods, but may sometimes be before or after school.	"During our planning, faculty meetings, or after school." "Several times a year we collaborate on how to improve our own learning through multiple types of professional development, grade level planning, and committee meetings." "We have Problem Solving Team meetings." "During grade level planning, MTSS meetings, IEP meetings, staff meetings and so on."

The fifth open-ended question asked participants, "Is respect or trust evident amongst staff members? How do you know?" As expected, neither group of respondents produced universally positive or negative responses; however, teachers from outlier schools more frequently reported that respect and trust were evident amongst their staff. The theme of these responses was professional collaboration. Teachers from outlier schools frequently cited working together as evidence of respect and trust. These respondents referenced planning together, sharing resources, and asking others for help.

In contrast, the theme of responses from teachers from non-outlier schools was communication as evidence of respect and trust. These respondents discussed getting along, trusting each other, and talking to each other. These responses focused more on the social relationships between the individuals. Sample responses from both groups are included in Table 11.

Table 11

Sample responses from OEQ 5- Relationships

	Outlier Schools	Non-outlier Schools
Is respect or trust evident amongst staff members? How do you know?	"Yes, teachers of different grade levels plan together and use information to incorporate into their lessons. Teachers collaborate with each other." "Yes, when working together we are able to share ideas that build upon each other." "Yes, this can be seen through collaboration and implementation of shared resources amongst faculty and staff."	"Yes, we talk to each other for the kids" "Yes, communication is open and key." "Yes, I believe our staff shows respect for each other by listening and working together for the good of our school." "Yes, because no matter what the circumstances most staff members seem to be able to work together and get along for the greater good of the kids"

The sixth open-ended question asked participants, "When do individuals at your school have opportunities to apply or discuss new strategies?" Responses from the two groups were fairly similar. Both groups frequently referred to grade level planning, RTI meetings, and professional development. Overall, there was a theme of structure. Neither group mentioned casual discussion aside from statements like "all the time." Teachers from outlier schools did report time as an important component. One respondent explained how their school provided subs to allow for extra time to discuss new

strategies, and another expressed the desire for more time to do this. One respondent from a non-outlier school stated that "there [aren't] opportunities available." Example responses from both groups are provided in Table 12.

Table 12

Sample responses from OEQ 6- Shared Personal Practice

	Outlier Schools	Non-outlier Schools
When do individuals at your school have opportunities to apply or discuss new strategies?	"Subs are provided to have extra time to discuss and apply new strategies" "We collaborate well during grade level meetings (those teachers only), and are great at sharing what works and doesn't work for different academic lessons and behaviors" "RTI meetings, CIP meetings, they are also given PD days for planning together when needed" "All the time, especially when needed!"	"During grade level planning, MTSS meetings, IEP meetings, staff meetings, and so on." "Many times throughout the school year, during professional development opportunities, grade level and committee meetings, we will implement the things we learn and develop together." "We have opportunities to apply new strategies everyday"

The last open-ended question asked participants, "When in your school's schedule can you learn collaboratively or share ideas?" Teachers from both outlier and non-outlier schools overwhelmingly cited their planning period as the best time for collaboration; however, teachers from outlier schools mentioned many additional opportunities outside of regular planning time. Responses from the outlier group included discussion of more purposeful, intentional meetings. These included RTI meetings, Problem Solving Team (PST) meetings, data meetings, and professional development. Only one respondent from

non-outlier schools referred to such meetings. Table 13 provides sample responses from each group.

Table 13

Sample responses from OEQ 7- Structures

	Outlier Schools	Non-outlier Schools
When in your school's schedule can you learn collaboratively or share ideas?	"Grade level planning meetings, RTI/PST meetings" "We have professional development opportunities throughout the school year, we have teacher work days where we meet and plan, and we are able to give ideas during staff meetings" "All teachers are given instructional planning time in their daily schedule. Teachers can request additional time for professional development/planning that can be organized throughout the school year."	"Grade level or planning meetings" "During planning time" "Grade level meetings in the afternoon after dismissal, and faculty meetings" "During collaborative grade level times, protected committee times and just any free time we have"

Integrated Results

This mixed methods study followed a convergent design, specifically the questionnaire variant (Creswell & Plano Clark, 2018). The inclusion of open-ended questions can be used to "validate and embellish" the quantitative findings using this design (Creswell & Plano Clark, 2018, p. 73). In this study, the combination of the results provided a more comprehensive understanding of the differences between outlier and non-outlier schools. Joint displays, or integration displays, provide a direct comparison of

the two forms of data (Creswell & Plano Clark, 2018). Table 14 provides a simplified presentation of both the qualitative and quantitative results for collective teacher efficacy and each dimension of PLCs through the use of a joint display. The following and final chapter will discuss the meaning of these integrated results in detail.

Table 14

Joint Display of Quantitative and Qualitative Results

	Quantitative Results		Qualitative Results	
	Difference between Outlier and Non-outlier	PLC & CTE Correlation	Outlier	Non-outlier
Collective Teacher Efficacy	No significant difference (U = 896.5, z = -1.41, p = .16)		Measurable student achievement as evidence	Relationships & positive climate as evidence
Shared and Supportive Leadership	No significant difference (U = 429.5, z = -1.89, p = .06)	Outlier: r_s = .46, p = .01 Nonoutlier: r_s = .45, p = .004	Face-to-face opportunities	Digital communication
Shared Vision and Values	Significant difference (U = 388.5, z = -2.38, p = .02)	Outlier: r_s = .47, p < .001 Nonoutlier: r_s = .49, p = .001	Systemized Structures	General understandings
Collective Learning and Application	No significant difference (U = 436.5, z = -1.80, p = .07)	Outlier: r_s = .25, p = .18 Nonoutlier: r_s = .39, p = .01	Organic, need-based discussions	Mostly structured meetings
Shared Personal Practice	No significant difference (U = 533.5, z = -0.63, p = .53)	Outlier: r_s = .52, p < .001 Nonoutlier: r_s = .48, p = .002	Structured Times	Structured Times
Relationships	Significant difference (U = 378, z = -2.51, p = .01)	Outlier: r_s = .39, p = .03 Nonoutlier: r_s = .39, p = .01	Collaboration as evidence of trust	Communication as evidence of trust
Structures	No significant difference (U = 439.5, z = -1.77, p = .08)	Outlier: r_s = .57, p < .001 Nonoutlier: r_s = .46, p = .003	Intentional and additional time	Regularly occurring meetings

Chapter V

Summary and Discussion

A significant deficit exists between the academic achievement of students of differing socioeconomic status in Alabama (U.S. Department of Education, 2022). Low-SES students consistently underperform in all subject areas when compared to their peers (U.S. Department of Education, 2022). The purpose of this study was to analyze the relationships between collective teacher efficacy beliefs, the dimensions of professional learning communities, and academic achievement in Alabama's high-poverty elementary schools. The study aimed to identify aspects of school culture contributing to the success of outlier schools. The researcher employed a convergent, mixed-method design to answer the following research questions:

1. To what extent does collective teacher efficacy differ between outlier and non-outlier schools?
2. To what extent do the dimensions of professional learning communities (shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, relationships, and structures) differ between outlier and non-outlier schools?
3. To what extent do relationships exist between individual professional learning community dimensions (shared and supportive leadership, shared values and

vision, collective learning and application, shared personal practice, relationships, and structures) and collective teacher efficacy in outlier and non-outlier schools?

4. How do school protocols or qualities that impact collective teacher efficacy or the dimensions of professional learning communities differ in outlier and non-outlier schools?

Data were collected from teachers at high-achieving, high-poverty schools known in this study as "outlier schools," and high-poverty, low-achieving schools known in this study as "non-outlier schools." The researcher distributed surveys to teachers from four outlier schools and four non-outlier schools in southeast Alabama. The three-part survey (Appendix B) included Goddard's (2002) Teacher's Collective Efficacy Scale Short Form, Hipp and Huffman's (2010) Professional Community Assessment-Revised and seven open-ended questions written by the researcher. Quantitative data were analyzed using the R statistical software package, and qualitative data were analyzed using Saldaña's (2021) approach to systematic coding.

Findings

Debate exists amongst researchers regarding the impact of collective teacher efficacy beliefs in high-poverty schools (Erdogan et al., 2022; Goddard et al., 2000; McCoach & Colbert, 2010; Moolenaar et al., 2012). This discrepancy, coupled with a lack of research supporting the connection between CTE and individual dimensions of PLCs (Moosa, 2021), pointed to a gap in research. The following sections will address conclusions related to each research question posed in this study.

Summary of Quantitative Results

The first research question examined how collective teacher efficacy beliefs differed between outlier and non-outlier schools. Statistical analysis revealed no significant difference between the two groups, though the mean score of outlier schools was slightly higher than that of non-outlier schools. Existing research previously debated the impact of collective efficacy on academic achievement in high-poverty schools (Erdogan et al., 2022; Goddard et al., 2000; McCoach & Colbert, 2010; Moolenaar et al., 2012). While the quantitative findings from this study did not reveal a significant difference between the schools of differing achievement levels, discussion of the qualitative findings will highlight differing perceptions of collective efficacy between the two groups.

The second research question examined the extent to which the six dimensions of professional learning communities were associated with achievement in high-poverty schools. A significant difference was identified in shared vision and values and relationships between the two groups. No significant difference was identified between the other four dimensions.

The third research question examined the extent to which relationships existed between each of the six dimensions of professional learning communities and collective teacher efficacy. Overall, more notable relationships were identified between CTE and PLC dimensions in outlier schools. The strongest relationships identified through analysis were moderate relationships between CTE and structures and shared personal practice in outlier schools. Out of the six dimensions of PLCs, five had significant relationships with CTE in outlier schools, only excluding collective learning and application. All six

dimensions of PLCs had significant relationships with CTE in non-outlier schools. In outlier schools, strength of relationships ranged from .39 to .57, while a smaller range of .39 to .48 was identified among non-outlier schools.

Summary of Qualitative Results

The fourth research question asked how school protocols or qualities related to collective teacher efficacy or the dimensions of professional learning communities differed between the two groups. While teachers from outlier and non-outlier schools shared various perspectives, there were several areas where the groups' answers differed greatly. Qualitative data revealed the most notable differences in themes related to three variables: collective teacher efficacy, shared vision and values, and relationships. One of the most notable differences was how teachers from outlier schools saw student achievement data as the best evidence of their staff's efficacy; teachers from non-outlier schools reflected on relationships and climate. Teachers from outlier schools reported tangible structures were used to promote shared vision and values. The non-outlier school teachers explained that vision and values were simply general understandings. Finally, the theme generated from outlier teacher responses relating to the evidence of trust was collaboration, whereas the theme amongst non-outlier teachers was communication. Analysis revealed the two groups saw relationships in the workplace quite differently. The outlier group focused closely on the professional relationship, and the non-outlier group focused on the social aspect of relationships.

One dimension with similarity was shared personal practice. Both groups reported structured opportunities supporting this dimension were available to them. Answers to questions about shared and supportive leadership, collective learning and application, and

structures suggested a nuanced presence of the dimensions within the schools. For example, teachers from both schools discussed opportunities to provide input towards decision making; however, while teachers from outlier schools mainly mentioned face-to-face opportunities, teachers from non-outlier schools frequently discussed digital options such as surveys.

Joint Findings

Conclusions of the study were formed from points where quantitative and qualitative results converged or diverged. Quantitative analysis identified a significant difference in shared vision and values between the two groups. This dimension was stronger in outlier schools than non-outlier schools. While this dimension was moderately related to CTE in outlier and non-outlier groups, the qualitative data aided in interpreting the results. The open-ended question relating to shared vision and values asked participants, "How does your school promote common goals or beliefs amongst staff members?" Analysis of the participants' responses revealed outlier schools had systemized structures promoting the vision and values of the school. In contrast, teachers from non-outlier schools could only speak to a general understanding amongst their staff.

Findings related to structures provided insight to a possible connection to the difference in shared vision and values. Though there was not a significant difference in structures between the two groups, a moderate relationship was identified between the dimension of structures and CTE in outlier schools and non-outlier schools. Though structures were similarly related to CTE, the role of structures was perceived differently in each group. For example, teachers from outlier schools described structures that embedded their schools' vision and values into daily routines. Qualitative data suggested

the inclusion of tangible systems and routines which intentionally support the work of teachers at outlier schools.

Qualitative data suggested the main value of teachers at outlier schools was students' success. This is a key component of the definition of a professional learning community (DuFour & Eaker, 1998). While no significant difference in CTE beliefs was identified between the two groups, qualitative data illustrated that teachers from outlier schools saw data as the best evidence of their efficacy; Teachers from non-outlier schools pointed to relationships and climate. This theme was threaded throughout multiple notable areas of the results.

Though teachers from non-outlier schools cited relationships and climate as the best evidence of their efficacy as a staff, this was not supported by quantitative findings. There was a significant difference between relationships in the two groups, with outlier schools demonstrating a stronger presence of this dimension than non-outlier schools. To understand how relationships were perceived, participants were asked what served as evidence of respect and trust in the workplace. Teachers from outlier schools commonly described professional collaboration as evidence. In contrast, the theme derived from the responses of non-outlier teachers was communication. The dimension of relationships was weakly related to CTE in the outlier group and the non-outlier group. Analysis of other variables provided more context to aid in understanding the difference in relationships, such as shared personal practice and collective learning and application.

Another notable result found CTE was moderately related to shared personal practice in outlier schools and non-outlier schools. Shared personal practice was considered a significant support to learning communities by Hord (1997). DuFour and

Eaker (1998) explained continuous learning was only possible with collaboration, and these practices bring focus to "organizational renewal" rather than just that of individuals (p. 26). Sharing one's practices requires close relationships and collaboration, which was evident in both groups based on qualitative and quantitative data; however, the ways in which these dimensions manifested were described differently. As previously stated in chapter four, quantitative data indicated that the dimension of relationships was more prevalent in outlier schools. Teachers from outlier schools described a collaborative culture when questioned about relationships. The theme of collaboration was derived from many examples of individuals working together towards tasks that promoted student learning such as planning and obtaining resources for instruction. The teacher's responses aligned closely with verbiage from the survey items relating to relationships; for example, one item stated, "School staff and stakeholders exhibit a sustained and unified effort to embed change into the culture of our school." Another item described "honest and respectful examination of data" to improve student outcomes.

In contrast, a theme of communication was identified among responses from the non-outlier group. Though comments were overwhelmingly positive in nature, respondents frequently described more relational qualities such as support, encouragement, listening, and friendship. While Hord's (1997) description of relationships in learning communities included social comradery, there was more emphasis on the professional relationship. This contrast revealed relationships in the workplace were evaluated differently between the two groups. The outlier group evaluated the relationships through the lens of their professional work, while the non-outlier group focused on the social dimensions.

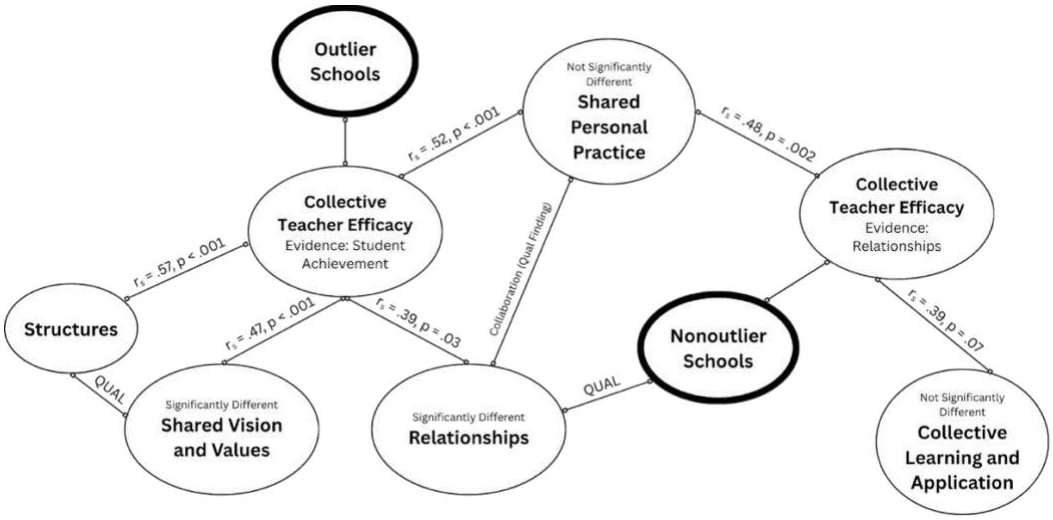
Hord's (1997) discussion of relationships as a dimension of professional learning communities described not only a friendly, but productive environment for educators. Though collaboration was highlighted through open-ended responses from the outlier group, there was no significant difference in collective learning and application between the two groups. Collective learning and application was moderately related to CTE in non-outlier schools, but no significant relationship was identified between the dimension and CTE in outlier schools. This disconnect may be explained by the difference in the groups' perception of collective efficacy. Outlier teachers overwhelmingly reported their students' achievement data was the best way to measure efficacy, while the non-outlier group pointed towards their relationships. It is possible the non-outlier group's differing value and perception of relationships led to collective learning and application being related to collective efficacy beliefs in these schools. While teachers from the non-outlier group perceived their relationships and climate to increase their efficacy, their schools' achievement levels demonstrate otherwise. This disconnect suggests that overemphasizing the social aspects of staff relationships over productivity provides unfavorable results.

The areas of convergence and divergence in the data sets provided much to consider. While levels of collective teacher efficacy were not significantly different between the groups, starkly different perceptions of the evidence of efficacy were evident. Outlier schools viewed student data as the greatest indicator of collective efficacy, and this focus on student outcomes was noticeable throughout other points in analyses. For example, teachers described collaborating with others to meet students' learning needs. This difference was evident when analyzing the context of the differences

in relationships and shared vision and values between the two groups. The connections between these distinctions have implications for improving student achievement in high-poverty elementary schools. Figure 3 provides a visual display of the joint conclusions.

Figure 3

Joint Findings



Recommendations for Practice

Many schools, especially those serving high-need students, find it difficult to implement all dimensions of professional learning communities with fidelity (Muñoz & Branham, 2016). Each multifaceted dimension requires ongoing attention and effort (DuFour & Eaker, 1998; Hord, 1997). The purpose of the study was to identify how leaders can promote collective teacher efficacy and the dimensions of professional learning communities most leverageable to improve student achievement in high-poverty elementary schools. This knowledge will allow leaders to optimize their efforts when time and resources are limited. Analysis of the quantitative and qualitative data for similarities and differences between high-poverty schools with differing achievement produced several recommendations for practice. Overall, quantitative data indicated

relationships and shared vision and values were the two dimensions of PLCs related to student achievement in the high-poverty elementary schools. Qualitative data provided context into how these dimensions manifested in the different groups, in addition to differing perceptions of collective efficacy. Leaders of high-poverty elementary schools should consider the following recommendations for improving student achievement:

1. A school's vision and values should be centered around student achievement. While climate and culture carry importance, leaders should ensure efforts to improve this area do not overshadow the main purpose of a professional learning community-improving student outcomes (DuFour & Eaker, 1998). Achievement-centered vision statements were evident in outlier schools participating in the study; these teachers explained how vision statements relating to student achievement served as constant reminders of their purpose. It is essential for a school's shared vision and values, not limited to a mission statement, to go deeper as to how educators will collectively fulfill their responsibilities to all students. DuFour and Eaker (1998) explained there are four building blocks that can be used to guide the direction of a school. These included mission/purpose, vision, values, and goals. When explaining mission and purpose, the authors stated that though many schools use the cliché statement, "we believe all students can learn," there is nuance to that statement. The following recommendations enable a school to put and achievement-centered vision statement into regular practice.
2. School leaders should promote the use of data for evaluation of instruction and implemented programs. Routines should be in place that engage teachers in collecting, analyzing, and celebrating student data regularly. Such routines could

include problem solving team (PST) meetings, professional development regarding the use of data, grade level data digs, or utilizing instructional coaches. Such practices are not only useful for practical purposes, such as identifying student needs and monitoring progress; the process of interpreting and applying data contributes to shaping the vision and values of the staff. Hord (1997) explained data-based discussions promoted "a culture of high intellectual quality" amongst members of a professional learning community.

3. Leaders should create systemized structures that embed the school's vision and values into everyday routines of the staff. Data-based discussion was one piece of the process as demonstrated in this study. While actions and routines speak loudly, they need to be explicitly connected to a carefully crafted depiction of the school's vision. Individuals will see their professional work as more meaningful if they are able to connect it to a larger goal or vision (DuFour & Eaker, 1998). By embedding the statement of the vision and values into daily routines, staff members will be reminded of how individual and collective efforts are aligned to the school's direction; furthermore, they may be empowered to discern behaviors or choices not aligned with the school's goals. Teachers from outlier schools cited many ways these visions and values were incorporated into daily routines, including being read over the announcements and being posted in areas that were accessible all stakeholders. By placing intentional focus on the school's vision and values, leaders can avoid inefficient focus on components that the study did not relate to improving student achievement, such as general understandings among the staff or social aspects of relationships.

Limitations

This study provides a contribution to current research discussing collective teacher efficacy, the dimensions of professional learning communities, and achievement in high-poverty elementary schools. Limitations of the study included a small sample size. The sample size was impacted by several challenges. Few schools qualifying as "outliers" existed in the southeast region of Alabama. Of the schools that were available, several did not respond to the invitation to participate in the study. A number of incomplete responses reduced the sample size. This limits how results can be generalized.

A limitation to the analyses of quantitative data was the assumption of parametric tests were not being met. As was explained in Chapter IV, much of the data failed to meet the assumption of normality. In order to combat this issue, the researcher employed nonparametric tests to analyze the data. While parametric tests are less conservative, the nonparametric tests avoided issues from using parametric tests inappropriately.

Recommendations for Future Research

This study contributed to the existing body of knowledge relating to collective teacher efficacy, the dimensions of professional learning communities, and achievement in high-poverty schools. The results of the study showed opportunities for further research into the roles of collective teacher efficacy and the dimensions of professional learning communities in high-poverty elementary schools. The following list includes the researcher's recommendations for future research in this area:

1. Future research could analyze how shared vision and values, relationships, and collective efficacy interact to impact achievement in a mixed methods study. Deeper investigation into interaction between these elements, in addition to

qualitative data collection, could provide insight towards how they work together to promote student achievement.

2. Future research could be conducted with a larger sample size to promote generalizability. Increasing the sample size would allow for more robust statistical analyses.
3. Future research could examine the differences of how teachers in each group perceive the values and vision of their schools. Understanding these perceptions and identifying trends could provide further insight towards how this dimension is related to achievement.
4. Future research could include a case study involving an outlier school could provide even further insight into the interworking of a school that overcomes the challenges of serving a high-poverty population.
5. Future research could include an experimental study that examines whether focus on improving the two PLC dimensions highlighted in this study, shared vision and values and relationships, has a positive impact on non-outlier schools. The use of mixed methods could help determine how this focus impacted perceptions of the staff in addition to student achievement.

Conclusion

This study examined how relationships between collective teacher efficacy beliefs and the dimensions of professional learning communities differed in high-poverty elementary schools with differing levels of achievement. The objective of the study was to evaluate these relationships and identify which areas of the PLC model were most leverageable for improving student achievement in high-poverty schools. The study was

inspired by a lack of studies considering all of the dimensions of professional learning communities (PLCs) and collective teacher efficacy (CTE) with the use of mixed research methods (Anderson & Olivier, 2022; Moore et al., 2011).

Findings from the study indicated two dimensions of professional learning communities were related to achievement: shared vision and values and relationships. Though no significant difference was identified in collective teacher efficacy beliefs, the study found teachers from outlier schools viewed student achievement as the best evidence of their efficacy. Connections between the qualitative and quantitative data were used to explore the relationships between the notable results relating to achievement.

School leaders should seriously consider how prioritizing the indicated areas of the PLC model, shared vision and values and relationships, could impact the trajectory of their students' success. Though the underperformance of our nation's low-SES students is discouraging, the success of outlier schools suggests more can be done to address their needs (Desimone et al., 2013). Future research should continue to pursue understanding of what sets these schools apart for the sake of not only each individual student, but our nation as a whole.

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Appendix A:

IRB Protocol

04.18.2025

Institutional Review Board (IRB)
for the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 04583-2025

Responsible Researcher(s): Alexandra Marshall

Supervising Faculty: Dr. Michael Bochenko

Dissertation Research Member: Dr. April Strevig

Project Title: *Collective Teacher Efficacy, the Dimensions of Professional Learning Communities, and the Link to Achievement in High-Poverty Elementary Schools.*

Institutional Review Board Determination:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations, **category 2**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

Comments:

- *Your research study may begin at the following approved research locations:* [redacted]. *Additional locations will be considered upon receipt of a letter of cooperation.*
- *Upon completion of the research study all data (e.g. data, pseudonym/email lists, transcripts, etc.) must be securely maintained (e.g. locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a* ***minimum of 3 years****. At the end of the required time, collected data must be permanently destroyed*

☒ ***Proposed modifications must be submitted to the IRB Administrator at tmwright@valdosta.edu for review and approval before implementation is permitted.***

Elizabeth W. Olphie *03.26.2025*

Elizabeth W. Olphie, IRB Administrator Date

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-259-5045.

Revised: 06.02.16

Appendix B:

Survey Materials

Research Statement:

You are being asked to participate in a survey research project entitled *"*Collective Teacher Efficacy, the Dimensions of Professional Learning Communities, and the Link to Achievement in High-Poverty Elementary Schools" which is being conducted by Alexandra Marshall*,* a doctoral candidate at Valdosta State University. The purpose of the study is to understand how collective teacher efficacy beliefs and the dimensions of PLCs impact student achievement in high-poverty elementary schools. You will receive no direct benefits from participating in this research study. However, your responses may help us learn more about promoting student achievement. There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life. Participation should take approximately 15 minutes to complete. This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. Participants must be at least 18 years of age to participate in this study. Your completion of the survey serves as your voluntary agreement to participate in this research project and your certification that you are 18 or older. You may print a copy of this statement for your records.

Questions regarding the purpose or procedures of the research should be directed to Allie Marshall at alexatucker@valdosta.edu. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants.

If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 229-253-2947 or irb@valdosta.edu.

Instructions:

Thank you for your willingness to participate in this study. Your voice is valued. Results of this study can be used to support schools like yours in the [redacted] area. Your responses are confidential and will only be used for research purposes. This survey assesses your perceptions of qualities and practices of your school. After reading each statement, use the scale to indicate your level of agreement. The open ended questions will allow you to elaborate on the initial statements.

Part 1: Collective Teacher Efficacy Scale (Goddard, 2002) Participants ranked the following statements using a 6-point Likert-scale (strongly agree to strongly disagree).	
1	Teachers in this school are able to get through to difficult students.
2	Teachers here are confident they will be able to motivate students.
3	Teachers in this school really believe every child can learn.
4	If a child doesn't want to learn, teachers here give up.
5	Teachers here don't have the skills to produce meaningful student learning.
6	These students come to school ready to learn.
7	Homelife provides so many advantages the students here are bound to learn.
8	Students here just aren't motivated to learn.
9	The opportunities in this community help ensure that these students will learn.
10	Learning is more difficult at this school because students are worried about their safety.
11	Substance abuse in the community makes learning difficult for students here.
12	Teachers in this school do not have the skills to deal with student disciplinary problems.

Part 2: Professional Learning Community Dimensions (Olivier et al., 2010) Participants ranked the following statements using a 4-point Likert-scale (strongly agree to strongly disagree).	
Shared and Supportive Leadership	
13	Staff members are consistently involved in discussing and making decisions about most school issues.
14	The principal incorporates advice from staff members to make decisions.
15	Staff members have accessibility to key information.
16	The principal is proactive and addresses areas where support is needed.
17	Opportunities are provided for staff members to initiate change.
18	The principal shares responsibility and rewards for innovative actions.
19	The principal participates democratically with staff sharing power and authority.
20	Leadership is promoted and nurtured among staff members
21	Decision-making takes place through committees and communication across grade and subject areas.
22	Stakeholders assume shared responsibility and accountability for student learning without evidence of imposed power and authority.
23	Staff members use multiple sources of data to make decisions about teaching and learning.
Shared Values and Vision	
24	A collaborative process exists for developing a shared sense of values among staff.
25	Shared values support norms of behavior that guide decisions about teaching and learning.
26	Staff members share visions for school improvement that have undeviating focus on student learning.
27	Decisions are made in alignment with the school's values and vision.
28	A collaborative process exists for developing a shared vision among staff
29	School goals focus on student learning beyond test scores and grades.

30	Policies and programs are aligned to the school's vision.
31	Stakeholders are actively involved in creating high expectations that serve to increase student achievement.
32	Data are used to prioritize actions to reach a shared vision.
Collective Learning and Application	
33	Staff members work together to seek knowledge, skills and strategies and apply this new learning to their work.
34	Collegial relationships exist among staff members that reflect commitment to school improvement efforts.
35	Staff members plan and work together to search for solutions to address diverse student needs.
36	A variety of opportunities and structures exist for collective learning through open dialogue.
37	Staff members engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.
38	Professional development focuses on teaching and learning.
39	School staff members and stakeholders learn together and apply new knowledge to solve problems.
40	School staff members are committed to programs that enhance learning.
41	Staff members collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.
42	Staff members collaboratively analyze student work to improve teaching and learning.
Shared Personal Practice	
43	Opportunities exist for staff members to observe peers and offer encouragement.
44	Staff members provide feedback to peers related to instructional practices.
45	Staff members informally share ideas and suggestions for improving student learning.

46	Staff members collaboratively review student work to share and improve instructional practices.
47	Opportunities exist for coaching and mentoring.
48	Individuals and teams have the opportunity to apply learning and share the results of their practices.
49	Staff members regularly share student work to guide overall school improvement.
Supportive Conditions - Relationships	
50	Caring relationships exist among staff and students that are built on trust and respect.
51	A culture of trust and respect exists for taking risks.
52	Outstanding achievement is recognized and celebrated regularly in our school.
53	School staff and stakeholders exhibit a sustained and unified effort to embed change into the culture of the school.
54	Relationships among staff members support honest and respectful examination of data to enhance teaching and learning.
Supportive Conditions - Structures	
55	Time is provided to facilitate collaborative work.
56	The school schedule promotes collective learning and shared practice.
57	Fiscal resources are available for professional development.
58	Appropriate technology and instructional materials are available to staff.
Statements	
59	Resource people provide expertise and support for continuous learning.
60	The school facility is clean, attractive and inviting.
61	The proximity of grade level and department personnel allows for ease in collaborating with colleagues.
62	Communication systems promote a flow of information among staff members.
63	Communication systems promote a flow of information across the entire school community including: central office personnel, parents, and community

	members.
64	Data are organized and made available to provide easy access to staff members.

	Part 3: Open Ended Questions
65	In your opinion, what is the best evidence of the effectiveness of your school's staff?
66.	How do staff members at your school have opportunities for leadership or input towards decision making?
67.	How does your school promote common goals or beliefs amongst staff members?
68.	When do staff members at your school work together to solve problems or try new strategies?
69.	When do individuals at your school have opportunities to apply or discuss new strategies?
70.	Is respect and trust evident amongst staff members? How do you know?
71.	When in your school's schedule can you learn collaboratively or share ideas?