

UNIVERSITY OF CALIFORNIA, SAN DIEGO
CALIFORNIA STATE UNIVERSITY, SAN MARCOS

The Role of Leadership in Developing and Sustaining Collective Efficacy
in a
Professional Learning Community

A dissertation submitted in partial satisfaction of the
requirements for the degree of Doctor of Education
in
Educational Leadership

by
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2011

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2011

DEDICATION

This dissertation research study is dedicated to my wife Monica, who made this journey possible because of her love, devotion, and unwavering belief in my ability to achieve this doctoral goal.

I also dedicate this dissertation to my three sons, Colin, Keegan, and Conor, for their love, support, and patience; due to the time I spent away from them in order to accomplish my educational dream. I would also like to thank all of my family members, especially; my mom and dad, for their words of encouragement, support, and love.

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ABSTRACT OF THE DISSERTATION

The Role of Leadership in Developing and Sustaining Collective Efficacy in a
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This mix methods study focused on the development and potential long-term sustainability of collective efficacy and the role leadership played in a collaborative professional learning community (PLC) environment. In schools across the United States, program improvement initiatives have been implemented to help close the achievement gap to meet the proficiency requirements of the No Child Left Behind Act (NCLB) of 2001. Research suggests that teachers are more likely to meet the achievement gap

demands if they: (a) work in collaboration with other teachers, (b) are supported and encouraged to look at student work and other achievement data together, (c) design and co-teach lessons and review their effects, and, (d) plan appropriate interventions collectively. One reform method that supports collaborative teacher work and has empirically shown potential in a number of studies in improving student achievement is professional learning communities (PLCs). This study investigated the role of leadership in developing and sustaining collective efficacy in a specific PLC reform model designed by DuFour and Eaker (1998). The study's quantitative data were analyzed using descriptive statistics, multiple regression analysis, bivariate correlation tests, ANOVA tests, and structural equation modeling (SEM) testing. Qualitative data were analyzed to support and triangulate the quantitative findings. The results indicated that there were no statistical differences between groups when analyzing study participant demographic data. The variables of PLCs, collective efficacy, and transformational leadership were positively correlated using bivariate correlations testing. It was also determined that the PLC sub-construct of "collective goals" had a stronger predictive influence on the collective efficacy and transformational leadership constructs compared to the PLC sub-constructs of "collective actions" and "focus on results." In the SEM model, "collective goals" again presented as the strongest predictive influence on the collective efficacy sub-constructs of "task analysis" and "group competence." Structural equation modeling also determined that the transformational leadership sub-construct of "transforming the organization" had the strongest predictive influence on total PLC and total collective efficacy.

CHAPTER 1: INTRODUCTION

With the advent of standards-based education coupled with significant accountability measures mandated by the tenets of *No Child Left Behind (NCLB)* (2001), public schools across the United States are taking drastic measures to ensure, with the purpose of reaching proficient academic performance levels by the year 2014, the learning and achievement for all students regardless of race, ethnicity, or economic status (U.S. Department of Education, 2001). This focus on proficient academic performance levels in terms of learning outcomes for all students is creating fervor, passion, and uneasiness at the local, state, and federal levels. The guidelines of NCLB including mandating the academic proficiency for all students to achieve a minimum level of proficient academic performance in the areas of language arts and mathematics by the year 2014 cannot be overlooked or ignored due to significant penalties pronounced by the federal government. Significant penalties can include financial penalties, whole-school staffing reconstitution, and the takeover of schools etc., if benchmark results from state testing are not met.

To meet the demand for 100% of students being proficient on state standards, one reform strategy that has shown promise is greater teacher collaboration (Bradford, 2008; Dale, 2004; Gallucci, 2003; Grider, 2008; Hord, 1997; Walgamuth, 2007; Wenger, 1998) often called professional communities, communities of practice, or learning communities. This concept has been popularized and spread nationally to many schools and districts through the work of DuFour and Eaker (1998), now commonly known as *Professional Learning Communities (PLCs)*. There has been limited research on this model and even less is known about how this model may influence teacher instructional practices and/or

teacher confidence as measured by the level of efficacy teachers may or may not feel about their work product. Working together in a professional community requires new skills and attitudes that may not be part of teachers' current repertoire since previously, most teachers have worked, and some still work, in isolation and with considerable autonomy. This study explored what role efficacy might play in supporting teachers in a DuFour and Eaker professional learning community model. Furthermore, there is little known about the role leadership plays to best support the efficacious collaborative process within a DuFour and Eaker PLC. This study explored this relationship as well.

The results of this study will help to fill these gaps in research by examining the level of implementation of professional learning communities in one district, which has systematically implemented the DuFour and Eaker PLC model for six years. According to Grider, (2008) research linking student outcomes to professional learning communities is limited. In addition, research specifically focused on the DuFour and Eaker (1998) model of professional learning communities has not been addressed in a formal study with regards to student achievement or teacher collective efficacy. Particularly important to this study is the exploration of the relationship between PLC characteristics, teacher collective efficacy, and the role of leadership in supporting or limiting the work of the teachers in the DuFour and Eaker PLC model.

Across the United States, teachers work in demanding high-stakes reform-minded public school environments where there is a constant and unrelenting focus on improving student achievement. With this constant and necessary focus on improving student achievement, prior research suggests that teacher efficacy may be critical to improving student learning (Anderson, Green, & Loewen, 1998; Ashton & Webb, 1986; Ross, 1992;

Ross, Hogaboam-Gray, & Gray, 2003); and at the same time, collective efficacy may be difficult to maintain especially in the face of increased demands for individual teacher accountability (Mintrop, 2004; Mintrop & Trujillo, 2007). For the purposes of this study, the researcher was interested in examining both individual and collective teacher efficacy. What is individual *teacher efficacy*? Individual teacher efficacy is a self-evaluation of the individual teacher's perceived ability to perform a required function or duty for the learning organization's cause. When a group of teachers are evaluating their effectiveness as a learning unit, they are evaluating the *collective efficacy* of the group's ability to perform a required function or duty necessary for the effectiveness of the learning organization (Bandura, 1997).

Statement of the Problem and Rationale for the Study

In school districts across the United States, teachers are faced with the daunting task of working in stressful learning environments where many students come to school carrying their proverbial "backpack of issues" readily "unpacking" these issues in their respective classrooms in tandem with their school books, lunches, and homework. Once unpacked, teachers are there ready to serve their students providing as much support, as they feel efficacious enough to deliver. In the 21st century classroom, this multi-dimensional increased demand and expectation for high academic performance support for students, is juxtaposed, with the increased multitude and varied social and emotional supportive needs of students in an educational environment where the resources to provide such support diminishes due to budget constraints or personnel reductions.

The stakes are high in the current reality of public education as educators are faced with the realization that by 2014, 100% of students will be required to academically

perform as proficient recipients of knowledge. Teachers and administrators are keenly aware of the 2014 deadline but may feel that attaining this goal is insurmountable without the proper training and effective school-wide reform implementation. Some key points to consider:

1. NCLB has highlighted the challenge by requiring disaggregated presentation of student achievement results, which have consistently shown that too many students from low-income and linguistically diverse backgrounds are not succeeding at levels to allow them to be successful in work and in life. To address school failure, NCLB has set a high standard of 100% proficiency for all subgroups in terms of Federal adequate yearly progress (AYP) by 2014 even if a district's state academic performance index (API) score is 800 or greater (NCLB, 2001; U.S. Department of Education, 2001).
2. In schools and districts across the United States, there has been a surge to improve student outcomes by implementing the latest "best practices" with regards to school reform. Practitioners have pursued multiple paths to achieve consistent best results for students. Some commonly known school reform efforts have been, *Outcome Based Education (OBE)*, *Standards-Based Education (SBE)*, *Comprehensive School Reform (CSR)*, and *No Child Left Behind (NCLB)*, etc. (Borman et al., 2003; Carvin, 2004). Although some of these reforms have produced student gains, the challenge of underperformance for some student groups still remain. (Datnow, Borman, & Stringfield, 2003; Ross, Stringfield, & Smith, 1996).

3. Two areas that have continued to surface in education as essential to reform are leadership (Chen & Bliese, 2002; Evans, 2009; Marks & Printy, 2003; Printy, 2008; Wahlstrom & Louis, 2008) and teacher collaboration (DuFour & Eaker, 1998; Hord, 1997; Gallucci, 2003; Little, 1993; Louis & Marks, 1997, 1998; Rosenholtz, 1989). While these two research areas have tended to explore what leaders do in the process of reform and the work of learning communities (PLCs), there has been less research or exploration analyzing the relationship between leadership and professional learning communities (Olsen & Chrispeels, 2009). To help close this gap, this study purposely explored the relationship between leadership behaviors and the quality and nature of PLCs, particularly those PLCs implementing a model of professional learning communities articulated by DuFour and Eaker (1998).

4. An issue related to school improvement and PLCs is teacher collective efficacy. Teacher collective efficacy is defined as the perceptions of teachers in a specific school that the faculty as a whole can execute courses of action required to positively affect student achievement or successfully implement the desired goals (Goddard, 2002). Some research suggests that schools that have higher collective efficacy also tend to have higher levels of achievement (Bandura, 1993; Goddard, 2001; Mark & Louis, 1997; Ross, 1992). This suggests that if schools demonstrate strong PLC characteristics they are also most likely to score higher on the construct of collective efficacy. This study also explored this issue. In addition, at the time of this study, less well researched was the relationship

between teacher collective efficacy and the role of leadership. This study also explored this relationship.

Overview: Professional Learning Communities

Research in the area of individual teacher and/or grade-level collective efficacy development and the role of leadership in a collaborative learning environment is a research topic that could provide administrators with effective strategies to support teachers in analyzing best-practice pedagogy in order to improve student learning outcomes. One of the collaborative learning environment approaches being adopted by many districts to raise achievement levels is the implementation of *Professional Learning Communities (PLCs)*. Professional learning communities describe educators as being committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve improved results for the students they serve (DuFour & Eaker, 1998).

According to DuFour, DuFour, Eaker, and Many (2006) and Hord (1997), professional learning communities operate under the assumption that the key to improved learning for students is to also have continuous job-embedded learning for educators. DuFour and Eaker define a professional learning community as a place where teachers work collaboratively by committing themselves to improving the teaching and learning process by collectively inquiring on how to deliver improved pedagogy in order to achieve better results for students. The PLC philosophy of DuFour and Eaker (1998) provided the theoretical professional learning community framework for this study. There are six prescribed PLC characteristics coupled with three operational principals that best describe the DuFour and Eaker professional learning community model. The six

characteristics are: (a) shared mission, vision, values, and goals, (b) collective inquiry, (c) collaborative teams, (d) action orientation and experimentation, (e) continuous improvement, and (f) results orientation. The three underlying operational principles necessary to effectively support the efforts of a professional learning community are: (a) ensuring all students learn at high levels, (b) supporting and promoting ongoing teacher collaboration and teacher professional development, and (c) focusing on student results.

Professional Learning Communities and Leadership

As teachers strive to produce positive student achievement results even in the midst of current dismal school budget conditions and other negative factors out of their locus of control, school leaders need to focus on what they can do to more effectively support teachers and staff members in a shared-decision making learning environment. In the DuFour and Eaker (1998) professional learning community model, the focus is on teacher collaboration with little mention of the role of the site administrator in supporting the collaborative process. This study sought to support the findings of other research, which has shown that school leadership is central to fostering teacher leadership and collaboration in PLCs (Heck & Hallinger, 2005; Olsen & Chrispeels, 2009; Wahlstrom & Louis, 2008). Effective support is critical in order to produce positive efficacy results in teachers and staff members no matter what conditions exist internally or externally that might affect the learning outcomes of the organization. When all school site members feel empowered to do great things in the name of positive student achievement, a sense of collective efficacy synergism emerges no matter what morose internal or external factors may be present (Hughes & Krisonis, 2007). Research in the area of professional learning communities is beginning to emerge with regards to collective efficacy and leadership

and will be discussed in the literature review. What is less well understood and researched is the role of leaders in fostering professional learning communities. Therefore, this study explored the leadership characteristics relevant to professional learning communities because professional learning communities may prove to be one methodology to support the efficacy of teachers and staff members through difficult times in public education. This study also explored the leadership and school conditions that would best help schools improve student achievement for all learning cohorts.

Efficacy

Reform efforts have been implemented in school districts across the United States with little attention paid to the affect these reform efforts have on the classroom teachers held responsible for the reform's effectiveness. Newman et al. (1989) concur that the typical educational reform movement is designed with minimal awareness of how the proposed reform plan connects to teachers' sense of efficacy and also lacks a clear understanding of the community of student learners with regards to the expectations that teachers have regarding their students. Efficacy is grounded in social cognitive theory produced from the work in the area of social learning theory (Miller & Dollard, 1941). Social learning theory posits that if a person wants to learn a particular behavior they would be more inclined to observe the desired behavior in others in order to model and solidify the expected behavior in themselves provided, that positive reinforcement is given after said behavior is positively presented by the individual. From this original research, Bandura (1977, 1997) developed a social cognitive theory based on his earlier work regarding self-efficacy. The description of self-efficacy provided by Bandura presents a belief that an individual possesses a desire to effectively accomplish a required

task based on the actions of said individual. Bandura believes that if an individual desires a specific outcome, specific actions are required of said individual in order to produce the expected outcome. In contrast, an individual can also have internal doubts about their abilities to perform a particular task, which in turn, will reduce the efficacy level of the individual.

Bandura (1997) presents four sources of individual efficacy-making influences: (a) mastery experience, (b) affective state, (c) vicarious experiences, and (d) social persuasion. Of the four sources of individual efficacy influences, mastery experiences have the strongest association to an individual's sense of self-efficacy (Bandura). Research also suggests that even though these four sources of individual efficacy influences are individually labeled and described, they operate as an interconnected system (Goddard, 2001; Goddard, Hoy, & Hoy, 2004). There have been numerous studies regarding collective efficacy over the years with limited empirical evidence supporting the value of collective efficacy (Goddard & Goddard, 2001). Research on improving student achievement has indicated that schools with high levels of collective efficacy have a better chance of improving student achievement (Leithwood & Jantzi, 2008; Wahlstrom & Louis, 2008). This study's primary focus was to research the role of leadership in building and sustaining collective efficacy in a DuFour and Eaker (1998) professional learning community model in addition to gathering data from classroom teachers on their perceptions of the implementation and effectiveness of their school's professional learning community.

Leadership and Collective Efficacy in a Professional Learning Community

There is minimal empirical evidence supporting the role of leadership to develop and sustain collective efficacy in a professional learning community model developed by DuFour and Eaker (1998). A persuasive body of research exists linking teachers' efficacy beliefs with the improved performance of their students (Ashton & Webb, 1986; Bandura, 1993; Goddard, 2002; Smith, Hoy & Sweetland, 2002). In a study by Ross and Gray (2006), leadership and perceived collective efficacy was examined using several structural equation models. Transformational leadership was one model that tested the connection to leadership and teacher commitment to organizational values when collective efficacy is involved. This current study looked at leadership's affect on collective efficacy in the DuFour and Eaker (1998) professional learning community model.

Purpose of the Study

The purpose of this study was to investigate the role of leadership in building and sustaining collective efficacy in a specifically designed model of professional learning communities developed by DuFour and Eaker (1998). To address this overarching purpose, several specific research questions were explored in this study.

Research Questions

- 1.0. What is the level of implementation of the characteristics of PLCs and the level of collective efficacy present within a PLC in a district implementing the DuFour and Eaker (1998) model for over six years?
- 1.1 What is the relationship between PLCs and teacher collective efficacy?

2.0. What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?

2.1. In what ways do school leaders build and support PLCs?

2.2. In what ways do school leaders foster collective teacher efficacy?

3.0. Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

Hypotheses

The following hypotheses were tested in this study:

- A. The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics.
- B. The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics.
- C. There is a direct relationship between PLC implementation and teacher collective efficacy.
- D. Schools that exhibit high levels of PLC characteristics also produce high levels of collective efficacy.
- E. There is a positive relationship between PLC characteristics, teacher collective efficacy, and leadership.
- F. Transformational leadership predicts PLC, which predicts the collective efficacy, which predicts student outcomes.

Overview of the Methods

To answer the research questions and test each hypothesis, a quantitative analysis of survey data coupled with a qualitative multi-case study was conducted in one

elementary school district with eight K-6 school sites to gain an understanding of the role of leadership in developing and sustaining collective efficacy in a professional learning community. As is typical of a case study with a mixed methods design approach, multiple sources of data were gathered (Yin, 2003). Purposefully selected one-on-one principal interviews as well as purposefully selected primary and upper grade-level individual teacher interviews were conducted after the quantitative survey data was collected and analyzed to unpack the quantitative results. The survey was designed to evaluate the perceptions of district teachers regarding the implementation level and effectiveness of their respective professional learning communities coupled with gathering their perceptions of the perceived collective efficacy levels of their professional learning communities and the role leadership played in the process.

Data Sources and Collection. The study incorporated an embedded mixed methods case study design drawing from multiple data sources. The primary data source was a district-wide electronic survey sent out to approximately 250 classroom teachers. In addition, one-on-one interview data were collected from a purposeful sampling of four principals and individual teacher interviews divided into a minimum of two primary (K-3) teacher interviews and a minimum of two upper grade (4-6) teacher interviews at each of the four schools where the principal interviews were conducted. The third data source was a review of both the district's PLC documents and the PLC documents from the four chosen schools. According to Yin (2003), multiple data sources increase the validity and reliability of a study.

The electronic survey addressed the constructs of leadership, collective efficacy, and professional learning community implementation and usage. As stated earlier, from

the quantitative statistical analysis, four schools were purposefully selected to conduct qualitative one-on-one principal and individual teacher interviews at both the primary and upper grade levels. The individual teacher interviews used a semi-structured interview protocol and were conducted to gather teacher perspective regarding the analysis of the quantitative statistical survey as it relates to teacher collaboration in a professional learning community. The respective school site administrators from each of the four schools were also purposefully selected to sit for a one-on-one qualitative interview with this researcher (Miles & Huberman, 1994).

Data Analysis. Quantitative statistical survey data was analyzed using SPSS statistical software (Pallant, 2007). Through the SPSS program, descriptive, factor analysis, bivariate correlations, multiple regression, ANOVA, and structural equation modeling methodologies were used to explore the relationship among the variables (Creswell, 2008). The qualitative interviews were analyzed using a constant comparative analysis approach (Glasser, 1965; Miles & Huberman, 1994) to identify themes and assign codes. To enhance the qualitative analysis, HyperRESEARCH software was used. In addition, grade, school, and district-level professional learning community documentation were reviewed in a similar way to identify themes and patterns to triangulate with both the quantitative and qualitative data. The quantitative data helped to discover if there were relationships among the variables of interest, whereas the qualitative data helped to clarify the how and why questions regarding PLCs, leadership, and teacher collective efficacy. Reviewing the documentation proved or disproved the existence of highly effective professional learning communities as well as supported or negated the quantitative and qualitative data.

Significance of the Study

According to Hoy et al. (2002), collective efficacy can be viewed as one of the most significant factors in explaining positive organizational functioning. Therefore, school leaders need to embrace and cultivate this philosophical ideology. Tagger and Seijts (2003) suggest that leadership training and development should hone in on leadership efficacy in order to increase collective efficacy capacity among school-site members. It is also understood that positive school-wide collective efficacy has been shown to positively impact student achievement results. However, two missing links to the phenomenon of collective efficacy and student achievement that this study sought to answer are: (a) what is the prescribed “best practice” organizational learning design required in order to flourish as a professional learning community? and (b) what is the role of leadership to positively develop and sustain both collective efficacy and student achievement in a professional learning community? Building on past research regarding collective efficacy and student achievement, this study provides evidence to bridge the constructs of collective efficacy and positive student achievement by studying their potential association to the role of leadership in a professional learning community model designed by DuFour and Eaker (1998).

The significance of the study’s location should also be addressed in order to clearly understand the motivation of this researcher. “Ocean View Union School District” (OVUSD) was selected as the location for the study because of its experience with the training and implementation of the DuFour and Eaker PLC model for over six years. Even though OVUSD is considered a high-achieving school district not only in its county but statewide as well, some education policymakers and pundits believe the conditions

and constraints of NCLB may not be relevant or as pressing for school districts like the OVUSD as compared to districts across the state who are struggling to even meet the minimum statewide STAR score of 800. In the OVUSD, API test results, though already above the minimum state benchmark of 800, have consistently shown positive increases over the six years since the district implemented the DuFour and Eaker PLC (1998) model.

In addition, all eight schools have earned double-digit API increases in total over the six years since the implementation of PLCs. It should also be noted that the DuFour and Eaker professional learning community collaborative model has been the only significant professional development district-wide organizational plan implemented in the OVUSD over the last six years. Furthermore, it should be noted that it is very difficult for an already high-performing, high API earning district to significantly raise API scores from an already high level. The OVUSD has accomplished this feat raising the achievement bar for the majority learning cohorts of students and the scores for all learning cohort sub-groups (Hispanic, African American, English Language Learners, and Special Education) within the district regardless of their lack of factorability in terms of calculating API numbers due to their statistical insignificance. This has been accomplished through the professional learning community belief in “all students learning.”

This researcher knows firsthand that the only significant pedagogical initiative implemented in the district over the past six years has been the professional learning community model designed by DuFour and Eaker (1998). By researching the OVUSD as a purposeful location, the results of this study may support the implementation of the

DuFour and Eaker professional learning community model not only for high achieving school districts but any school district serious enough to reform the status quo regarding the education of all students. The following table represents the district’s STAR test data during the implementation phase of the DuFour and Eaker professional learning community model. Individual school site achievement scores will be presented later in the study.

Table 1.1: “OVUSD” District API Scores

2002	2003	2004	2005	2006	2007	2008	2009	Total API Gain
901	921	920	936	941	946	944	959	58 Points

It is important to have a clear understanding of key terms and concepts discussed in this study. The following section provides a review of key terms and concepts used throughout this study to create a frame of reference with regards to the research topic. Only the essential key terms and concepts are presented in the following section to bridge a connection to the research questions.

Glossary of Key Terms and Concepts

Collaboration: “A systematic process in which people work together, interdependently, to analyze and impact professional practice in order to improve individual and collective results. In a PLC, collaboration focuses on the critical questions of learning: What is it we want each student to learn? How will we know when each student has learned it? How will we respond when a student experiences difficulty in

learning? How will we enrich and extend the learning for students who are proficient?”
(DuFour, DuFour, Eaker, & Many, 2006, p. 214).

Collective Efficacy: “The perceptions of teachers in a specific school that the faculty as a whole can execute courses of action required to positively affect student achievement or successfully implement the desired goals” (Goddard, 2002, p. 98).

Leadership Competencies: The internally possessed characteristics held by an individual in command of an organization such as being capable, able, skilled, fit, proficient, experienced, and knowledgeable to expertly carry out expected and normal job functions by an individual placed in charge of an organization to guide and direct others.

Leadership Effectiveness: The effectiveness exhibited by principals serving in their leadership capacity within five categories established by Kouzes and Posner. The categories are: Modeling the way, Inspiring a shared vision, Challenging the process, Enabling others to act, and Encouraging the heart (2002).

Learning Organization: “Organizations where people continually expand their capacities to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (Senge, 1990, p.3).

Principal: A person holding the position of school site leader/administrator as defined in their employment contract responsible for the site administration of school and district policies with regards to the education of students.

Professional Learning Communities (PLC): “Educators committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve better results for the students they serve. Professional learning communities operate under

the assumption that the key to improved learning for students is continuous job-embedded learning for educators” (DuFour, DuFour, Eaker, & Many, 2006, p. 217; Hord, 1997).

Teacher: A person possessing a valid teaching credential holding the position as a classroom educator as defined in their employment contract responsible for the effective implementation of school, district, and state policies within their respective classrooms with regards to the standards-based education of students.

Organization of the Study

This study is organized into six distinct chapters. Chapter One provided the introduction to the study as well as the statement of the problem, rationale for the study, purpose of the study, research questions, overview of the methods, significance of the study, and glossary of key terms and concepts. Chapter Two will discuss the relevant literature connected to leadership, collective efficacy, and professional learning communities. Chapter Three will discuss in depth, the research methods used in this study and the data analysis procedures utilized to answer the research questions. Chapter Four will provide a discussion on the specific quantitative findings of this study. Chapter Five will offer the results of the qualitative interview findings for this study. Lastly, Chapter Six will present the conclusions of the researcher, provide suggestions for future research efforts, and discuss the study’s implications for current practices.

CHAPTER 2: LITERATURE REVIEW

Nationally, intensive pressure to improve student academic outcomes is being felt at the school district level, local educational agency (LEA) level, and state level due to the *No Child Left Behind Act* (2001), which mandates requirements to have every student performing at a baseline proficiency level in English language arts and mathematics by the year 2014. Due to this intense focus on NCLB, educational systems are reorganizing for the anticipated arrival of cost-effective and research-based educational reform methodologies to achieve NCLB's legislative mandate. Some cost-effective and research-based reform methodologies such as professional learning communities, communities of practice and purposeful communities discussed in this literature review have shown promise as a strategy for school improvement (Gallucci, 2003; Hord, 1997; Marzano, Waters, & McNulty, 2005; Wahlstrom & Louis, 2008; Wenger & Snyder, 2000.)

Another professional learning community model needing empirical validity because of its self-reported causational or relational connection to organizational improvement and improved student achievement results is the professional learning community model developed by DuFour and Eaker (1998.) This study focused on the DuFour and Eaker professional learning community (PLC) model to elicit both quantitative and qualitative data to determine teachers' awareness and understanding of the level of PLC implementation and PLC effectiveness within their respective grade-level teams and also gathered both quantitative and qualitative data regarding leadership traits to support the development and sustainability of teachers' collective efficacy within a PLC.

With Adequate Yearly Progress (AYP) tied closely to NCLB and the high-stakes assessment and accountability system, educational leadership from the national level down to the state, district, and site levels are counting on the current abilities of teachers to deliver rigorous standards-based instruction in order to raise student achievement results. The impetus for the current educational reform movement stems from the historic document, *A Nation At Risk: The Imperative for Educational Reform*, first published in 1983 by the National Commission on Excellence in Education. Twenty-five years later, the American educational system continues to have difficulty closing the ever-widening achievement gap for students of color, students identified with learning needs, English learners, and students acknowledged as economically disadvantaged (Lips, 2008).

Most importantly, with K-12 public school funding at over \$550 billion per year in the United States (U.S. Department of Education, 2009), our students and parents are counting on the public educational system to develop and sustain best practices to meet the individual learning needs of all students. This reliance on teachers to deliver individualized and differentiated instruction to all students requires effective leadership in order to continue moving more and more students to the proficient and advance range to meet the accountability demands required of NCLB. The following literature considerations will focus on leadership theory and practice as a starting point to help build a case that leadership may be a mediating factor in the building and sustaining of collective efficacy in a DuFour and Eaker (1998) professional learning community.

Leadership Role

Burns (1978) and Bass (1985) provide the historical leadership framework for this study with regards to the analysis of specific and critical leadership traits or qualities necessary to function effectively and in concert as both a transactional and transformational leader. Both of these leadership styles are necessary in today's politically charged, high demand, and high stakes educational learning environment. A chronological review of the American educational system will demonstrate that today's high-stakes educational system requires leadership that can promote and sustain the learning of both students and teachers ensuring that all stakeholders have leadership responsibilities (Thompson et al., 2004.) In an extensive review of leadership theory and research to gather evidentiary data regarding the nature, causes, and outcomes for schools and students with successful leadership, Leithwood, Day, Sammons, Harris, and Hopkins (2006), noted five types of typical leadership studies: (a) qualitative case study conducted in exceptional school settings, (b) large-scale quantitative studies of overall leader effects, (c) large-scale quantitative studies of specific leadership effects, (d) studies on leadership effects on pupil engagement, and (e) studies focusing on principal succession and its affect on school and district outcomes.

From these varied leadership studies one can intelligently glean from the data analysis results that much responsibility falls on the shoulders of school leaders especially, when communities and districts are demanding high student test scores. Hallinger and Heck (1998), in their seminal review of leadership research conducted from 1980 to 1995, reviewed "The principal's contribution to school effectiveness."

focusing primarily on 40 empirical studies of administrator affects on student and school outcomes. Findings from this research review indicated that principals made a difference in student achievement even though the 40 research studies were deficient in describing in great detail about how principals responded to the varied environmental conditions affecting organizational efficiency or student learning outcomes. This deficiency was primarily focused on the lack of theoretical or methodological sophistication regarding how the data relating to the 40 studies were collected and analyzed. Therefore, this current study focused on an accurate accounting of the principal's influence on organizational learning and student outcomes by ensuring scientific integrity during data collection, data analysis, and data interpretation in order to advance the research on leadership's influence on collective efficacy in a professional learning community. This study focused primarily on the role of leadership in developing and sustaining collective efficacy in a professional learning community.

It should be noted that none of the 40 empirical studies mentioned above in the Hallinger and Heck (1998) review of leadership research from 1980 and 1995 discussed the impact and influence of leadership when specifically focusing on collective efficacy in a professional learning community. Therefore, this study provides new empirical evidence by researching leadership and leadership's influence on the development and sustainability of collective efficacy within a DuFour and Eaker (1998) professional learning community model to provide additional research data to compliment the scant amount of empirically based research regarding the DuFour and Eaker PLC model.

Leadership Motivation

According to Mulford (2008), school leaders challenge themselves by taking on the role of instructional school site leader because they altruistically want to make a difference in the lives of the students they serve. Mulford continues by stating the need for a much broader perspective in terms of evaluating a school's effectiveness, which, currently is based solely on a narrow achievement test. According to Bass, Avolio, Jung, and Berson (2003), leadership in today's ever-changing and demanding complex organizational environments requires leaders to be flexible and adaptive as they face a myriad of challenges within their organizations. This adaptability requires them to work with their follower colleagues as co-leaders in a distributed leadership format in order to find creative solutions to the challenges they face daily as an organization. In comparison, Fullan (2005) believes school site leaders should possess five core competencies with regards to leadership. The five competencies are (a) broader moral purpose, (b) keeping up with and understanding the change process, (c) cultivating relationships, (d) sharing knowledge, and (e) creating coherence. In addition to possessing the five core competencies for effective leadership, school site leaders need to support their teachers by being facilitators, supporters, and reinforcers with regards to jointly implementing the agreed upon school curriculum initiative in order to potentially produce positive student achievement results (Edgerson & Kristsonis, 2006). In terms of this study, the role of leadership was researched in relationship to the development and sustainability of a professional learning community as well as the role leadership might

play in the development and sustainability of collective efficacy within a professional learning community.

According to Hargreaves and Fink (2004) school leaders are also motivated to create sustainable changes in their organizations. These sustainable changes involve multiple feedback loops, employing flexibility, demonstrating dynamic balance, and synergizing the partnerships between energy and resources. Leaders who are supporting sustainability must make lasting change and be inclusive. Leaders concerned with sustainability are about deep learning, sustaining others in deep learning, and sustaining themselves. Important to leadership sustainability is distributed leadership where collective intelligence is tapped into and put into action, thereby multiplying the capacity of the system. Contributing to the sustainability of leadership are the interrelationship behaviors and connections that are vital to generating and regenerating learning and therefore the enthusiasm to renew the organization's energy and focus.

Leadership Behaviors

The pace of today's complex public school learning environments requires multifaceted leadership to address the multitude of school conditions present on school campuses nationwide. Leaders who are quick to adapt are able to ascertain and evaluate the challenges faced by them as leaders as well as help mediate the challenges faced by their followers (Bass, Avolio, Jung, & Berson, 2003). According to Leithwood, Louis, Anderson, and Wahlstrom (2004), leadership is the catalyst for school effectiveness and change. Without an effective instructional leader, successful reform implementation lacked significant organizational change over time. Additional researchers have noted

that the principal's leadership style can have a profound affect on the development and ongoing positive performance of a professional learning community (Boyd & Hord, 1994; DuFour and Eaker, 1998; Graham, 2007; Morrissey, 2000; Thompson et al., 2004).

Transformational Leadership. The adaptable leader mentioned above has been described by Bass (1985) as a transformational leader; one who can generate optimum and creative solutions to school-wide problems by working collaboratively with their followers. Bass believes that transformational leadership is typically found to reflect current social values in times of distress and social change. This co-constructed problem-solution approach supports the professional development of teachers by exposing them to a wider net of potential problems on which to collaborate to find creative solutions (Bennis, 2001). Burn's (1978) influence on transformational leadership research demonstrates that school leaders should focus on effective communication processes and positive interactions with the organization's members who see themselves as responsible for the organizational change. Over the past 20 years, the research literature regarding transformational and transactional leadership has increased rapidly with only a handful of studies examining how transformational and transactional leadership predict performance (Bass et al., 2003). In a study reported by Howell and Avolio (1993), transformational, not transactional leadership, positively predicted the performance of a specific financial unit. Leithwood (1994) states that transformational leadership influenced the performance of the grade-level team as well as individual teachers by developing interpersonal relationships that encouraged organizational commitment in order to promote positive institutional change. In this study, leadership was a central and dependent variable when

focusing on whether certain leadership traits found in both transformational and transactional leadership positively or negatively affect the collective efficacy of grade-level teams or units.

Transactional Leadership. In contrast, but not subservient to transformational leadership, transactional leadership typically surfaces in a “well-ordered society” (Bass, 1985). According to Bass et al. (2003), most studies focusing on transformational or transactional leadership occurred during times of relatively stable conditions. According to Podsakoff, Todor, and Skov (1982), transactional leadership was demonstrated in an environment where followers agreed with and accepted expected behavior requirements in exchange for praise and recognition when followers carried out their duties and assignments. This type of contingent transactional leadership style clearly communicates the expected behaviors and expected outcomes of the followers. Previous research on transactional leadership was shown to positively demonstrate follower dedication, commitment, and satisfaction including an improvement in the organizational citizenry of the organization’s membership (Goodwin, Wofford, and Whittington (2001). This timely current study looked at the influence and affects of leadership in an era of high-stakes accountability adjudicated at both the state and federal levels in terms of expected student outcomes.

Boyd and Hord (1994) in a case study using interviews as their qualitative methodology, focused on four principals over a 20-year period. In the Boyd and Hord case study, the researchers addressed four functional leadership responsibilities necessary to improve a professional learning community as well supporting the collective efficacy,

which was found to evolve from the development of a school-wide professional learning community. The four functions are: (a) to increase staff capacity, (b) to provide a caring, productive environment, (c) to promote increase quality of instruction, and (d) to reduce the opportunities for continued teacher isolation. With these functions promoted in a learning organization, staff member's efficacious attitudes and professional successes increased.

For the purposes of this study, research gathered by Kouzes and Posner (2002) regarding 21 effective leadership practices was analyzed against current leadership theory and research to compare the results of this study to a similar efficacy study regarding leadership conducted by Graham (2007). This study used the Kouzes and Posner Leadership Practices Inventory (LPI) survey to gather quantitative data on teachers' perceptions on leadership and how leadership may positively or negatively impact teachers' collective work. Table 2.1 presents key leadership behaviors, practices, and traits to initiate positive organizational change as detailed in the extant literature on leadership in comparison to the five leadership practices espoused by Kouzes and Posner (2002).

Table 2.1: An Alignment of Leadership Research to Kouzes and Posner's LPI

Kouzes & Posner	Modeling The Way	Inspiring a Shared Vision	Enabling Others to Act	Challenging the Process	Encouraging the Heart
Bass (1985)	*Modeling	*Visioning	*Inspirational motivation *Intellectual stimulation *Supportive group goals	*Idealized Influence *High Expectations	*Individual Consideration and Support
Boyd & Hord (1994)			*Increased school capacity	*Reduce teacher isolation *Improve quality of instruction	*Provide a caring and productive environment
Burns (1978)		*Shared purpose		*Transformation of the organization	*Transformation of the individual
Fullan (2005)		*Broader moral purpose	*Sharing knowledge	*Understanding the change process *Creating coherence	*Cultivating relationships
Hallinger & Heck (2005)	*Being visible and modeling the values	*Shared purpose	*Goals for staff and students *Intellectual stimulation	*High performance expectation *Focus on improved teaching and learning	
Leithwood et al. (1998)	*Appropriate modeling	*Vision *Setting directions and purpose	*Group goals *Productive school culture *Intellectual stimulation	*Structure *Redesigning the organization *High performance expectation *Deprivatized practice	*Individual support *Developing people
Wahlstrom & Louis (2008)	*Visibly involved in instructional work	*Shared leadership and trust *Collective sense of responsibility			*Individual support

In terms of this study, the quantitative leadership practices inventory (LPI) (Kouzes & Posner, 2002) was used as an analysis instrument in conjunction with Goddard's (2002) quantitative collective efficacy scale instrument to determine connections between leader effectiveness and teachers' sense of collective efficacy. In a study by Graham (2007) titled, *"Leadership Behaviors and Collective Efficacy as Perceived by Teachers of Schools in the Katy School District"*, it was determined that leadership had a low positive correlation to collective efficacy. However, of the Kouzes and Posner's five leadership practices of: (a) model the way, (b) inspiring a shared vision, (c) enabling others to act, (d) challenging the process, and (e) encouraging the heart, "challenging the process", was the strongest ($r = .48$) when correlated to collective efficacy and the weakest correlation to collective efficacy was, "inspiring a shared vision" ($r = .36$). Although modest, these correlations suggest the importance and value in continuing to explore the relationship between these two variables. Therefore, in the following section, a review of the literature on efficacy will be presented.

Collective Efficacy

Collective efficacy references the held beliefs group members as a whole possess concerning the effectiveness of their individual pedagogical expertise with regard to their individual efforts coupled with the group's capability to reach desired goals (Goddard and Skrla, 2006). In a school setting, a desired goal is to have all students achieve mastery in standards-based content areas as a result of the efforts of individual teachers as well as the "collective" effort of all teachers and staff members of a school site. With the NCLB goals of 100% proficiency on annual state standards tests by 2014, it is paramount

for schools and individual grade-level teams to build and sustain positive collective efficacy. The research on efficacy initially began with more attention to self-efficacy; however more recent studies have focused on group or collective efficacy.

Self-Efficacy. Collective efficacy begins with self-efficacy. Bandura (1997) describes four criterion of self-efficacy development: (a) mastery of individual and/or collective experiences, (b) vicarious interpretations from individual experiences, (c) the individual and/or group affective or emotional state with regards to the particular task-at-hand, and (d) the effect on individual and/or group decision-making based on social persuasion efforts. These four elements play off each other with regards to the perceived success or failure of a particular task. When an individual and/or group believes they have the capacity to make a positive change in a particular situation, efficacy increases; in contrast, when an individual and/or group believes they do not possess the capability to make a positive change in a particular situation, efficacy decreases. A discussion of the development of the four self-efficacy criterion will follow to connect self-efficacy to group efficacy.

Mastery experiences. According to Bandura (1986, 1997), of the four sources of efficacy, mastery experiences are the most significant source of efficacy compared to vicarious experiences, physiological and emotional states, and social persuasions. Personal mastery is probably the most critical to self-efficacy and in terms of professional learning communities, this study was interested in looking at how personal mastery can be fostered and influenced effectively in a PLC by either the grade-level team members or site administrator. Mastery experiences are connected to a past successful performance

where efficacy levels were raised based on the past positive performance and the expectation then that a future performance of the same task will also produce positive results. From these positive results, positive efficacy levels will increase. When a repeated event or experience continues to be positive, mastery experience as it relates to efficacy continues to exist. According to Senge (1990):

People with a high level of personal mastery live in a continual learning mode. They never 'arrive'. Sometimes, language, such as the term 'personal mastery' creates a misleading sense of definiteness, of black and white. But personal mastery is not something you possess. It is a process. It is a lifelong discipline. People with a high level of personal mastery are acutely aware of their ignorance, their incompetence, and their growth areas. And they are deeply self-confident. Paradoxical? Only for those who do not see the 'journey is the reward' (p. 142).

Vicarious experiences. According to Bandura, (1986,1997) vicarious experiences are connected to the observance of another organizational member who has the skills others are seeking. The organizational member models the desired skills and then the skills are internally analyzed by the observer individual who wishes to obtain the observed skills. The vicarious process involves the observer individual comparing himself or herself to the skilled organizational member in terms of where the observer individual ranks their perception of their current individual skill set in comparison to the skill set during the observation of the skilled organizational member. Through the observational experience of a vicarious event, the individual seeking the skills determines at what level of efficacy, the individual identifies with the skilled organizational member. The more the individual identifies with the skilled organizational member, the higher their individual efficacy level. On the contrary, if the individual does not identify with the skilled organizational member in terms of where the individual places themselves

skill-wise compared to the skilled organizational member, the individual's efficacy level will be low. This study looked at how a PLC could also provide opportunities for vicarious experiences when one grade-level team teacher shares his or her work with the grade-level team and explains how and why students did so well on a particular assignment or assessment.

Physiological and emotional state. The physiological and emotional state of the individual or group can play a significant role in determining the outcomes of a particular individual or group task (Bandura, 1986; 1997). When individuals or groups are faced with an unfamiliar task or a task that they perceive they are unprepared to complete, a level of emotional arousal or anxiety can be produced which could impact the desired task results (Goddard, Hoy, & Hoy, 2004; Tschannen-Moran, Hoy, & Hoy, 1998.) These researchers have agreed that the factors regarding the physiological and emotional state of both the individual and group can play an integral and significant responsibility with regards to organizational outcomes if these factors are not positively addressed. Though research is scant with regards to the impact of affective states of organizations and its impact on collective efficacy levels and organizational performance, the theory has merits for future research. This study addressed the issue of the physiological and emotional state of the individual or group through the individual principal interviews and individual grade-level teacher interviews.

Social persuasion. The final experiential condition of efficacy is social persuasion, which deals with other organizational members or stakeholders communicating their desired organizational outcomes to individuals or groups who may

not yet possess the required skills or desires to make the agreed upon organizational change. This power of persuasion can be communicated through staff meetings, staff development opportunities, school site council meetings, board meetings, and, within the structure of the teachers' lounge or classrooms. According to Bandura (1986), the strength or power of the persuasion depends on the authenticity, credibility, trustworthiness, and expertise of the one who is trying to persuade. In an era of accountability, persuasion to conform to the desired behavior expectations can be expressed by both internal and external forces of the organization. This study explored this issue by examining the relationship between PLCs, efficacy, and leadership.

Collaboration and Efficacy

The concept of social cognitive theory (Bandura, 1986) sheds some insights into how teachers may construct meaning as they collaborate in their grade-level team.

Social Cognitive Theory. In terms of collective efficacy, Albert Bandura's (1986) social cognitive theory of self-efficacy forms the basis of understanding in terms of specific human behaviors regarding an individual's internalized perception of themselves as either possessing high or low levels of efficacy. The internalized perception of self-efficacy will in turn, act as a barometer for the individual when they internally evaluate how effectively the group will perform a specific task based on this internalized analysis of their personal efficacy levels. Individuals with high levels of efficacy will act in a different manner than an individual with low levels of efficacy, an assumption that is also true of group competence. Efficacy is grounded in social cognitive theory evolving from two distinct research perspectives. The first research perspective on efficacy was

introduced by Rotter, (1966), where he focused on social learning theory in a study funded by the RAND Corporation. The second research perspective was an amalgamation of Rotter's theory and included Bandura's (1997) input on the social cognitive theory of self-efficacy. Social cognitive theory then helps bridge the link between teacher (or individual) efficacy and collective efficacy (group or grade-level) with regards to group competence and/or task analysis. Bandura's (1997) social cognitive theory advanced this ideology in terms of assessing individual versus collective efficacy as described in this statement:

People working independently within a group structure do not function as social isolates totally immune to the influence of those around them. Their sense of efficacy is likely to be lower amidst a group of chronic losers than amidst habitual winners. Moreover, the resources, impediments, and opportunities provided by a given system partly determine how efficacious individuals can be, even though their work may be only loosely coupled (p. 476).

As the above mentioned quote reflects, individuals in a group dynamic will be influenced either positively or negatively by those around them regardless of their intentions to operate independently within the group or as a interconnected cohort member. Leaders can play a pivotal role in helping shape the individual's motivation to link themselves with other group members with regards to group competence and/or task analysis that in turn will influence their level of participation in the group norm behavior (Bandura, 1997). High levels of collective efficacy can provide school grade-level educational team members with the ability to strengthen the collaborative process with each individual staff member feeling valued and efficacious about their ability to promote and support effective practices in their respective learning environments. Collaboration

has been extensively studied in both the education and private sector environments with results indicating the benefits of collaboration on organizational processes and outcomes (Boyd & Hord, 1994; Buffum & Hinman, 2006; Bullough, 2007; Darling-Hammond, 1996; Dooner, Mandzuk, & Clifton, 2008; Graham, 2007; Hipp, Huffman, Pankake, & Olivier, 2008; Hord & Rutherford, 1998; Little, 1982; Senge, 2006). Collaboration is a fundamental element of professional learning communities and has been the primary focus in research regarding PLCs because of the historic difficulty for most organizations to engage in effective collaboration (DuFour & Eaker, 1998). Schools and district offices need to provide adequate time for collaboration in order for teachers to organize their collective approach when developing curriculum to meet the needs of all students. To make time for collaboration, schools and districts should:

- Develop common planning time for PLC teams while specialists provide advance learning opportunities during the same time block
- Create adjusted start and end times
- Share classes to allow for PLC planning in large grade-level teams
- Create opportunities for school-wide learning activities/events/testing to release teachers to plan
- Bank time so that one morning or afternoon per week, students either arrive late or are released early to allow for collaboration
- Provide staff in-service or professional development opportunities to infuse collaboration time into the day's schedule (DuFour, DuFour, Eaker, & Many, 2006).

To evaluate the level of efficacious collaboration among teachers, Goddard, Hoy, and Woolfolk-Hoy (2000) incorporated Bandura's social cognitive theory (1997) and the collective efficacy survey instrument (based on a teacher efficacy model) designed by Tschannen-Moran, Woolfolk-Hoy, and Hoy (1998) to build a 21-item collective efficacy scale survey. The survey was tested at The University of Michigan and The Ohio State University. Goddard, Hoy, and Woolfolk-Hoy, (2000) pioneers in studying collective efficacy, designed a 21-item Collective Efficacy scale to be used to determine individual teacher efficacy and teachers' collective efficacy with regard to predicting the success outcomes of students. Through piloting and testing the survey, the collective efficacy survey was finally reduced from 21 to 12 items focusing primarily on the areas of: (a) mastery experience of the individual, (b) vicarious experiences of individual, (c) social persuasion placed upon the individual, and (d) the emotional state of the individual.

The original survey instrument had an unbalanced number of questions for each of these four sources of collective efficacy input, which the researchers felt created a sense of survey bias. Therefore, the 21-item collective efficacy scale was later redesigned by Goddard (2002) to reflect a more theoretically pure efficacy design by incorporating all of the dimensions of the original Collective Efficacy Scale but in a redesigned and rebalanced 12-item collective efficacy scale to measure the collective efficacy in schools. Analysis of the redesigned 12-item collective efficacy scale compared to the original unbalanced 21-item scale produced similar results making the newer 12-item collective efficacy scale more parsimonious. The following figure represents the simplified model of collective teacher efficacy.

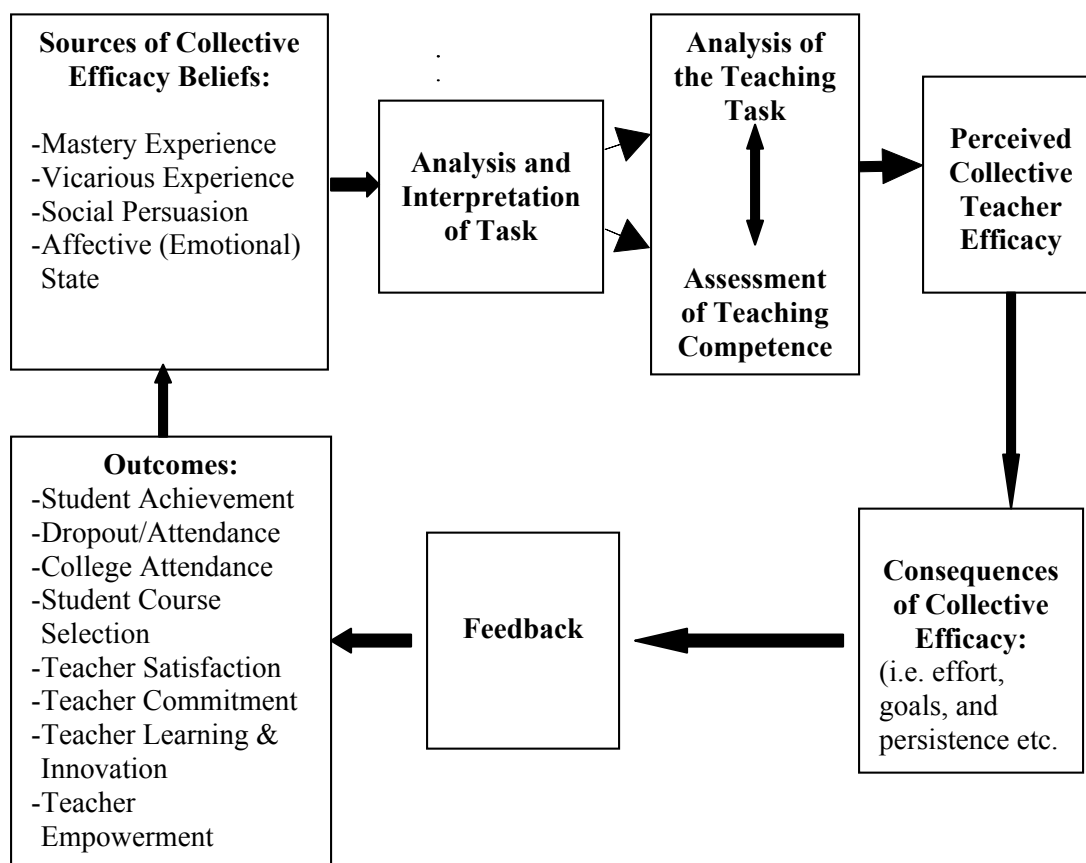


Figure 2.1: The Model of the Formation, Influence, and Change of Perceived Collective Efficacy in Schools. Note. From “Collective Efficacy Beliefs: Theoretical Developments, Empirical Evidence, and Future Directions” by R. D. Goddard, W. K. Hoy, and A. Woolfolk-Hoy, 2004, *Educational Researcher*, 33(3), pp.3-13.

Based on Goddard et al.’s graphic presented above, collective teacher efficacy is a fluid and continuous process utilizing various collective efficacy influences such as mastery experience, vicarious experience, social persuasion, and human emotional state, to analyze and interpret professional input data regarding a particular teaching task. In addition, an internal assessment of teaching competency is analyzed in conjunction with the analysis of the teaching task, which then creates the total individual and/or collective efficacy estimation for the respective sources or situations affecting the collective

efficacy levels. Goddard, Hoy, and Hoy (2004) created this proposed collective efficacy model based on Goddard's (2002) model to include a more holistic approach to the "formation, influence, and change of perceived collective efficacy in schools." This study sought to understand the relationship between collective efficacy and the implementation of professional learning communities because PLCs create a possible context in which collective efficacy could be developed or enhanced. In terms of the collective efficacy model developed by Goddard et al., the role of leadership in developing and sustaining collective efficacy is not represented, which was also explored in this study.

Influence of Collective Efficacy on Student Achievement

Collective efficacy studies focusing on group goal attainment and individual student achievement in an educational setting have shown a probable positive correlational relationship (Bandura, 1993; Goddard, 2001; Goddard et al., 2000). Bandura's study communicated a stronger perceived relationship between the collective efficacy of teachers and student achievement compared to the relationship between the socio-economic status (SES) of the students and their achievement. Goddard's study factored in prior achievement, SES, race/ethnicity, and gender when deciding on factoring influences on student achievement. The study found that the collective efficacy communicated a stronger influence on student achievement compared to the influence of SES or student race.

Over the past two decades, researchers have found links between student achievement and three constructs of efficacy. The three constructs of efficacy are (a) self-efficacy in judgment of students (Pajares, 1994, 1997), (b) teachers' beliefs in their own

pedagogical efficacy (Tschannen-Moran et al., 1998), and (c) teachers' beliefs in the collective efficacy of their school site (Goddard, Hoy, & Woolfolk Hoy, 2000). The research suggests that a school's strong collective efficacy culture may in fact exert a stronger influence on the individual teacher's sense of efficacy with regards to effective instruction. This effective instruction may then lead to positive student performance results even though teachers work in isolated classroom environments. When the social influence of an organization is clearly established and communicated, this influence will permeate into each respective classroom. Bandura (1997) shares this theory when he states:

People working independently within a group structure do not function as social isolates totally immune to the influence of those around them...the resources, impediments, and opportunities provided by a given system partly determine how efficacious individuals can be, even though their work may be only loosely coupled (p. 469).

In a non-educational setting such as a neighborhood, research has also shown that the collective efficacy of the neighbors can positively influence the conditions in which the neighborhood operates. Neighborhoods with high levels of collective efficacy have a positive effect on group goal attainment when working together to reduce crime rates in their neighborhoods (Sampson, Raudenbush, & Earls, 1997). As with classroom teacher efficacy, individual neighbor efficacy is influenced by the other members of the neighborhood to influence the expected neighborhood outcomes. The study primarily focused on collective efficacy as a whole unit of analysis compared to Bandura's (1997) four measures of individual self-efficacy.

Leadership and Collective Efficacy

Goddard and Skrla (2006) believe that with a strong instructional leader and high levels of collective efficacy an organization can sustain positive change. With both individual and collective efficacy levels congruent with site objectives, all educational participants can work towards sustaining the goals and objectives of the educational organization to hopefully improve student achievement in a professional learning community. Leithwood, Steinbach, and Jantzi (2002) in a Canadian study, communicated the need for effective principal leadership to support teachers during reform implementation such as professional learning communities. Leithwood et al. believe there is a strong relationship between teachers' sense of self-efficacy with regards to reform implementation and the leadership practices demonstrated by site administrators. Some of the leadership practices include: (a) buffering and delegating the responsibilities concerning the reform efforts, (b) modeling reform effort behavior, (c) providing contingent reward which is dependent upon results, (d) providing individualized support, and (e) inspiring a sense of shared purpose (Leithwood et al., 2002).

Chen and Bliese (2002) believe that leadership is more closely related to collective efficacy compared to individual efficacy. They conclude that specific leadership behavior is focused on increasing the collective efficacy of the group. Leadership influence on individual efficacy focuses on the role clarity of the individual and the psychological state of the individual with regards to the individual's role in the organization. Chen and Bliese go on to state that leaders are more likely to try to improve the collective efficacy of the whole rather than the individual. In conclusion, Chen and

Bliese believe antecedent predictors of leadership influence on individual and/or collective efficacy may not be homologous. Interventions focused on individual efficacy may or may not have the same effect on collective efficacy levels.

To help support the development of effective school site leaders with regards to group efficacy, Kouzes and Posner (2003) present five leadership dimensions to vet out and sustain effective leadership. The dimensions are (a) modeling the way, (b) inspiring shared vision, (c) challenging the process, (d) enabling others to act, and (e) encouraging the heart. Graham (2007) conducted a statistical analysis to determine which of the five leadership behaviors presented a higher correlation to collective efficacy compared to the other four leadership dimensions. The results showed the most significant correlation to effective leadership and collective efficacy was “challenging the process” compared to the lowest correlation to effective leadership being “inspiring a shared vision.” Another leadership study executed by The National Comprehensive Center for Teacher Quality (2008) also showed similarly required leadership competencies with regards to supporting teachers. The two studies agree on the need to establish a shared school vision and encouraging others through shared leadership responsibilities (Graham; National Comprehensive Center for Teacher Quality).

To support student learning, principals must provide teachers with opportunities to collaborate in order to help move a school from an environment of isolated professional work experiences to a coordinated and interconnected professional learning community such as the professional learning community prescribed by DuFour and Eaker (1998). In the following discussion, collaborative organizational learning is reviewed in

order to establish a theoretical connection to professional learning communities, which is the cornerstone of this study's environmental context.

Organizational Learning

Organizations must develop from an isolated and independently experienced organization to an organization that collectively and collaboratively learns about and effectively implements improvement practices in order to enhance and improve student achievement. The organizational learning philosophies of Argyris (1957); Argyris and Schon (1974, 1978); Schutten (1990); Senge (1990, 2006); and Sergiovanni (1992) helped frame how an organization can learn in an environment of collaboration as seen in a professional learning community. Organizational learning is a cornerstone of an effective professional learning community. In the current atmosphere of mistrust concerning public education coupled with the requirements of the NCLB Act (2001) individual identity must mingle within the larger context of the organization (Argyris & Schon, 1974). In addition, Senge (1990) suggests, based on Argyris and Schon, that organizations need to look specifically at how the whole organization operates compared to an analysis of the organization's individualized parts. This whole organizational philosophy can also be found in the literature describing professional learning communities in terms of operating the school organization as a whole-school systems thinking approach rather than as individual teacher/classroom approach (DuFour & Eaker, 1998).

There have been many researchers who have discussed the effective "umbrella" tenets of an effective learning organization. The most seminal components of an effective

educational learning organization are: (a) strong site leadership, (b) collectively shaped shared vision and organizational mission, (c) the empowerment of the teaching staff possessing a predetermined set of skills, and (d) collaborative data-driven teams focused on analyzing the teaching and learning outcomes (Dean, Galvin, & Parsley, 2005; Fullan 2001, 2003, 2005; Marzano, 2003; Reeves, 2000, 2004, 2005; Zmuda, Kuklis, & Kline, 2004). Senge (1990) parlayed his prior research when introducing his beliefs regarding the tenets of an effective learning organization by introducing *systems thinking*, which he feels is at the “cornerstone” of an effective and efficiently run organization.

According to Senge, “systems thinking” creates a fusion of the independently held beliefs of other researchers of organizational learning theorizing that “systems thinking” will provide an organization with the ability to “comprehend and address the whole, and to examine the interrelationship between the parts” providing an opportunity to coordinate an integrated approach to organizational learning. Senge posits that five disciplines are necessary to positively shape organizational learning: (a) systems thinking, (b) personal mastery, (c) mental models, (d) building a shared vision, and (e) team learning (p. 9). As the literature review will reveal, Senge’s belief in the five disciplines are closely aligned to the same requirements of the DuFour and Eaker (1998) professional learning community model primarily in the disciplines of “building a share vision” and “team learning.”

When organizational learning takes place in an environment of reform, the efforts of the “change agents” are not without controversy due to established positionality of the key players on both sides of the issue. DuFour and Eaker (1998) believe that there will be

significant challenges and difficulties from both internal and external political pressure points as revealed in their beliefs that complicated issues will surface when it is evident that change is necessary:

Reform movements are complicated events. Each has several interested audiences with different agendas. One of these audiences is composed of policy-makers, policy-watchers, and citizens at-large. This group is most interested in the wider issues of reform: the recommendations of commissioners, new legislation, and the commitment and concern of top officials. Another audience includes the citizens and parents of specific communities. While interested in the larger reform scene, these spectators focus their attention on their own school board, superintendent, principals, and teachers...Amid all of these diverse audiences is a seasoned, tired, and wary group of players - teachers and administrators...They also see in reform programs suggestions that they already know are needed. And they know that some elements of the proposed reform could seriously harm education if they were put into practice...The superintendents, principals, and teachers who are asked to improve the schools often are unsure of exactly how to proceed. (p. ix).

Organizational learning is a complicated process with multiple pathways of influence creating either a positive learning synergism or a disconnected self-serving negative influence if the organization's learning process is ineffectively planned or implemented. Organizational learning in a collaborative format where the organization operates as a collective can help create a positive learning environment for all who are willing to participate in the process (Hord, 1997; Massell & Goertz, 2002; Morrissey, 2000). These researchers as stated in Haas (2005) believe:

The development of professional learning communities (PLCs) is one of the most promising approaches to building teacher capacity, and to creating the culture change required for schools to engage in continuous improvement. Based on current research, the district must take a strong role in accomplishing this culture shift to teachers and administrators engaging in the culture of inquiry (p. 21).

Finally, with regards to the teaching and learning process, student achievement for all students must begin with teachers effectively collaborating about their teaching processes and the results of their efforts in terms of student achievement and mastery levels. When teachers begin to disaggregate the data into student “like-groups”, they can begin to visualize what curricular areas need to be readdressed and for what student “like-groups” the readdressing needs to focus on (DuFour & Eaker, 1998; Hord, 1997). When teachers complete a critical analysis of student performance levels, they will hopefully and honestly make adjustments in their teaching to address the learning levels of the students who are at-risk. Professional learning communities focused on student learning for all students can effectively address the achievement gap by leveling the educational “playing field” for all students regardless of race, ethnicity, or social status. In terms of organizational developmental design, which focuses on the collective learning of all organizational members, there are a number of design methodologies that can be implemented to address staff collaboration and organizational development (Senge et al., 2000). The following table represents four well-known proponents of organizational professional learning community development including each design’s foundational structure and merits.

Table 2.2: Professional Learning Communities To Other Models

Professional Learning Community DuFour and Eaker (1998)	Professional Learning Community Hord (1997, 1998)	Purposeful Community Marzano, Waters, & McNulty (2005)	Communities of Practice Wenger & Snyder (2000)
Shared mission, vision, values, and goals	Shared values and vision	Accomplish a purpose and produce outcomes that matter to all stakeholders	Joint enterprise
Collective inquiry into “best practices” and “current reality”	Collective learning and application of that learning		Passion, commitment and identification with group’s expertise
Collaborative teams focused on learning			Build and exchange knowledge
Action orientation and experimentation	Shared personal practice		
Commitment to continuous improvement	Supportive conditions-structures and relationships	Agreed-upon processes	
Results orientation	Shared and supportive leadership	Use all available assets	
		Collective efficacy	
			Informal, optional, flexible meetings

Note. Excerpted and adapted from “The balanced leadership framework: Connecting vision with action”, T. Waters and G. Cameron, 2007, Denver, CO.: Mid-continent Research for Education and Learning.

The foundational constructs and merits of each of the above mentioned organizational learning perspectives can be found in various types of organizations. However, professional learning communities have primarily been implemented in educational environments. What separates the DuFour and Eaker (1998) professional learning communities from the other three constructs is a focus on results. An additional interesting caveat is only Marzano, Waters, and McNulty's (2005) purposeful communities organizational learning construct explicitly communicates the presence of collective efficacy while the other three, DuFour and Eaker's (1998) professional learning communities, Hord's (1997) professional learning communities, and Wenger and Synder's (2000) communities of practice, implicitly communicate the presence of collective efficacy.

In communities of practice, the theoretical construct of collective efficacy in essence is specifically communicated and integrated into the organizational planning efforts in comparison to being implicitly communicated and integrated in the other three learning organizational designs. As a review, individual or collective efficacy is an individual or groups belief that their applied efforts will provide the desired performance outcomes necessary to produce the desired results (Bandura, 1997). For the purposes of this review, the DuFour and Eaker (1998) professional learning community will be referenced with regards to this study's organizational design model described in the following section. Following is a discussion on professional learning communities where, when grade-level teams collectively work together to improve their teaching practices in order to improve student-learning outcomes, the organization's collective system

develops into a learning organization.

Professional Learning Community Design Model

In addition to investigating how leadership practices build and sustain collective efficacy, this study also explored the effects of leadership on a professional learning community model designed by DuFour and Eaker (1998). In the Graham (2007) study, the school context was not described as a professional learning community. Therefore, this study looked at leadership, collective efficacy, and the DuFour and Eaker professional learning community model. DuFour and Eaker (1998) state:

Each word of the phrase “professional learning community” has been chosen purposefully. A “professional” is someone with expertise in a specialized field, an individual who has not only pursued advanced training to enter the field, but who is also expected to remain current in its evolving knowledge base...“Learning” suggests ongoing action and perpetual curiosity...The school that operates as a professional *learning* community recognizes that its members must engage in ongoing study and constant practice that characterize an organization committed to continuous improvement...In a professional learning *community*, educators create an environment that fosters mutual cooperation, emotional support, personal growth as they work together to achieve what they cannot accomplish alone (p xi-xii).

The following is a discussion focused on the historical perspective of professional learning communities.

Historic Perspective of Professional Learning Communities

For a historical perspective on professional learning communities, a statistical analysis of college freshman readiness was conducted during an “eight-year” period from 1930 to 1942, sponsored by the Progressive Education Association (PEA). During the 1930s, nothing of this magnitude or with such an educationally focused purpose had ever been researched or addressed in American education (Bullough, 2007). This study looked

at how American secondary schools at the turn of the century supported students with effective academic instruction in order to prepare them to transfer to higher education with minimal difficulty.

The study evaluated the transition from four years of high school to four years of higher education that in totality, described, the “eight-year study” even though the experience of the study actually ran for 12 years. At the completion of this study, five key points were recommended for future educational collaboration focus. The focus areas were (a) teacher education and capacity building, (b) teacher action-research, (c) trust and relationship building, (d) mutual desire for change and improvement, and (e) professional reflection (Bullough, 2007). A significant plan of action discussed in the study’s findings was the implementation of professional learning communities. Aside from Bullough’s research on professional learning communities, current research indicates professional learning communities have been “studied” since the early 1900s. Similar ideology from the above mentioned turn of the century case study can be found in today’s modern-day research concerning school reform and PLCs.

Understanding Professional Learning Communities

For this study, four professional learning community models were explored including this study’s DuFour and Eaker PLC model as a comparative reflection. The four models are: (a) DuFour and Eaker’s (1998) PLC model, (b) Hord’s (1997) PLC model, (c) Waters, McNulty, and Marzano’s (2005) purposeful community model, and (d) Wenger and Snyder’s (2000) communities of practice model (summarized in Table 2.2). Professional learning communities (PLCs) is one current educational reform design

that may offer educators an effective methodology to use to ensure that all students have the opportunity to learn. Most of the studies in this literature review looked at professional learning communities as a reform construct to improve the strength and learning of the respective organizations with the hope of improving teaching practices and learning outcomes for all students. Studies were included that also indicated the benefits of a professional learning community in terms of improving student achievement through collaborative teacher efforts. Modern day educators view the term professional learning communities (PLCs) as a link to school improvement where educators work together to formulate methodologies to improve student achievement (Bullough, 2007; DuFour, 2003a; Vescio, Ross, & Adams, 2008). According to DuFour and Eaker, (1998); Vescio et al. (2006); and Hord (1997), the focus of PLCs is to bridge current classroom practices to the “knowledge of practice” that is centered on the sole purpose of improving student learning and achievement.

Professional learning communities are also viewed by many as a significant organizational methodology intended to increase student learning by supporting teachers during the planning, implementation, and evaluation of educational pedagogy (Bullough, 2007; Gorinski & Shortland-Nuku, 2006; Hord, 1997; Morrissey, 2000). However, according to Vescio et al. (2006) the existence of empirical studies indicating a positive cause-effect PLC connection to student achievement is sparse. Most educational professionals do agree though about the need for a comprehensive improvement plan because of the significant challenges facing educators. Therefore incorporating a PLC plan where teachers and staff work together to plan, evaluate, and obtain the results

needed by becoming a community of learners can be significantly beneficial for everyone and represents an important area for continued research to see if stronger relational or causal links can be found (Thompson, Gregg, & Niska, 2004). Another definitional perspective on professional learning communities is about teachers working together in a constant state of continuous inquiry by evaluating their teaching practices in comparison to the performance of their students (DuFour, 2003a). In this definition, individual teacher and grade-level analysis should be based on state standards addressed through everyday best-practice lesson design and delivery.

Hord (1997) discusses effective school restructuring in terms of using professional learning communities as a foundational construct. The elements of professional learning communities as identified by Hord are: (a) good leadership, (b) elements of effective external support, and (c) approaches used to implement effective professional learning communities. In Hord's (1997) qualitative case study analysis, the five urban school's learnings from the multi-year study were divided into two professional learning categories in terms of elements affecting professional learning outcomes. The two categories were (a) learnings related to principals and/or other campus-based leadership and (b) leadership which is provided outside of the school site.

The Current Framework of Professional Learning Communities

DuFour and Eaker (1998), describe PLC schools as having a collaborative design with a critical focus on improving student achievement results by implementing a shared common vision for the sole purpose of improving teaching practices to benefit student learning. The DuFour and Eaker (1998) PLC model involves three guiding principles as a

baseline to effectively support a professional learning community. In terms of modern research vernacular, professional learning communities appear to contribute to the improvement of instruction and student learning when school systems incorporate the following three fundamental guiding principals coupled with five supportive dimensions, which, will be discussed in the following section.

PLC guiding principles. According to DuFour (2004), the three guiding principles that effectively support a professional learning community environment that need to be in place are (a) ensuring all students are learning, (b) creating a culture of continuous professional collaboration, and (c) focusing on student results. The focus on the results of student learning is a key professional paradigm shift for most teachers because PLCs study student learning rather than on what teachers are teaching. The PLC idea therefore is a nuanced modern-day focus on what students are learning, not on what teachers are teaching, which was, the primary focus in the past (DuFour & Eaker, 1998). This shift in focus has been advocated as a pathway to improved student learning, yet few studies have documented the effect of PLCs on student achievement outcomes.

PLC supportive conditions. Professional learning communities have also been viewed as an ongoing exploration to improve teaching and learning by incorporating supportive cultures and the necessary conditions needed to support effective teaching and learning in the classroom (Morrissey, 2000). There are five supportive conditional dimensions of a professional learning community (as cited in Hughes & Kritsonis, 2006; Hord, 1997; Huffman & Hipp, 2000), that include: (a) supportive and shared leadership,

(b) shared values and vision, (c) collective learning and application of the learning, (d) supportive conditions, and (e) shared personal practice.

Senge (1990,1999, 2006), one of the founding fathers of organizational learning, has vetted the benefits of professional learning communities in terms of recognizing schools as a “meeting ground for learning” for both students and teachers. Creating an effective learning organization is paramount to the overall health of an organization. Senge (1990,1999, 2006) communicates the need for the effective implementation of learning organizations by sharing this quote by Hanover’s Bill O’Brien:

I talk with people all over the country about learning organizations...and the response is always very positive. If this type of organization is so widely preferred, why don’t people create such organizations? I think the answer is leadership. People have no real comprehension of the type of commitment that’s required to build such an organization (p. 317).

This quote suggests that a gap in the literature may be why there is a lack of understanding with regards to the kinds of leadership practices that are needed to support PLCs and organizational learning. One leadership practice that may be critical is providing structural supports for effective PLC functioning. O’Brien indicates it is always leadership, but there are some schools with toxic cultures that prevent even the best leader from successfully implementing PLCs (Senge, 1990). Interestingly, the solution for schools that have remained five or more years in Program Improvement (PI) is to start anew with a new principal and selected teachers and staff members.

PLC structural support. Another prevalent theme, structural supports, is viewed as an important link to the success of a PLC environment. System structural support mechanisms such as early or late starts, change in bell schedules, room accommodations,

class coverage etc., provide time for teacher collaboration, peer observations, vertical grade-level articulation, and time to develop appropriate documentation templates to collect data to be analyzed by PLC teams. When school sites effectively design system structural support mechanisms to support PLC initiatives, more attention can be focused on best practice pedagogy with regards to teaching and learning (Bullough, 2007; Gorinski & Shortland-Nuku, 2006; Hord, 1997; Morrissey, 2000).

Leadership in a Professional Learning Community

An analysis of two transformational leadership styles (Bass, 1985; Leithwood et al., 1998) in comparison to the two main professional learning community designs (Hord, 1997, 1998; DuFour & Eaker, 1998) presents a unique relationship. The transformational leadership style introduced by Bass (1985) describes four characteristics: (a) idealized influence, (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration. Leithwood, Leonard, and Sharratt's (1998) transformational leadership style shares eight characteristics: (a) vision, (b) group goals, (c) intellectual stimulation, (d) high performance expectations, (e) individualized support, (f) appropriate modeling, (g) appropriate modeling, (h) productive school culture, and structure. The following table provides a visual representation of the similarities and differences between professional learning communities and transformational leadership.

Table 2.3: Transformational Leadership's Connection to PLCs

Transformational Leadership (Bass, 1985)	Transformational Leadership (Leithwood et al., 1998)	Professional Learning Communities (Hord, 1997, 1998)	Professional Learning Community DuFour and Eaker (1998)
<ul style="list-style-type: none"> • Idealized influence • Inspirational motivation 	<ul style="list-style-type: none"> • Vision • Group goals 	<ul style="list-style-type: none"> • Shared values and vision 	<ul style="list-style-type: none"> • Shared mission, vision, values, and goals
<ul style="list-style-type: none"> • Intellectual stimulation 	<ul style="list-style-type: none"> • Intellectual stimulation • High performance expectations 	<ul style="list-style-type: none"> • Collective learning and application of that learning 	<ul style="list-style-type: none"> • Collective inquiry into “best practices” and “current reality”
<ul style="list-style-type: none"> • Individualized consideration 	<ul style="list-style-type: none"> • Individualized support 		<ul style="list-style-type: none"> • Collaborative teams focused on learning
	<ul style="list-style-type: none"> • Appropriate Modeling 	<ul style="list-style-type: none"> • Shared personal practice 	<ul style="list-style-type: none"> • Action orientation and experimentation
	<ul style="list-style-type: none"> • Productive school culture • Structure 	<ul style="list-style-type: none"> • Supportive conditions-structures and relationships 	<ul style="list-style-type: none"> • Commitment to continuous improvement
		<ul style="list-style-type: none"> • Shared and supportive leadership 	<ul style="list-style-type: none"> • Results orientation

Adapted from the work of Olsen and Chrispeels (2009)

Transformational leaders who look to serve their constituents by empowering rather than delegating; who build trust rather than demanding adherence and loyalty to the cause; and, instead of listening and responding from their cognitive position, seek to clearly understand the given situation by leading from their heart, will improve the long-term quality of the relationships they build with their school-site educational colleagues (Edgerson & Kristonis, 2006). In addition, Edgerson and Kristonis believe that in educational settings where teachers believe in and trust their school-site leaders, a dedicated and sustainable effort to promote professional learning community ideology will more likely thrive.

Leithwood et al. (2006) identified three key practices leaders exhibit when implementing effective and successful change over time. The three key practices are: (a) leadership by setting directions, establishing organizational goals, and monitoring the achievement of the goals, (b) leadership to develop organizational members by making sure they have the necessary tools, skills, and resources to be successful, and (c) leadership that redesigns the organization to ensure optimum conditions that promote effective teacher practices and positive organizational outcomes. Hallinger and Heck (1998) describe the above-mentioned leadership traits presented by Leithwood et al. as organizational purpose, organizational people, and organizational structure. Kanungo (1992) describe these traits as visionary leadership strategies, efficacy building leadership strategies, and structure within the organization. Marzano, Waters, & McNulty (2005) listed 21 leadership practices that Leithwood et al. (2006) felt aligned closely with the three leadership practices mentioned above. As stated previously, Kouzes and Posner

(2003) present five leadership dimensions to vet out and sustain effective leadership within a professional learning community organization. The dimensions are: (a) modeling the way, (b) inspiring shared vision, (c) challenging the process, (d) enabling others to act, and (e) encouraging the heart. Teacher collaboration can be influenced either positively or negatively depending of the type of leadership present within the learning organization. A discussion regarding teacher collaboration in a professional learning community will be presented next.

Teacher Collaboration in Professional Learning Communities

With federal and state reform mandates associated with NCLB failing and more importantly falling primarily on teachers' shoulders of responsibility, it is important to understand how an individual such as a teacher working in a group environment, constructs his or her own meaning regarding the required or expected collective group behavior. Although there is a growing body of research that suggests that when teachers work together, student learning is enhanced (Berry, Johnson, & Montgomery, 2005; Hollins, McIntyre, Debose, Hollins, & Towner, 2004; Phillips, 2003, Strahan, 2003; Supovitz, 2002; Supovitz & Christman, 2003), the structure and norms of many schools support individual teacher autonomy and isolation. Teachers spend most of their days alone with their students, with little time to build a collective response to the new demands for 100% proficiency. Some school districts are, however, beginning to create structure and time for greater teacher collaboration. It is critical to understand how teachers construct meaning when required now to shift from a norm of autonomy to one

of collaboration and collective responsibility. Therefore, this study, as previously mentioned, also explored teachers' sense of collective efficacy within a PLC context.

PLC teacher development. An additional important professional learning community dimension is teacher development and teacher readiness with regard to the implementation of PLC methodologies when designing the implementation timeline of a PLC cohort. Bullough (2007), Gorinski and Shortland-Nuku (2006), and Morrissey (2000) all concur that effective and timely staff development is necessary to prepare teachers for the implementation of PLCs. Effective teacher development facilitates teacher buy-in and ensures that teachers will be better prepared to implement PLC strategies within the classroom. Gorinski and Shortland-Nuku (2006) also suggest that staff development should be designed with a sense of cultural sensitivity in order for teachers to connect to the ethnic diversity of the student population in which they serve.

Teachers in a PLC environment can foster a sense of reflective professional practice that can also be viewed as being reflective action-research practitioners (Bullough, 2007). By becoming a reflective action-research practitioner, teachers become committed to the PLC process because the research being conducted is based on real life classroom conditions just waiting for the implementation of effective strategies. With this action-research perspective, teachers are able to articulate PLC data outcomes in terms of changed teacher practices and improved student achievement (Bullough, 2007; Vescio et al., 2008).

According to Bullough, (2007); Sweetland (2008); and Vescio et al. (2008) school personnel including teachers, classified instructional aides, principals, and support

staff are more inclined to personally hold themselves morally accountable with regard to ensuring and securing the success of each individual student if they strongly believe they are a part of a collegial and collaborative staff development professional learning environment. In addition, Vescio et al. (2008) communicate, in terms of staff development, the need for effective professional learning communities to inherently communicate four staff development characteristics that promote changes in the teaching and learning process. The four characteristics are: (a) collaboration, (b) focus on student learning, (c) teacher authority, and (d) continuous teacher learning.

Professional learning communities provide an avenue for all students to succeed if effective PLC procedures are established that focus on (a) what it is educators want their students to learn, (b) how educators will know if their students have mastered the required content, (c) what educators will do if their students do not learn, and (d) what educators will do when some students have already mastered the required information (DuFour, 2003b). However, establishing policies alone will not create sustainable organizational change with regard to PLCs. A significant factor in determining the effectiveness and potential sustainability of PLCs is the teachers' commitment to PLC practices that will turn the tide on reform. In terms of a social justice perspective, professional learning communities are a significant educational reform that when implemented effectively, can focus on an aspect of social justice that has been overlooked by educators who possess good intentions for all students even in the presence of inadequate program funding, resources, and training etc. The achievement gap between

minority students and their educational peers is a social justice issue and until it is closed, equity will not exist for all.

PLCs have provided educators with a methodology to improve the teaching and learning for all students. By focusing on results, educators will be able to determine which students are in need of additional instruction or remediation. According to DuFour (2003b), effective teacher collaboration will promote best practices for meeting the needs of marginalized students while at the same time improve professional practices in schools. PLCs may be an effective way to create sustainable student achievement when teachers collaborate together as action-researchers to address student achievement including the achievement of minority students. As the literature communicates, PLC implementation has a standard foundational basis however; PLC nomenclature can be varied depending on the type of organization implementing a professional learning community. The focus of this study was to research the relationship between collective efficacy and leadership within a professional learning community as designed by DuFour and Eaker (1998), by gathering both quantitative and qualitative data to determine whether collective efficacy or leadership had a stronger influence on the nature and degree of professional learning community implementation in the OVUSD. The results of the statistical relationships will be discussed in Chapter 4. In terms of the PLC connection to collective efficacy and leadership, a scant amount of empirical data is present regarding the DuFour and Eaker professional learning community model. This study provides new evidence regarding the role and influence of collective efficacy and

leadership within a DuFour and Eaker professional learning community model as implemented for over six years in the OVUSD.

The PLC Connection to Collective Efficacy and Leadership

In a professional learning community there are opportunities for shared leadership and shared decision-making made available to individual teachers and/or grade-level teams (DuFour & Eaker, 1998). This notion of positive professional development opportunities for individual teachers and/or grade-level teams provides an avenue to improve knowledge and skills, which then can be applied to the classroom environment. In a study conducted by Pescosolido (2001), it was noted that emergent leadership, leadership that emerges from within a group, and not necessarily through a formal designation process, had a positive affect on collective efficacy. According to Goddard et al. (2000), collective teacher efficacy has the ability to positively or negatively impact and shape the environment of an organization. When teachers are provided with professional development opportunities in a shared-leadership and/or shared decision-making format, professional community and collective responsibility for student learning was at a higher level of collective efficacy compared to schools where democratic processes were not present (Marks & Louis, 1999.)

In a recent study by Grider (2008), a significant correlation was found ($r = .422$) communicating a positive relationship presentation between teachers' analysis of the degree of PLC implementation present at their respective schools sites and teachers' sense of efficacy. Past research has also identified the existence of a linkage between the descriptors of professional learning communities and teachers' sense of efficacy (Grider,

2008; Lee, Dedrick, & Smith, 1991; Newmann, Rutter, & Smith, 1989; Rosenholtz, 1989). Based on Grider's conclusions from his study on elementary, middle, and high school teachers' perceptions of professional learning community and sense of efficacy and, the results from the only other known study focusing on teacher's professional learning communities and efficacy (Cowley, 1999), it was noted that the scant amount of research on the topic of schools functioning as professional learning communities in relationship to teachers' sense of efficacy created a need for further research on the topic. What is missing from the literature according to Graham (2007), are studies specifically focusing on the role of leadership in determining teachers' sense of collective efficacy within a PLC, which this current study, has provided by focusing on a DuFour and Eaker (1998) professional learning community design.

Summary of Literature Review

This literature review examined empirical evidence documenting the importance of positive individual and collective efficacy, the role of leadership, and a possible school reform model commonly known as a professional learning community in terms of each domain's individual importance to the educational system's efficiency efforts to improve student achievement. Each domain independently implemented, should produce positive results in terms of effective teaching and learning opportunities. The missing link is the tri-relational connection between collective efficacy, the role of leadership, and professional learning communities specifically focused on the DuFour and Eaker (1998) model. This study specifically researched the relationship of professional learning community, collective efficacy, and leadership in a district that has adopted the PLC

design developed by DuFour and Eaker. As stated earlier in the literature review, there is significant evidence suggesting the individual benefits of collective efficacy, the individual role of leadership, and the benefits of working in a professional learning community in hopes of improving student achievement.

If professional learning communities are the conduit for educational reform, the results of this study should advance the current empirical knowledge of professional learning communities by gathering both quantitative and qualitative data from one San Diego County north coastal school district where the DuFour and Eaker PLC model has been in place for six years. By analyzing previous quantitative, qualitative, and mixed-methods studies, this review of pertinent literature explored social cognitive theory and self and collective efficacy, leadership theory, organizational learning theory, and the history, definition, and four models of professional learning communities as well as, established an understanding of the role of leadership within a professional learning community. The following chapter will discuss the methodology used for this study to effectively analyze the construct of collective efficacy and leadership in a specific professional learning community model.

CHAPTER 3: METHODOLOGY

Modern day teachers work in environments where the stakes are high and the pressure to deliver results is intense as schools and districts strive to meet *NCLB* (2001) proficiency standards. A review of the literature has shown a need for teachers to form collaborative and collegial teams in order to effectively conduct the work necessary to optimally and efficaciously perform as effective contributors in a professional learning community. Student achievement has been linked to research in the area of collaboration showing that when teachers believe they can make a positive impact on student achievement as individual teachers (high individual efficacy) in conjunction with the collective feelings of grade-level teams (high collective efficacy) a belief exists that as a learning organizational team, they can make a difference together (Goddard, 2002).

A number of studies have documented the effect of collective efficacy and professional learning communities on student achievement (Goddard et al. 2000; Hipp, 1996; Hord, 1997; Hoy & Woolfolk, 1993; Lee & Smith, 1996; Louis & Kruse, 1995; Louis & Marks, 1998; Mitchell & Sackney, 2000; Wahlstrom & Louis, 2008). These studies have helped to establish the significance of professional learning communities, which have become a major strategy for improving schools. DuFour and Eaker (1998) have popularized the concept of professional learning communities (PLCs) and have been the leading proponents and disseminators of a PLC model. Yet few studies have been conducted on the effects of this model. Furthermore, little research has been conducted on the role of leadership in relationship to PLCs. Therefore, the purpose of

this study was to explore the role and relationship of leadership in building and sustaining a professional learning community model as described by DuFour and Eaker (1998) and the development of teacher collective efficacy within these communities.

To address this overarching purpose, several specific research questions were explored in this study:

1. What is the level of implementation of the characteristics of PLCs and the level of collective efficacy present within a district implementing the DuFour and Eaker (1998) PLC model for over six years?
 - 1.1. What is the relationship between PLCs and teacher collective efficacy?
- 2.0. What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?
 - 2.1. In what ways do school leaders build and support PLCs?
 - 2.2. In what ways do school leaders foster collective teacher efficacy?
- 3.0. Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

Hypotheses

The following hypotheses were formulated and addressed in this study:

- A. The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics.
- B. The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics.
- C. There is a direct relationship between PLC implementation and teacher collective efficacy.

- D. Schools that exhibit high levels of PLC characteristics also produce high levels of collective efficacy.
- E. There is a positive relationship between PLC characteristics, teacher collective efficacy, and leadership.
- F. Transformational leadership predicts PLC, which predicts the collective efficacy subcategories of task analysis and group competence, which predicts student outcomes.

Context of the Study

This study was conducted in the “Ocean View Union School District” (OVUSD) located in southern California. OVUSD is a K-6 district with approximately 4000 students. The district covers a geographic area of approximately 200 square miles and includes two distinct communities. The school district currently operates two K-6 schools in one community and six K-6 schools in an adjacent community. This K-6 school district is a feeder district to a neighboring high school district, which consists of four 7th and 8th grade middle schools, four comprehensive high schools, one alternative high school, and one adult education high school. This study focused only on the OVUSD elementary district.

The district has the following mission statement and core beliefs:

“Mission Statement

Supported By An Involved Community, An Outstanding Staff And A Shared Vision For Academic Excellence, “The Ocean View School District” Is Committed To Providing A Rigorous, Inspiring And Nurturing Educational Program That Is Continually Evolving To Develop Well-

Rounded Individuals Who Embrace Learning For Life And Who Are Prepared To Meet The Challenges Of The Future.

Core Beliefs | *We believe that...*

- Every Individual Has Worth
- Individuals Deserve The Opportunity To Reach Their Potential
- Learning Is A Life-Long Process
- Everyone Has The Right To Be Safe
- Individuals And Communities Have Responsibilities To Each Other
- The Uniqueness Of Individuals Enriches The Community”

This district was an illuminative site for this study because of its unique PLC implementation. PLC grade-level teams meet weekly for 120 minutes (K-3) or 180 minutes (4th – 6th). These PLC minutes (120 or 180 per week) are provided when students attend “Extended Studies” programs such as art, music, physical education, science, and technology. In addition, the school’s traditional bell schedule was also amended to allow for the early release of students every Wednesday at 12:30 p.m., for PLC grade-level, site level, or district level team meetings. Students are released every Wednesday at 12:30 p.m. in order for teacher teams to meet to discuss student assessment results gathered during both ongoing learning opportunities (formative) and after the learning process (summative.) PLC time is conducted on the 2nd and 4th Wednesday of every month while the 1st, 3rd, and 5th Wednesday of every month are early release days for teachers and school site personnel to use for personal or professional endeavors also beginning at

12:30 p.m. due to the lengthening of the school days on Mondays, Tuesdays, Thursdays, and Fridays.

In order to establish professional learning communities in this district, staff members attended the DuFour and Eaker off-site training held six years ago in 2003 as well as on-going district provided professional development over the last six years. Table 3.1 provides demographic data for both teachers and students where the study was conducted. The numbers used for the data has been adjusted +/- 10 to protect the identity of the district.

Table 3.1: PLC Study Demographic Data

Teachers	Asian Indian	Black	Chinese	Filipino	Hispanic	Korean	Vietnamese	White
256	1 %	0%	1.9 %	0.4 %	1.5%	3 %	0.0 %	92.2%
Students	Asian Indian	Black	Chinese	Filipino	Hispanic	Korean	Vietnamese	White:
4,200	3.6 %	1.7 %	11.6 %	1.5 %	5.9 %	5.5 %	1.7 %	68.5 %

General Research Design and Rationale

This mixed-methods multi-case study focused on one San Diego county coastal K-6 school district to seek the perceptions of teachers and principals regarding the perceived implementation levels of professional learning communities across the district. According to Yin (2003), a case study is the best course of action when researchers have minimal influence over existing events and when the research topic is embedded within a contemporary experience. This study also investigated teachers' perceptions of collective efficacy in their professional learning communities. Yin (2003) describes a case study to be "an empirical inquiry that investigates a contemporary phenomenon within its real-life

context, especially when the boundaries between the phenomenon and context are not clearly evident” (p. 3).

Study Participants

K-6 principals and teachers were the primary participants for this study. Study participants were sent an invitation via email with an embedded link to a voluntary Web-based survey (on Survey Monkey), which was disseminated to all certificated classroom teachers, certificated special education teachers, and site principals. There were approximately 250 certificated teachers who were invited to participate in the quantitative statistical survey. The quantitative survey was voluntary and the participants’ identities remained anonymous. Qualitative one-on-one principal interviews and primary/upper grade-level individual teacher interviews were also conducted based on the quantitative results. Purposefully selected principals and both primary and upper grade-level teachers were selected based on the results of the quantitative survey identified only through the survey respondents self-selected school identification.

From the quantitative survey results, a purposeful sampling of a minimum of two primary and a minimum of two upper grade-level teachers were asked to volunteer for an individual teacher interview from the schools where four principal one-on-one interviews were chosen. The schools were chosen because the quantitative data indicated two schools presenting with high levels of PLC implementation and two schools presenting with low levels of PLC implementation out of the eight district schools. The study’s qualitative participants were purposefully selected in order to hone in on a central phenomenon such as professional learning communities because the study’s participants are “information rich” with regards to the current status of the DuFour and Eaker (1998)

professional learning community model that has been implemented in the district (Creswell, 2008).

Quantitative Sampling and Participants

Using the District's *First-Class* email system, all certificated classroom teachers were sent an invitation to voluntarily participate in an electronic survey disseminated via *Survey-Monkey*, asking them to answer questions about their knowledge of their grade-level team in terms of their perceptions of the levels of professional learning community implementation and their perceptions about collective efficacy as it also relates to their professional learning community grade-level team. The email provided an "opt in or opt-out" choice at the very beginning of the electronic survey. If the certificated teachers chose to continue on with the survey, an electronic copy of the consent form was the next link after the "opt in" choice. To maximize survey participant numbers, an incentive was provided.

In the study's pseudo-district, the education foundation raises money to support the arts, music, physical education, science, and technology programs. To maximize survey participant numbers, this researcher donated \$2 to the education foundation per completed electronic survey for a potential maximum donation of approximately \$500. At the completion of the survey collection time frame, 192 electronic surveys were completed with eleven surveys eliminated because of too many missing question responses. Based on the original number of quantitative surveys completed (192), this researcher donated \$384. Later, during the study's qualitative data collection phase, an additional study incentive was added where \$10 was donated for each one-hour qualitative survey completed. This researcher conducted 27 qualitative interviews at four

of the eight schools within the district. Based on the 27 qualitative interviews, an additional \$270 was donated for a total of \$654. With corporate matching, the educational foundation of this study's district received a total donation of \$1,308. The following section describes the qualitative sampling and participants.

Qualitative Sampling and Participants

Using a purposeful sampling method (Miles & Huberman, 1994), a minimum of two primary teachers and a minimum of two upper grade teachers at each of the four purposefully selected schools were asked to volunteer for individual teacher interviews. The selection of the individual teacher interviews was based on the selection of the four principals who were also asked to voluntarily participate for one-on-one principal interviews respectively in order to seek perspective regarding professional learning communities and its perceived affect on the collective efficacy of the organization's members. Principals were asked to volunteer for the qualitative one-on-one principal interviews due to their known extensive training in the particular DuFour and Eaker (1998) professional learning community model used in this pseudo-district. In addition to the face to face interviews with the principals about their understanding of collective efficacy in terms of organizational effectiveness within a professional learning community model, the individual teacher interviews were conducted to collect data regarding grade-level team experiences within the professional learning community model and how the grade-level team experiences in a professional learning community either hindered or supported their collaborative effectiveness as teachers.

Online Quantitative Questionnaire Measures and Instrument Design

Participants in this study were asked to complete a survey consisting of seven demographic questions and three specific constructs of (a) characteristics of a PLC (13 questions), (b) collective efficacy (12 questions), and (c) leadership (36 questions) for a total of 68 quantitative survey questions. The first construct regarding professional learning communities explored participants' responses in terms of their perceptions of the PLC construct and the level of professional learning communities implementation within their school and grade-level as defined by DuFour and Eaker (1998) (Appendix A). The PLC component is based on 13 questions that were first trialed in a dissertation by Grider (2008) titled, *Elementary, Middle, and High School Teachers' Perceptions of PLC and Sense of Efficacy*. Grider's original PLC survey consisted of 52 original items. DuFour and DuFour, two experts in the field of PLCs analyzed Grider's 52 PLC survey questions to provide the researcher with content validity analyzed against the DuFour and Eaker (1998) PLC model. Based on the DuFour and Eaker model, the original 52 PLC survey items were pared down to 13, which Grider used in his dissertation.

The second construct explored was collective efficacy. The construct was assessed through 12 collective efficacy questions designed by Goddard (2002) (Appendix B). The collective efficacy survey has the formal name of "*A Theoretical and Empirical Analysis of the Measurement of Collective Efficacy: The Development of the Short Form.*" The collective efficacy survey focused on the teachers' sense of task analysis and group competence. The survey was balanced with an even number of both positive group confidence (GC+) and task analysis (TA+) statements and negative group confidence (GC-) and task analysis (TA-) statements in both the task analysis and group competence

questions to maintain the equilibrium in the survey design. Of the 12-item scale, there were three questions for each of the four categories. When Goddard field-testing the original 12-item survey to determine whether or not to include a question, all but one question (Home life provides so many advantages the students here are bound to learn.) presented with a low structure coefficient of .72 with the extracted factor. It was determined to leave this question in because the structure coefficient (.65) was deemed adequate; all but this item correlated .73 or above. In addition the 12-item scale yielded high internal consistency scores ($\alpha = .94$).

The third construct assessed by the survey was leadership. The leadership items were derived from a survey (Appendix C) developed by Kouzes and Posner (2002), which analyzes the five exemplary leadership practices of: (a) modeling the way, (b) inspiring a shared vision, (c) challenging the process, (d) enabling others to act, and (e) encouraging the heart. In the survey, there are six questions for each of the leadership practices for a total of 30 Kouzes and Posner leadership questions for both the self and observer survey formats. In addition, this researcher added six additive leadership practices questions specifically focused on professional learning community leadership practices for a total of 36 leadership survey questions. For this study, the leadership practices inventory (LPI) “observer” format was used to capture the teachers’ perceptions about their principal’s leadership practices. To participate in the voluntary electronic survey, teachers were asked to review the invitation to participate and then click on “Next” to participate (Appendix D).

Qualitative Instrument

To provide a richer understanding and interpretation of the quantitative data, an interview protocol was developed that probed the three major constructs (Appendix E). The interview began with an open-ended exploration of typical PLC meetings (grade level meetings). Of particular interest as qualitative data was gathered was how well the participants felt they were able to meet the needs of all learners individually, as well as in a group environment. Finally, the interview explored leadership both within the PLC and between the PLC and the school administration. The interviews provided data triangulation with the survey responses and enabled a more detailed response to the research questions.

After the quantitative survey responses were collected and initially analyzed using SPSS statistical software, primary and upper grade-level individual teacher and principal one-on-one interviews were conducted using questions, which “unpacked” the survey instrument’s preliminary quantitative results. This unpacking of the quantitative results with the use of qualitative questioning provided a significant perspective in terms of blending the data knowledge of the quantitative and qualitative results to create a “marriage” of support for a rich case-study research design. The qualitative interview questions were designed to collect school district professional learning communities consumer experiences to help answer the research questions and to build a case study analysis of the district’s current reality in terms of the impact leadership plays in building and sustaining collective efficacy in a professional learning community. In review, the research questions are:

- 1.0. What is the level of implementation of the characteristics of PLCs and the level of collective efficacy present within a district implementing the DuFour and Eaker (1998) PLC model for over six years?
 - 1.1 What is the relationship between PLCs and teacher collective efficacy?
- 2.0. What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?
 - 2.1. In what ways do school leaders build and support PLCs?
 - 2.2. In what ways do school leaders foster collective teacher efficacy?
- 3.0. Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

Data Collection Methods

To deliver the survey to the district teachers, an email using the district *First-Class* email system was sent asking teachers to complete the online survey. The invitation email had an embedded link to www.Surveymonkey.com, which took participants directly to the survey. With IRB and University approval, the electronic survey was first available to study participants from January 10 to January 20, 2010. Due to an initial low district-wide response rate it was necessary to re-open the survey link until April 1, 2010. A follow-up reminder was sent to participants and the length of the time available to respond to the survey was extended. In the follow-up email communication sent, teachers were reminded about the researcher's offer regarding an Education Foundation incentive of \$2 per completed survey. The goal was to obtain a 75% response rate across the eight schools in the district. The following Table 3.2 represents the online survey response rate per school and for the entire school district.

Table 3.2: Quantitative Survey Responses Per School

	School #1	School #2	School #3	School #4	School #5	School #6	School # 7	School #8	Total District Responses
Survey Responses:	17	26	21	13	26	23	27	37	190
Response Rate:	77%	84%	95%	81%	74%	64%	88%	82%	84%

Once the surveys were collected, they were analyzed to determine which schools would be the focus of the qualitative data collection. From the quantitative research results, two schools with high levels of professional learning community implementation and two schools with low levels of professional learning community implementation were selected, based on their total mean scores for the total professional learning community variable, to conduct the site principal interviews as well as the primary/upper grade individual teacher interviews. At each school, a minimum of two primary (K-3) teachers and a minimum of two upper grade (4-6) teachers were asked to participate in individual one-on-one interviews. Efforts were made to conduct the interviews during an early release day, when PLCs usually meet. In addition, the principals at the four selected high/low professional learning community schools were also asked to volunteer for one-on-one interviews with the researcher. The professional learning community mean scores will be kept confidential and not communicated to the study participants to enhance the confidentiality of the study. The Table 3.3 represents the number of qualitative interviews at each of the four selected school sites.

Table 3.3: Qualitative Interviews Per Selected School

	School #1	School #2	School #3	School #4	Total Qualitative Interviews
Principal	1	1	1	1	4
Classroom Teacher	6	8	5	4	23
Total	7	9	6	5	27

The final data collection was a review of professional learning community documents from the four selected schools sites. Of particular interest was evidence of the types of data used by the teams, samples of student work reviewed, and joint products produced by the team, especially rubrics, common assessments, or common lessons. If PLC agendas or minutes were kept, sample copies were also collected. These documents provided another source of data to triangulate with the survey and interview data. From information gleaned from the quantitative surveys and qualitative interviews, documents were reviewed at each of the selected interview school sites to seek evidentiary validation regarding the existence of the tenets of a professional learning community model as defined by DuFour and Eaker (1998), as well as, evidence of collective efficacy supporting increased student achievement. Additional documents reviewed included site mission and vision statements, school websites, state test results, intervention plans, and other documents supporting the research questions. Gathering documents provided the researcher with a deeper understanding and insight regarding the operational perspectives of each respective professional learning community school site. Gathering documents to augment the data collected through both the quantitative and qualitative methodologies

reduces the possibility of bias in the study (Patton, 1990; Yin, 2003). Most importantly, the gathering of data from all forms of data collection methodologies helps mitigate the possible limitations from gathering data from a single source because utilizing data sources in isolation would not provide enough detailed information to capture the full perspective of the constructs being studied.

Pilot Study

The survey instrument was first tested in a pilot study where 36 questionnaire items consisting of demographic, professional learning community, and collective efficacy questions were administered to a sample of 45 participants. The pilot survey was administered via *SurveyMonkey*, an online survey instrument, to one K-6 elementary school in San Diego County and a second K-6 elementary school in Riverside County. The initial survey items were drawn from two previously developed and tested surveys. The beginning of the survey gathered demographic information. The second section of the survey listed professional learning community statements originally used in a dissertation by Grider (2008). Prior to Grider using the PLC survey in his study, two professional learning community experts, Robert DuFour and Rebecca DuFour, reviewed the survey items to provide survey items validity. The balance of the survey, contained statements to determine collective efficacy levels in an organization and was originally created and field-tested by Goddard (2002). At the time of the pilot, the Kouzes and Posner (2002) Leadership Practices Inventory (LPI) was not used in the online survey. The 30 LPI questions and the six PLC leadership questions totaling 36 leadership questions, were added after the pilot study but, prior to the study's initial data collection phase.

In April 2009, the pilot study was sent to 45 teachers from two schools in two counties who had agreed to pilot the survey statements to validate the survey as a tool for the proposed study. In the pilot study, participants were given the opportunity to provide the researchers with survey instrument feedback through an open-ended questioning technique after each of the distinct survey sections. From this open-ended feedback, adjustments to some of the questions were made in order to increase question clarity, survey reliability and validity of the questions prior to the questions being used in a future research study.

From the pilot study data collection, an analysis was done to ensure that the questions being asked in the survey would indeed effectively answer the research questions. A factor analysis was also conducted to determine if any of the questions needed to be eliminated from the proposed survey to increase the stability and reliability of the survey instrument. From the results of the factor analysis, it was determined which factors and which questions loaded together to allow for the generation of distinctive themes. Three factors emerged, accounting for 71.634% of the variance, based on the Varimax rotation of the professional learning community survey items. These items were labeled as the following factors: (a) establishing collective goals (4 items), (b) organizing for collective action (6 items), and (c) collective focus on results (3 items). Table 3.4 represents the results of the professional learning community coding for the professional learning community survey component based on the factor analysis.

Table 3.4: Survey Coding

Establishing Collective Goals:

Teacher team created goals to achieve collective action leading to results.

Establishing Collective Goals: Shared mission, vision, values, and goals

PLC Survey Questions: 3, 11, 12, 13

Organizing for Collective Action:

Teacher team behaviors during PLC collaboration time.

Organizing for Collective Actions

Collective inquiry into “best practices” and “current reality”

Collaborative teams focused on learning

Action orientation and experimentation

PLC Survey Questions: 1, 2, 4, 5, 9, 10

Collective Focus on Results:

The specific PLC grade-level meeting results based on PLC collective actions.

Collective Focus on Results

Commitment to continuous improvement

Results orientation

PLC Survey Questions: 6, 7, 8

Table 3.5 shows the results using SPSS of the “rotated component matrix” after removing the first question regarding how often the professional learning community teams meet. From the rotated component matrix, it was determined that the first professional learning community question, “I meet at least once every other week with my teacher team to work collaboratively on improving student learning”, could be removed due to a low loading percentile. This statement was ultimately removed as one of the professional learning community statements for the final version of the survey for this study.

Table 3.5: Professional Learning Communities Questions Rotated Component Matrix

Professional Learning Community (PLC) Questions	Component		
	1	2	3
My team monitors the learning of each student at least four times each year...	.880	.132	.203
My team works together to establish common pacing guides for each unit...	.784		.141
My team has adopted specific and explicit norms and protocols that...	.716	.256	.105
My team members use student achievement results from a variety of...	.651	.446	.409
My team works together to clarify essential outcomes for each unit of...	.642	.508	.171
We practice applying the criteria until we can do so consistently.	.613	.478	.485
My team works interdependently to establish and achieve SMART goals...	.231	.834	-.210
The shared vision and values among my school's staff influence policies...		.722	.331
My team works collaboratively to clarify criteria to judge the quality...	.347	.574	.484
Improved results, achievement of goals, and the work of teams are the...	.501	.562	.299
Students who experience academic difficulty are guaranteed access to...		.134	.866
Students are required rather than invited to devote extra time and...	.305		.792
My team members use student achievement results to improve our...	.417	.446	.531

A similar process was followed to analyze the collective efficacy section of the survey. The results of the factor analysis vetted similar results to those of Goddard's (2002) pilot study of the same instrument. Due to obtaining similar results, all twelve of Goddard's collective efficacy survey questions were incorporated in this study's final survey instrument.

A convenient sampling of two principals and 45 teachers at two K-6 elementary school districts took a “mock” quantitative online survey to provide feedback on question clarity, purpose, and validity. The principals and two school sites agreed to pilot the proposed survey questions to give input regarding the types of questions asked in order to provide data concerning the role of leadership in building and sustaining collective efficacy in a professional learning community. A majority of the pilot study participants felt the questions were clear, concise, and easily understood. No one suggested that a question be reworded or removed from the proposed survey instrument.

Quantitative Data Analysis

The data from the study’s quantitative statistical survey experienced six types of statistical tests to develop a direction for data analysis as it relates to the research questions. First, descriptive statistics were conducted to glean an initial analysis in terms of mean, median, mode, variance, and standard deviation. Second, factor analysis procedures were conducted to better clarify the data responses in terms of their load factoring. From the load factoring, an analysis of possible themes or constructs emerged to analyze the data even further. Thirdly, correlation tests were conducted on the quantitative data to determine if there were significant relationships within the groups of variables being tested in the study. Multiple regression analysis tests were the fourth type of statistical analysis conducted on the quantitative survey data to determine the presence of any possible variance of responses among the variables being tested. In addition, One-way between groups ANOVA tests were conducted to determine possible differences between each of the eight schools and between any sub-groups tested such as age of study participants or the study participants years of teaching experience etc. The final

statistical analysis conducted was a structural equation model (SEM) to test and estimate the confirmatory or exploratory causal relationships between the exogenous and endogenous dependent and independent variables researched in this study.

Qualitative Data Analysis

Once the quantitative data was analyzed, qualitative one-on-one teacher interviews were conducted and a recording of these interviews as well as individual principal interviews was made and transcribed. The transcriptions omitted fill words. Each transcript was read, first to gain a holistic or organic perspective of what the participants were sharing about their PLC, sense of efficacy, and leadership. The transcripts were then re-read to identify themes and create codes. These codes were then entered into Hyper Research qualitative software in order to more fully analyze the transcripts, search for responses that may align to survey data questions, and to explore the relationships among the themes.

Strategies for qualitative data analysis outlined in Yin (2003) and Miles and Huberman (1994) was used. According to Miles and Huberman (1994) there are three stages to the data analysis process: (a) data reduction to place the research data into themes, (b) data displays in order to condense the data to draw initial conclusions, and (c) conclusions that are drawn and validated based on evidentiary analysis. The four stages of qualitative data analysis were incorporated in the methodology regarding both the interviews and document review.

Proposed Theoretical Framework Model

Figure 3.1 presents the proposed model tested from data gathered and analyzed in this mixed method study. The model demonstrates the characteristics of DuFour and Eaker's (1998) professional learning communities, Goddard's (2002) collective efficacy measurements, and the transformational leadership themes of Kouzes and Posner (2002) delineating a range of pathways of influence on the variables being measured in this study. The proposed model postulates the existence of a positive relationship between collective efficacy and professional learning communities when influenced by the existence of transformational leadership to develop and sustain the model, which leads to increased student achievement. The SEM analysis will determine the goodness-to-fit of each element of this proposed model.

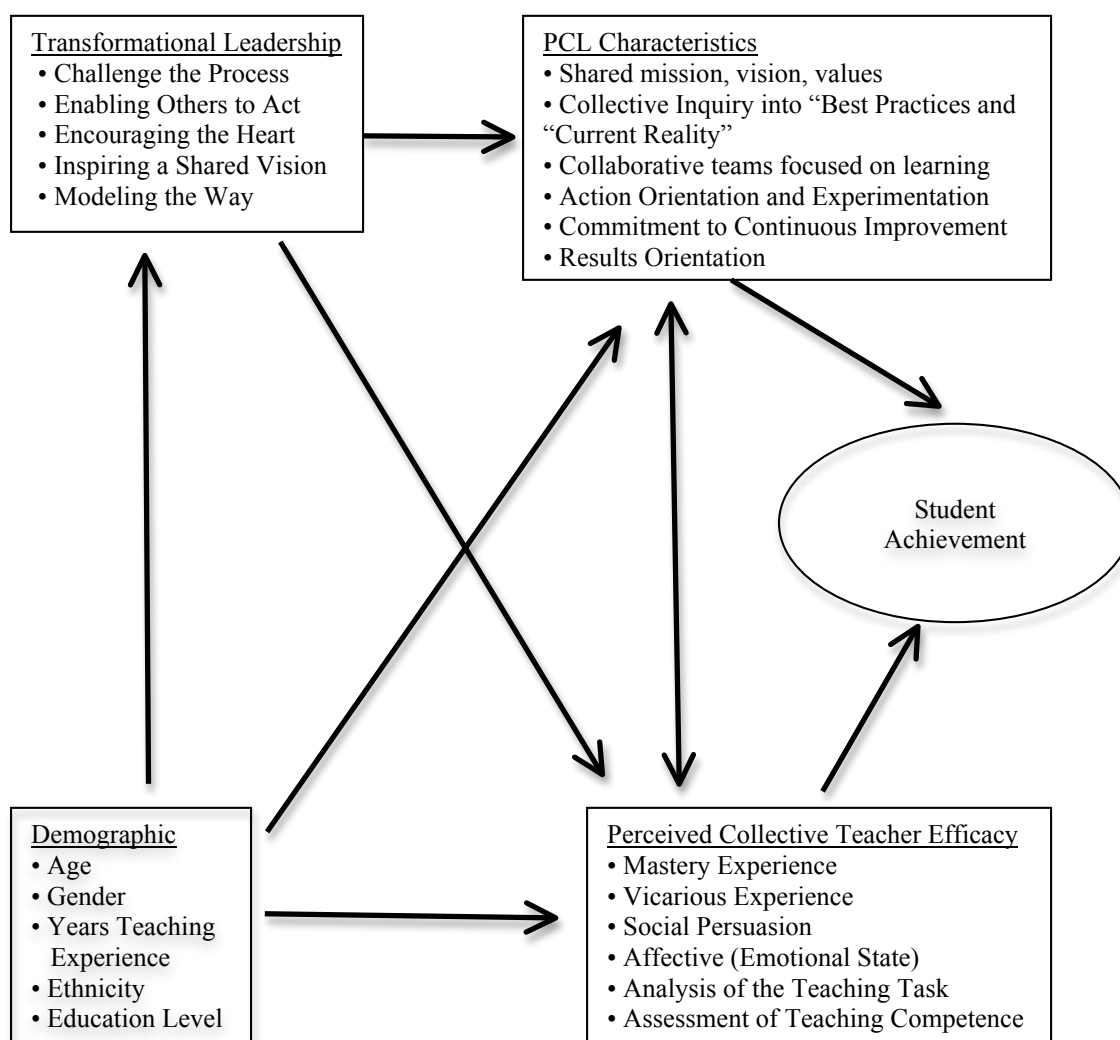


Figure 3.1: Proposed Theoretical Framework Model representing the relationships between collective efficacy, professional learning community, and transformational site leadership characteristics to increase student achievement.

Limitations of the Study

The study is limited by the fact that it was conducted in one school district with teachers who have had considerable experience with professional learning communities. Thus, the results may not represent teachers in other districts who have not participated in professional learning communities. This would then make the results difficult to

generalize to other school sites and districts. The study, however, will provide valuable insights into the level of implementation of PLCs in one district and how teachers in this district perceive the level of support provided to them by the school's leadership team for their collaborative grade-level work. Therefore, since there are limited studies on the three constructs of PLC, leadership and collective efficacy, this study will help to fill this void.

A second limitation of the study was that the survey instrument specifically explores the components of PLC as outlined by DuFour and Eaker (1998). The perceived level of understanding of the teachers as it relates to this professional learning community model may not fully reflect the nature of the PLCs operating in this district. However, the qualitative interviews will help to address this limitation. In addition, the study is focusing on the role of leadership in building and sustaining collective efficacy in a professional learning community model. One limitation may be the depth of understanding regarding the roles of leadership and the fundamental understanding of collective efficacy. Again, the use of multiple data sources helped address this potential limitation.

A final limitation regarding this study was the researcher's positionality in the OVUSD as a long-time certificated employee. When gathering both quantitative and qualitative data, the researcher was well aware of the sensitive nature regarding the constructs being analyzed in this research study. Great care and caution therefore was taken by the researcher to report the accurate analyses of the quantitative data, as well as, reporting the accurate reflections of the qualitative participants keeping in mind, that first

and foremost, the identities of all study participants have and will forever remain anonymous including, confidential interview data.

CHAPTER 4: QUANTITATIVE RESULTS

The purpose of this study was to identify the role of leadership in developing and sustaining collective efficacy in a professional learning community (PLC) specifically, a professional learning community as described by DuFour and Eaker (1998). To examine the three constructs of: leadership, collective efficacy, and professional learning communities, teachers in the “Ocean View Union School District (OVUSD)” voluntarily participated in an online survey using the web-based SurveyMonkey link. The study was purposefully conducted in the “Ocean View Union School District” (OVUSD), an elementary public school district in Southern California, because of the district’s prior experience implementing the specific model of professional learning community (PLC) being researched for this study, a model designed by DuFour and Eaker (1998).

The OVUSD is a K-6 district with roughly 4000 students. The district covers a geographic area of approximately 200 square miles and includes two distinct communities. The school district currently operates two K-6 schools in one community and six K-6 schools in an adjacent community divided by an interstate highway running in a north and south direction. This K-6 school district is a feeder district to a neighboring high school district containing four 7th and 8th grade middle schools, four comprehensive high schools, one alternative high school, and one adult education high school.

This study focused only on the OVUSD elementary district where classroom teachers and principals were asked to voluntarily provide their insights and perceptions on both the level of their specific school’s professional learning community implementation and effectiveness, as well as, their respective grade-level team’s professional learning community PLC implementation and effectiveness. Data for the

study were gathered first from teachers, when they completed an online survey to gather quantitative data, followed by purposefully selected one-on-one teacher and principal qualitative interviews based on the preliminary quantitative results.

The quantitative survey consisted of seven demographic questions, 13 professional learning community questions, 12 collective efficacy questions, and 36 leadership practices questions for a total of 68 quantitative survey questions. In addition to the quantitative online survey, 23 teachers and four principals from across the OVUSD participated in qualitative one-on-one interviews with the researcher to provide a more personal and in depth description of their experiences within their professional learning communities. The analysis of the qualitative interviews will be discussed in Chapter 5. Table 4.1 presents the online survey completion percentage for each of the eight OVUSD schools. The goal was to have at least a 75% completion rate per school and for the entire district as a whole. Six of the eight schools met the minimum 75% completion rate with the overall district survey completion rate at 84%.

Table 4.1: Quantitative Survey Responses Per School

	School #1	School #2	School #3	School #4	School #5	School #6	School # 7	School #8	Total District Responses
Survey Responses:	17	26	21	13	26	23	27	37	190
Response Rate:	77%	84%	95%	81%	74%	64%	88%	82%	84%

The organization of Chapter 4 begins with the analysis and presentation of the quantitative survey data, followed by Chapter 5, where a thorough description of the qualitative interpretations and findings will be presented, including a summary of the study's mixed-methods results. The study's closing Chapter 6, contains discussion of the

findings, conclusions, implications, and suggestions for future research. The study focused on responding to six research questions. Three of the six research questions are addressed in Chapter 4 using quantitative methods. The remaining three qualitative research questions are addressed in Chapter 5.

Quantitative Data Results and Analysis

The quantitative survey used for this study was to answer three of the six research questions. The three research questions were:

1. What is the level of implementation of the characteristics of PLCs and the level of collective efficacy present within a district implementing the DuFour and Eaker (1998) PLC model for over six years?
 - 1.1 What is the relationship between PLCs and teacher collective efficacy?
2. What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?

Hypotheses

- A. The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics.
- B. The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics.
- C. Schools that exhibit high levels of PLC characteristics also produce high levels of collective efficacy.
- D. There is a positive relationship between PLC implementation and teacher collective efficacy.

- E. There is a positive relationship between PLC characteristics, teacher collective efficacy, and leadership.
- F. Transformational leadership predicts PLC, which predicts the collective efficacy subcategories of task analysis and group competence, which predicts student outcomes.

To answer the quantitative portion of this study's data collection methods, teachers in the OVUSD were sent an email invitation to participate in the study (Appendix D). The origin and psychometric qualities of each of the three independently designed quantitative surveys constructed as one 68-item survey for this study were previously discussed in Chapter 3. Later in this chapter, there will be a discussion of the psychometric qualities of the combined 68-item quantitative survey instrument designed by incorporating components from previously designed surveys focusing on PLC, collective efficacy, leadership, and leadership specifically focused on professional learning communities.

Descriptive Statistics

Using SPSS version 16.0, the quantitative data were first prepared through the screening and cleansing process (Pallant, 2007) in order to ensure for accurate analysis. The survey data were analyzed through the descriptive statistical process to check for missing data. If any individual surveys were missing one or two values within the collective efficacy, leadership, or professional learning communities survey items, mean imputation was used to fill in the missing values (Fowler, 2009). Surveys returned missing more than two values, were excluded from the study. Originally, 192 surveys were collected with 11 surveys excluded due to missing more than two values within the

survey leaving 181 complete and usable cases. The data for this study were analyzed using the “Exclude cases pairwise” option. This option excludes the case or person when they are missing the necessary data for a specific analysis.

Demographics of Study Participants

Descriptive statistics representing the variable for age of the survey respondents show that of the 181 survey respondents, a majority (31.5%), were between the ages of 29 - 34 with the second highest category of respondents being between the ages of 35 – 40 years of age (24.9 %). The third highest age range after combining three age categories (47 – 52, 53 – 58, and 59 or older) represents 21.6 % of the respondents surveyed. In addition, from the represented data, a majority (92.3 %) of the respondents were female with the balance of the survey respondents being male (7.7 %). As with most research conducted in elementary school environments in the U.S., the majority of study participants for this research were female.

The majority of the survey respondents (91.7 %) were Caucasian or White with the smallest ethnicity group reporting as Multi-Racial (1.1 %). Two groups in the quantitative survey (survey choice 2: African American and survey choice 5: Native American) were not represented in this study because no survey respondent self-identified as either of these two ethnic groups. Also, there was no one among the study participants who self-reported as survey choice 6, “Other.”

From the data, a majority of the teachers in this study (n=57 or 31.5 %) have taught between six to ten years. In addition, 37 teachers (20.4 %) have taught between 11 to 15 years and 29 teachers (16.0 %) have taught for only one to five years. A majority of the 181 survey respondents (52.5 %), have taught at their current school between one and

five years followed by 30.4 % of the survey respondents reporting that they have taught at their current school between six to ten years. There were no respondents who identified with either category 5 (21 to 25 years) or category 7 (31 or more years) found within the 181 surveys.

In comparing the years in teaching with the years taught at the teachers' respective schools, 31.5 % of teachers (57 respondents) who reported as having only six to ten years of teaching experience also presented with similar results in terms of the number of years as a teacher at their current school. Extrapolating the data between the teachers' years of teaching experience compared to the teachers' number of years at their current school, approximately 56 of the survey respondents who reported as having taught between 6 to 10 years have also been members of their school site for the equivalent amount of time. This is an indication that a majority of the teachers in this study were hired six to ten years ago and have also remained at their original school site for the entire duration of their employment within the district, suggesting overall a high level of teacher/school employment stability.

In addition, a majority of the survey respondents (52.2 %) have been at their current school between one to five years. 16 % of the survey respondents have only one to five years of teaching experience in comparison to 52.5 % of the survey respondents who have been at their current school between one to five years. One explanation for this phenomenon is found by reviewing district documentation, which describes the OVUSD's need to open an additional two schools within the past six years due to student growth. As the two new schools were opened, veteran staff were transitioned to the newer schools in order to balance the teaching experience and expertise across the district. In

regard to the education levels acquired by the study participants, over half of the survey respondents (53.0%), have obtained a Master's degree, with 17.7% of the respondents reported having only a Bachelor's degree; 27.7% of the survey respondents are currently working towards a post-baccalaureate degree.

Exploratory Data Analysis

Prior to analyzing the quantitative data, it was necessary to conduct an exploratory data analysis (EDA) of the quantitative data to assess the accuracy of the data, check for missing data and its affect on the balance of the data, evaluate the effect of any possible outliers, and determine the fit between the characteristics of the data and the assumptions regarding the specific statistical technique to be used to answer the research questions. To begin the discussion regarding the EDA, the results of the analysis regarding any possible outliers and violations of assumptions is presented next.

Outliers and Violations of Assumptions

The quantitative data were checked for accuracy and assurances in order to look for any possible outliers and violations of assumptions prior to conducting statistical analysis on the study's data. The distribution of each variable's score was reviewed using a box plot to determine the presence of any outliers in the data. From the data set, it appears that there were only a few outliers in each of the box plot graphs representing the variables for total professional learning communities (one outlier), total collective efficacy (two outliers), total leadership (one outlier), and total professional learning community leadership (two outliers). Normality tests were also conducted to assess the mean values using the 5% trimmed mean feature to ascertain whether the few outliers would have a strong influence on the true mean scores. The 5% trimmed mean analysis

revealed that the data used in the analysis for each composite variable did not appear to have a strong influence on the true mean scores when reviewing the few extreme outlier scores. When reviewing the true mean and the 5% trimmed mean, the difference in the mean scores ranged from a minimum difference of .3855 to a maximum difference of 1.4242. Due to the minimal differences between the mean and 5% trimmed mean scores, the outlier scores remained in the data set for the remainder of the statistical analysis.

Exploratory Factor Analysis

To explore possible interrelationships between the PLC, collective efficacy, and leadership variables, the 61-item professional learning community, collective efficacy, and leadership scales were analyzed using the exploratory factor analysis process. The framework guiding the factor analysis process centers on the need for researchers to effectively summarize vital information contained in the data by “forcing” the data into a fewer number of reliable factors. According to Hair et al. (1998), the primary purpose of factor analysis is divided into two key areas: (a) data reduction to refine and define the underlying data structure into fewer factors that explain as much of the survey response variance as possible and (b) to provide substantial interpretation of the data without loss of extensive data integrity.

Tabachnick and Fidel (2007), suggest that sample sizes greater than 300 produce higher correlation coefficients among the variables because factors obtained from smaller sample sizes may present as less reliable. If smaller sample sizes (< 150 cases) are used, the factors generated may not generalize as well as factors generated from larger sample sizes. According to Tabachnick and Fidell, sample sizes of at least 150 cases may suffice if the factor analysis process produces several high factor analysis marker variables

(above .80). Other researchers including Nunnally (1978), conclude that the overall sample size is not as important as the ratio of “subjects to items.” From this discussion, it is recommended that a 10 to 1 ratio be present indicating the presence of 10 cases for every factor to be analyzed. This study has a sufficient amount of cases ($n=181$) for the factors being analyzed.

From the initial factor analysis, the Kaiser-Meyer-Olkin (KMO) value was .932, which exceeded the recommended value of .6 or greater. In addition, the Bartlett’s Test of Sphericity presented as significant $p = (.000)$, a value less than the recommended $p < .05$. With the KMO valued at .932 and the Bartlett’s test significant at $p = (.000)$, factor analysis was appropriate for this data set. Principal component analysis revealed nine components with eigenvalues greater than one (1), explaining 70.717% of the variance. The first factor explained 39.7% of the variance in teacher responses. The second factor explained 9.9% of the variance in teacher responses. The third factor explained 6.6% of the variance in teacher responses. The range of variance in teacher responses from factors four through nine were 3.3%, 2.6%, 2.3%, 2.2%, 2.0% and, 1.7% respectively. When the screeplot for the data was reviewed, a clear break after the ninth component was revealed.

Another way to determine the number of factors to retain in the analysis is to use what is described as *Parallel Analysis* (Watkins, 2000). Parallel analysis is a method involving the comparison of the eigenvalues of the present study with those generated by a random data set of the same size (Horn, 1965). In the social sciences, this statistical technique has become increasingly popular as one of the steps when determining the number of factors to retain during factor analysis (Choi, Fuqua, & Griffin, 2001; Stober, 1998). Using this study’s data set, parallel analysis was conducted using a computer

software program called, “Parallel Analysis Engine to Aid Determining Number of Factors to Retain” (Patil, Singh, Mishra, & Donovan, 2007). When using this analysis, researchers are directed to compare the eigenvalues of the current study with the eigenvalues created when using the parallel analysis statistical technique with the same sample size ($n=181$), the same number of variables ($n=61$), and a desired 95% eigenvalues confidence level. Table 4.2 shows the comparison between this study’s eigenvalues as compared to the values created using the parallel analysis statistical technique.

Table 4.2: Comparison of Initial Eigenvalues to Parallel Analysis

Components	Total Variance	% of Variance	Parallel Analysis Percentile
1	24.230	39.722	2.485305
2	6.044	9.908	2.320069
3	4.066	6.666	2.225065
4	2.022	3.314	2.127237
5	1.625	2.664	2.033572
6	1.440	2.361	1.966879
7	1.359	2.227	1.903874
8	1.277	2.093	1.850197
9	1.074	1.761	1.789873

From the comparative analysis, only three of the original components highlighted above had eigenvalues higher than the percentiles produced using the parallel analysis statistical procedure. Components 1 through 3 will be accepted and components 4 through 9 from the initial eigenvalues table will be rejected because according to Horn (1965), the number of factors to retain is based on the number of random eigenvalues generated from the random sample of 100 correlation matrices. Once produced, the 100 randomly generated eigenvalues are then compared to the eigenvalues presented in this

current study. If the current study's eigenvalues for each component presents higher than the corresponding random eigenvalues, the factor will be retained.

According to the current analysis, three (3) original component eigenvalues were higher than the randomly generated eigenvalues. Therefore as stated earlier, components 4 through 9 will be rejected. The original nine (9) eigenvalues explained 70.72% of the total variance as compared to 56.3% of the total variance using the three (3) greater than 1 eigenvalues produced from the parallel analysis statistical procedure. To aid in the analysis and interpretation of the three remaining post-parallel analysis components, a Varimax rotation was performed. Table 4.3 below presents the factor load analysis after a Varimax rotation was performed on the three remaining post-parallel factor analysis.

Table 4.3: Varimax Rotated Component Matrix for 61-Item-3-Factor Solution

Survey Statements	Factor 1 Leadership	Factor 2 PLC	Factor 3 Collective Efficacy
L21: My principal builds consensus around a common set of...	.834		
L8: My principal challenges people to try out new and831		
L26: My principal is clear about his/her philosophy of leader...	.821		
L27: My principal speaks with a genuine concern about...	.821		
L22: My principal paints the "big picture" of what we...	.821		
L3: My principal seeks out challenging opportunities...	.810		
L7: My principal describes a compelling image of what...	.806		
L4: My principal develops cooperative relationships...	.802		
L13: My principal searches outside the formal boundaries...	.798		
L28: My principal experiments and takes risks, even when...	.796		
L12: My principal appeals to others to share an exciting...	.790		
L25: My principal finds ways to celebrate accomplishments...	.780		
L1: My principal sets a personal example...	.777		
L36: My principal creates an appropriate context for teacher...	.775	.316	
L29: My principal ensures that people grow in their jobs by...	.774		
L30: My principal gives members of the team lots of...	.768		
L11: My principal follows through on promises and...	.758		
L10: My principal makes it a point to let people know about...	.757		
L2: My principal talks about future trends that will influence...	.757		
L18: My principal asks, "What can we learn?" when things...	.755		
L9: My principal actively listens to diverse points of view.	.745		
L5: My principal praises people for a job well done.	.739		
L17: My principal shows others how their long-term...	.739		
L15: My principal makes sure that people are creatively...	.728		
L31: My principal shares leadership and power with teachers...	.724		
L33: My principal has the ability to collaboratively participate...	.723		
L35: My principal effectively gathers and reports student...	.716		
L23: My principal makes certain that we set achievable goals...	.713		
L6: My principal spends time and energy making sure that...	.712		
L14: My principal treats others with dignity and respect.	.703		
L19: My principal supports the decisions that people make...	.702		
L20: My principal publicly recognizes people who exemplify...	.688		
L16: My principal asks for feedback on how his/her actions...	.683		
L34: My principal provides teachers with PLC resources...	.648		
L32: My principal facilitates the work of the staff regarding...	.626	.401	
L24: My principal gives people a great deal of freedom and...	.562		

Table 4.3: Continued: Varimax Rotated Component Matrix for 61-Item-3-Factor Solution

PLC5: My team monitors learning four times per year...			.720	
PLC1: My team works together to clarify essential outcome...			.710	
PLC8: My team uses student achievement results to identify...			.692	
PLC11:My team works interdependently to establish SMART..			.655	
PLC2: My team works together to establish common pacing...			.615	
PLC12: Improved results, achievement of goals, and the work...			.580	.345
PLC7: Students are required rather than invited to devote time.			.559	
PLC10: My team has adopted specific and explicit norms and...			.556	.326
PLC6: Students who experience academic difficulty are...			.537	
CE7: Teachers provide many engaging lessons that the760
CE2: Teaches are confident to be able to motivate student...				.756
CE3: Teachers believe it is their responsibility to help...				.725
CE6: If students come to school unprepared, teachers have...				.715
CE9: The structures, practices, and procedures of this school...				.700
RCE5: Some teachers lack skills to ensure every child can...				.669
CE12: Teachers in this school help each other incorporate...				.653
RCE4: If a child doesn't want to learn, teachers here give up...				.649
CE1: Teachers in this schoolwork together to meet the needs				.636
CE11: Teachers at this school have strategies...				.577
PLC13:The shared vision and values among my school's staff...	.330	.356		.546
RCE10:Learning is more difficult at this school because...				.535
RCE8: Students here just aren't motivated to learn...				.531
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
A. Rotation converged in 5 iterations				

Construct Validity

The independent psychometric qualities of the three survey instruments used for this study have previously gone through the vetting process with regards to each survey's validity and statistical strength. This researcher, focusing on specific principal behaviors regarding the professional learning community process, added six new leadership questions in addition to the 30 Kouzes and Posner (2002) Leadership Practices Inventory (LPI) questions. The additional six-leadership questions loaded with the remaining 30 LPI questions in factor 1 with coefficient loadings ranging from a high of .775 to a low of .626. Based on the factor loadings in previous studies where each of the three survey

instruments was used as an independent stand-alone survey tool, the variables in this study also loaded as expected. Therefore, the psychometric properties and strength of each respective survey will be accepted. However, to ensure the reliability and internal consistency of the combined three-scaled 61-question survey instrument used in this study, a scaled reliability analysis was performed. Prior to the reliability analysis, four negatively worded survey items were reversed coded to ensure for a reliable and data accurate Cronbach alpha value. In this current study, the Cronbach's alpha coefficient for the composite 61-item survey instrument is .972, well above the preferred value of .8. In reviewing the item-total statistics, the corrected item-total correlations for all 61 survey items are above the recommended minimum value of $p > .3$. The Cronbach alpha values for each of the original and independent stand-alone surveys (not including the six additional professional learning community leadership questions designed specifically for this current study) are PLC: (alpha = .89), collective efficacy: (alpha = .94), and LPI: (alpha = .80).

The composite variables formed for this study were based on the factor analysis conducted in previous studies where each survey was used separately. For this study, the three surveys were combined with six new PLC leadership questions represented in the factor analysis presented above in Table 4.4. Factor analysis loadings derived from inputting all 61 variables together, showed that all questions from each respected survey primarily loaded together including the six PLC leadership questions, which loaded with the LPI leadership questions. Based on current data, groups of variables were combined to form twelve (12) new composite variables.

The PLC variables were divided into four distinct groups: (a) collective goals

(PLC items 3, 5, 11, 12, & 13), (b) collective actions (PLC items 2, 4, 9, & 10), (c) focus on results (PLC items 1, 6, 7, & 8) and (d) total PLC composite variable. The collective efficacy variables were placed in three categories: (a) task analysis (CE items 6, 7, 8, 9, 10, 11, & 12), (b) group competency (CE items 1, 2, 3, 4, & 5), and (c) total collective efficacy composite variable. The leadership variables were placed in four composite groups based on a number of previous studies where the LPI survey was used as a stand-alone instrument (Carless, 2001; Lam, 1998; Sandbakken, 2004; Wilberg, 2003). The three leadership variables are: (a) transforming the organization (LPI items 1, 2, 6, 7, 11, 12, 17, 21, 22, 26, & 27), (b) supporting actions (LPI items 3, 5, 8, 10, 13, 15, 18, 20, 23, 25, 29, & 30), (c) modeling the way (LPI items 4, 9, 14, 16, 19, 24, & 28), and (d) total leadership composite variable. The six additional PLC leadership practices survey questions were computed as the 12th stand-alone composite variable.

Once the variable groupings were completed, another factor analysis was conducted. The data revealed many correlation coefficients above the recommended .3. According to Pallant (2007), many coefficients should be above the .3 value, which was true of this data set when loaded as the twelve composite variables described above. The composite data set presented with a Kaiser-Meyer-Olkin coefficient of .840 exceeding the minimum value of $>.6$. The Bartlett's Test of Sphericity was significant at ($p = .000$), a value lower than the recommended $p < .05$. A review of the total variance explained by the twelve composite variables showed that one component with an eigenvalue greater than one, represented 54.52% of the variance followed by only two other components with eigenvalues greater than one explaining 19.45% and 14.077% of the remaining variance respectively for a total explanation of approximately 88% of the total variance in

teacher responses. A review of the screeplot also revealed a specific delineation after the first component, communicating similar variable loadings from this study with respect to how the variables have loaded in previous studies using the same three survey instruments independently.

Composite Variable Correlations

Table 4.4 displays the correlation coefficients between the independent PLC variables of focus on results; collective actions, collective goals and the composite total PLC independent variable correlated to the dependent collective efficacy variables of task analysis, group competence, and the composite total collective efficacy dependent variable. In addition, the dependent leadership variables of transforming of organization, supporting actions, modeling the way, PLC leadership, and a total leadership variable were also correlated to the independent variables. Of the 66 ($12 \times 12 = 144 - 12$ perfect variable to variable correlations divided by 2 = 66) correlations produced by the 12 composite variables in this study, 10 were small strength correlations (15 %), 35 were medium strength correlations (53 %), and 19 were large strength correlations (28%) (Cohen, 1988, pp.79-81).

Table 4.4: Correlations Among Professional Learning Community Subscales, Collective Efficacy Subscale, and Leadership Subscales

	1	2	3	4	5	6	7	8	9	10	11	12
1. PLC	-											
2. Collective Efficacy (CE)	.415 **	-										
3. Leadership (L)	.432 **	.398 **	-									
4. PLC Leadership (PLCL)	.451 **	.369 **	.874 **	-								
5. Collective Goals (CG)	.936 **	.460 **	.457 **	.460 **	-							
6. Collective Actions (CA)	.931 **	.343 **	.345 **	.375 **	.810 **	-						
7. Focus on Results (FOR)	.888 **	.317 **	.374 **	.397 **	.730 **	.763 **	-					
8. Task Analysis (TA)	.391 **	.788 **	.357 **	.291 **	.443 **	.345 **	.263 **	-				
9. Group Competence (GC)	.342 **	.688 **	.265 **	.222 **	.410 **	.309 **	.191 *	.734 **	-			
10. Transform Organization (TO)	.422 **	.385 **	.972 **	.821 **	.447 **	.341 **	.359 **	.361 **	.271 **	-		
11. Supporting Actions (SA)	.417 **	.380 **	.969 **	.789 **	.444 **	.326 **	.365 **	.365 **	.258 **	.920 **	-	
12. Modeling Way (MW)	.325 **	.358 **	.919 **	.730 **	.354 **	.252 **	.276 **	.289 **	.225 **	.861 **	.875 **	-

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

* Correlation is significant at the 0.05 level (2-tailed)

Multiple Regression Tests

Prior to multiple regression analysis, the sample size of this study was compared to the formula used to ascertain whether a sample is large enough to conduct the multiple regression analysis. According to Tabachnick and Fidell (2007, p. 123), the following formula is used to calculate the sample size: $N > 50 + 8M$ (m = the number of

independent variables). This current study has three independent variables as described above; therefore the sample size should be at least 74. With a sample size of 181, this study is well within the suggested parameters suggested by Tabachnick and Fidell. To investigate any further remaining violation of assumptions, four standard multiple regression tests were conducted.

The first analysis was calculated with task analysis (subcategory of collective efficacy) as the composite dependent variable and collective goals, collective actions, and focus on results as the three professional learning community (PLC) composite independent variables. The second set of data analyzed using multiple regression analysis included the same three PLC composite independent variables with a change of the composite dependent variable to group competence (subcategory of collective efficacy). The third multiple regression analysis analyzed collective goals, collective actions, and focus on results as the composite PLC independent variables with transforming the organization, supporting actions, and modeling the way, as the leadership composite dependent variable. The fourth and final multiple regression analysis described the relationship between the three independent PLC composite variables of collective goals, collective actions, and focus on results with the total PLC leadership composite variable as the dependent variable.

Multiple Regression #1. First and foremost, the researcher evaluated the internal relationships between each of the three independent variables in the first of four multiple regression tests described above to ensure the correlations between each of the independent variables was at least lower than the recommended bivariate correlation level of ($r < .7$). The independent variables of collective goals, collective actions, and

focus on results all presented with correlations above the .7 indicator of bivariate correlation, which was also indicated in the factor analysis previously discussed. Therefore, to obtain an accurate analysis regarding multicollinearity, the correlations and collinearity diagnostics were explored by reviewing the Tolerance and Variance inflation factor (VIF). Pallant (2007) suggests that tolerance levels above .10 would indicate that the bivariate correlation between the independent variables is low representing the absence of multicollinearity. In addition to the Tolerance level, the VIF levels for all three independent variables were well below the recommended $VIF < 10$, which also indicates the absence of multicollinearity among the independent variables. The tolerance levels between the three independent variables ranged from .280 to .382, well above the recommended .10. The VIF scores ranged from 2.62 to 3.56 between the three independent variables, well below the recommended < 10.0 so there were no violations of the multicollinearity assumption.

To check the data for any major digression from the assumptions of normality, linearity, and homoscedasticity, Pallant suggests reviewing the Normal P-P Plot and the Scatterplot represented in separate graph format. The Normal P=P Plot should show a relatively straight diagonal line from bottom left to top right (Pallant, p. 156). Also, the Scatterplot should indicate a relatively rectangular shape with most scores around the 0 point. In this researcher's opinion, a review of the Normal P-P Plot and the Scatterplot showed no deviation of assumptions regarding normality, linearity, and homoscedasticity. To determine whether any outlier residuals might affect the results of the multiple regression analysis, a review of the maximum and minimum Mahalanobis distances was conducted. To ascertain which cases were considered outliers, the critical chi-square

value was determined by reviewing Tabachnick and Fidell's (2007) statistical tables for statisticians. According to Tabachnick and Fidell, the maximum allowable chi-square value for this data set would be 16.27 with the presence of three independent variables. The chi-square value produced from this set of data was 15.191, which is below the maximum allowable amount of 16.27. Just to be sure that any outlier case(s) didn't affect the result in either the positive or negative extreme, the Casewise Diagnostics was reviewed, which indicated the presence of one case falling outside the recommended 3.0 or below -3.0 range. To determine if this particular case might have an adverse effect or positive/negative influence on our model as a whole, the Cook's Distance was reviewed. According to Tabachnick and Fidell (2007), p. 75) cases with a Cook's value greater than 1 are a potential issue. In this study, the one-outlier case with the predictive value for total task analysis at 23.8780 presented with a true value of 7.0. However, the Cook's Distance value was .674 well below the recommended maximum value of 1.0. The outlier case for the analysis of total task analysis remained in the data set.

A secondary step in multiple regression is to evaluate the model being analyzed. To aid in evaluating the first multiple regression model using the three PLC independent variables of focusing on results, collective goals, and collective actions as analyzed with task analysis (subcategory of collective efficacy), the composite dependent variable, the SPSS model summary was reviewed. This summary predicts how much of the variance in the dependent variable (task analysis-a subset of collective efficacy) can be explained by the model. The value in the model is $r^2 = .204$, which explains approximately 21% of the variance in the model that includes the three independent PLC variables of focusing on results, collective goals, and collective actions. In reviewing a more realistic

Adjusted R square result, the data shows that the first multiple regression model can explain 19% of the variance in the dependent variable of task analysis. To ensure the statistical significance of the results, it was necessary to review the ANOVA table within the multiple regression analysis. From reviewing the results of the first multiple regression analysis, it was noted that the model reaches statistical significance at (Sig. = .000; meaning $p < .005$).

The final stage in the multiple regression analysis is to evaluate each of the three independent PLC variables (focus on results, collective goals, and collective actions) to ascertain which of the three independent variables strongly contributed to the prediction of the dependent variable task analysis. To determine which predictor independent variable had more influence on the dependent variable of task analysis, the Beta and Standardized Coefficients were reviewed as well as the Sig. values. The data presents the Beta at .139 (focus on results), .522 (collective goals), and .028 (collective actions). The results show that when all other variances explained in the model are controlled for, collective goals at .522, makes the strongest unique contribution to explaining the dependent variable (task analysis). The independent variable providing the least contribution to explaining the dependent variable was collective actions at .028. When reviewing the Sig. values, only the independent variable collective goals communicated a significant unique contribution (Sig. < .05) to the dependent variable. The independent variable collective actions was statistically insignificant at Sig. = .824 as well as was the independent variable focus on results at Sig. = .201.

When reviewing the Part correlation coefficients, only the independent variable collective goals contributed more to the total R square than the remaining two

independent variables of focus on results and collective actions in the first of four multiple regression models. If the independent variable of collective goals were to be dropped from the model, the R square would drop by 8.5%. In review, the results of multiple regression analysis #1 of 4, shows the correlations between the variables to be significant at $r > .3$ with collective goals making the largest unique contribution to the model.

Multiple Regression #2. The second multiple regression analysis was conducted using the same three PLC composite independent variables of collective goals, collective actions, and focus on results with the composite dependent variable changed to group competence (subcategory of collective efficacy). The results of the second of four multiple regression tests showed the absence of multicollinearity when reviewing the collinearity diagnostics represented in the Tolerance and VIF scores due to the presence of bivariate correlations between each of the independent variables ($r > .7$). Both the Tolerance and VIF scores were within acceptable limits indicating the absence of multicollinearity. The assumptions were also checked with the inspection of the Normal Probability Plot (P-P) and Scatterplot and the results were accepted as well as was the outlier analysis of the Mahalanobis and Cook's Distance scores. The evaluation of the second model using the three independent PLC variables in relation to the dependent variable of group competence shows that 11% of the variance in group competence is explained by the model. The results were significant at (Sig. = .000). In evaluating which of the three composite PLC variables of collective goals, collective actions, and focus on results had more influence in predicting the dependent variable of group competence, it was noted that the independent PLC variable of collective goals was statistically

significant at .461 when reviewing the Beta standardized coefficients scores indicating a unique contribution of 7% to the dependent variable. The influence of collective actions and focus on results showed little influence on predicting the dependent variable of group competence. In review, the results of multiple regression analysis #2 of 4, shows the correlations between one of the variables is significant at $r > .3$ (collective goals) making the largest unique contribution to the model with collective actions and focus on results showing very little influence on predicting the dependent variable. All three independent variables were statistically significant (Sig. = .000).

Multiple Regression #3. The third multiple regression test analyzed collective goals, collective actions, and focus on results as the composite PLC independent variables with transforming the organization, supporting actions, and modeling the way, as the composite total leadership dependent variables. The results of #3 out of 4 multiple regression tests showed the absence of multicollinearity when reviewing the collinearity diagnostics represented in the Tolerance and VIF scores due to the presence of bivariate correlations between each of the three independent variables ($r > .7$). Both the Tolerance and VIF scores were within acceptable limits indicating the absence of multicollinearity. The assumptions were also checked with the inspection of the Normal Probability Plot (P-P) and Scatterplot and the results were accepted as well as was the outlier analysis of the Mahalanobis and Cook's Distance scores. The evaluation of the third model using the three independent PLC variables in relation to the composite dependent variable of total leadership shows that 21% of the variance in total leadership is explained by the model. The results were significant at (Sig. = .000). In evaluating which of the three composite independent PLC variables of collective goals, collective actions, and focus on results

had more influence in predicting the dependent variable of total leadership, it was noted that the independent PLC variable collective goals was statistically significance at .471 when reviewing the Beta standardized coefficients scores indicating a unique contribution of 7% to the dependent variable. The influence of collective actions and focus on results showed little to no influence on predicting the dependent variable of total leadership. In review, the results of multiple regression analysis #3 of 4, shows the correlations between all three independent variables to the dependent variable were significant at $r > .3$ with collective goals making the largest unique contribution to the model and collective actions and focus on results showing very little influence on predicting the dependent variable. All three independent variables were statistically significant (Sig. = .000).

Multiple Regression #4. The fourth and final multiple regression analysis described the relationship between the three independent PLC composite variables of collective goals, collective actions, and focus on results with the total PLC leadership composite variable as the dependent variable. The results of the fourth and final multiple regression test showed the absence of multicollinearity when reviewing the collinearity diagnostics represented in the Tolerance and VIF scores due to the presence of bivariate correlations between each of the three independent variables ($r > .7$). Both the Tolerance and VIF scores were within acceptable limits indicating the absence of multicollinearity. The assumptions were also checked with the inspection of the Normal Probability Plot (P-P) and Scatterplot and the results were accepted as well as was the outlier analysis of the Mahalanobis and Cook's Distance scores. The evaluation of the fourth model using the three independent PLC variables in relation to the composite dependent variable of total PLC leadership shows that 21% of the variance in total PLC leadership is explained

by the model. The results were significant at (Sig. = .000). In evaluating which of the three composite PLC variables of collective goals, collective actions, and focus on results had more influence in predicting the dependent variable of total PLC leadership, it was noted that the independent PLC variable of collective goals was statistically significant at .404 when reviewing the Beta standardized coefficients scores indicating a unique contribution of approximately 5% to the dependent variable. The influence of collective actions and focus on results showed little influence on predicting the dependent variable of total PLC leadership. In review, the results of the fourth and final multiple regression analysis shows the correlations between all three independent variables to the dependent were significant at $r > .3$ with collective goals making the largest unique contribution to the model and collective actions and focus on results showing very little influence on predicting the dependent variable. All three independent variables were statistically significant (Sig. = .000). For all four multiple regression tests, the independent variable collective goals (a subset of total PLC) had the strongest predictive contribution for each of the dependent variables of task analysis, group competence, total leadership, and total PLC leadership.

Data Analysis of the Research Questions

Researcher Question 1: What is the level of implementation of the characteristics of PLCs in a district implementing the DuFour and Eaker (1998) model for over six years?

To answer the first research question, three of the hypotheses were tested:

1. The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics.

2. The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics.
3. Schools that exhibit high levels of PLC characteristics also produce high levels of collective efficacy.

To determine PLC implementation levels at each of the eight schools, the professional learning community construct was analyzed using a 13-question, 5-point Likert scale written as: (a) 1: Not at all, (b) 2: Very Little, (c) 3: Some Degree, (d) 4: Quite A Bit, and (e) 5: A Great Deal. A Cronbach Alpha reliability test on the professional learning community survey instrument was conducted resulting in a reliability of ($\alpha = .89$), suggesting strong internal consistency (Pallant, 2007). Based on the 5-point Likert scale, the district's overall PLC mean score was 3.85. This is moderately positive evidence of the level of PLC characteristics implemented within this district over the last six to seven years even as the district experienced three changes in superintendent leadership during the same time period. The fact that this district has implemented the DuFour and Eaker (1998) PLC model for the past six to seven years even in the midst of leadership changes is proof that the PLC model has been sustained within this district.

Hypothesis A. The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics. To analyze teachers' perceptions of the 13 professional learning characteristics, the teacher responses were grouped into three categories: (a) positive PLC perceptions indicated by respondent selection of a "4" – Quite a Bit or "5" – A Great Deal; (b) average PLC perceptions indicated by respondent selection of a "3" – Some Degree; and (c) negative PLC

perceptions indicated by respondent selection of a “1” – Not at all or “2” - Very Little.

Table 4.5 presents the descriptive professional learning community statistics for each of the 13 professional learning community survey questions.

Table 4.5: District Descriptive Professional Learning Community Statistics

Survey Statement	Mean	Std. Dev.	% 1/2 Not at all/ Very little	% 3 Some degree	% 4/5 Quite a bit/ A great deal
1. Essential outcomes	3.79	.931	8.3	27.6	64.1
2. Common pacing	3.88	1.08	10.5	23.8	65.8
3. Judge student work	3.72	.933	8.8	28.2	63.0
4. Practice #3	3.49	.987	13.8	37.6	48.6
5. Monitor learning	3.71	1.20	13.8	26.0	60.2
6. Interventions	4.12	.896	3.3	21.5	64.6
7. Additional support	3.67	1.01	12.1	23.2	64.6
8. Use student data	3.89	1.02	9.4	23.8	66.8
9. Practice #8	3.96	.985	7.8	22.1	70.2
10. Norms/Protocols	3.83	1.14	12.2	23.2	64.6
11. S.M.A.R.T. goals	4.15	.997	6.1	18.2	75.7
12. Celebration	3.88	1.07	9.9	24.3	65.8
13. Shared vision	3.94	.950	5.6	26.5	67.9

N=181 district teachers

The descriptive statistical analyses presented in Table 4.5 indicate the district as a whole is operating as a professional learning community as defined by DuFour and Eaker (1998) when calculating percentage sum totals for each PLC statement factoring in only response choices of 3 - Some Degree, 4 - Quite a Bit, and 5 - A Great Deal. All PLC statements received a “3”, “4”, or “5” from at least 86% of the survey respondents suggesting a majority of teachers in the OVUSD have the perception that the activities they are participating in are related to professional learning communities. Fewer than 14% of teachers selected a “1” or a “2” on any statement. The PLC statement with the

highest percentage indicated by teachers selecting a “3”, “4”, or “5” was statement 13 (94.4%) indicating that teachers feel positive about the shared vision being communicated at their school site. The lowest percentage was given to statement 6 where only 86.1% of the respondents who chose a “3”, “4”, or “5” felt that there were interventions in place for students struggling to meet proficiency standards. The mean percentage of teachers who selected a “3”, “4”, or “5” for all 13 PLC statements was 90%.

Analyses of Variance Between the OVUSD Schools

A series of one-way between-groups analyses of variance (ANOVA) were conducted to compute and compare the mean scores of teachers’ perceptions of the implementation and characteristics of PLC between each of the district’s eight schools. The purpose of analysis of variance (ANOVA) is to test for significant differences between means as found in the data between the eight schools. Table 4.6 presents the total PLC mean scores for each of the eight schools in the study.

Table 4.6: Total Mean PLC Scores for OVUSD Schools

N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound		
S1: 16	49.2500	9.73995	2.43499	44.0599	54.4401	31.00	62.00
S2: 26	48.8077	9.23913	1.81194	45.0759	52.5395	34.00	64.00
S3: 21	53.4286	10.10233	2.20451	48.8300	58.0271	23.00	63.00
S4: 13	49.8462	7.20932	1.99951	45.4896	54.2027	32.00	59.00
S5: 26	46.5385	9.67566	1.89755	42.6304	50.4465	25.00	65.00
S6: 21	53.0476	7.73612	1.68816	49.5262	56.5691	32.00	65.00
S7: 22	54.4091	5.76243	1.22855	51.8542	56.9640	43.00	63.00
S8: 36	47.4167	8.94866	1.49144	44.3889	50.4445	30.00	62.00
181	50.0276	9.04521	.67233	48.7010	51.3543	23.00	65.00

For the ANOVA analysis, 181 surveys were used to compare the mean PLC scores at each of the eight schools. An initial review of the ANOVA results showed no violation of the assumption of homogeneity of variance when reviewing the Levene's test for homogeneity. The significance value (Sig.) for the Levene's test was .252, a result greater than the minimum expected $p > .05$ between the eight schools: $F(7,173) = 2.7$, $p = .01$. When reviewing the results, there was a significant difference at the $p < .05$ level in total PLC scores between School 5 and School 7. The effect size, calculated using eta squared, was .09, indicating a medium to large effect size (.02-small, .06-medium, and .14-large) (Cohen, 1988). When reviewing the Post-hoc comparisons using the Tukey HSD test, School 5 ($M = 46.54$, $SD = 9.68$) was significantly different from School 7 ($M = 54.40$, $SD = 5.76$). The remaining six schools did not differ significantly from each other nor did they differ significantly from School 5 or School 7. When reviewing the

total mean score for the district as a whole ($M = 50.03$, $SD 9.05$), the total PLC mean scores based on the 13-question, 5-point Likert scale indicates a per question PLC average of 3.85 out of 5 representing a higher than average PLC implementation score across the district when 2.5 out of 5 score is considered average. The total district potential PLC mean score would be 65, if each of the 13 questions had received the highest possible score of “5” – A Great Deal.

A second ANOVA test was conducted to compare mean scores between three clearly defined composite age groups regarding the level of professional learning community implementation in order to produce a difference in professional learning communities implementation based on age. The original survey contained seven categories of age ranges: (a) 23-28, (b) 29-34, (c) 35-40, (d) 41-46, (e) 47-52, (f) 53-58, and (g) 59 or older. To effectively run an ANOVA based on age, the age categories were collapsed and recoded into three new composite age groups: (a) 23-34 (37%), (b) 35-46 (41.4%), and (c) 47 or older (21.5%). Table 4.7 below, presents the ANOVA test comparing the three composite age groups in relation to each group’s total PLC mean score.

Table 4.7: ANOVA Between Composite Age Groups in Relation to Total PLC

Age Group	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound		
23-34	51.9254	7.40457	.90461	50.1193	53.7315	30.00	65.00
35-46	49.2800	9.67661	1.11736	47.0536	51.5064	23.00	65.00
47 or >	48.2051	9.95564	1.59418	44.9779	51.4324	25.00	64.00
N = 181	50.0276	9.04521	.67233	48.7010	51.3543	23.00	65.00

The Levine's test of homogeneity of variances was reviewed indicating whether the variance in the PLC scores were the same for each of the three groups. Due to the (Sig.) value presenting at $p = .016$ (less than the desired $p > .05$), a violation of the assumption of homogeneity of variance was present in the data between the three composite age groups. Therefore, the Robust Tests of Equality of Means table was reviewed as a secondary variance check. In reviewing the Robust Tests of Equality of Means table, both the Welch and Brown-Forsythe were significant at $p = .063$ and $p = .089$ respectfully, indicating the absence of any violation of assumption of homogeneity of variance between the three newly formed composite age groups.

In reviewing both the between-groups and within-groups ANOVA sum of squares, there does not appear to be a significant difference between the mean scores of total PLC with regards to the three composite age groups: $F(2, 178) = 2.5$, $p = .08$ because (Sig.) values less than or equal to .05 indicate a significant variance in the mean scores between the three composite age groups. In reviewing the mean plots for the three composite age groups, Group 1 (23-34 years of age) recorded the highest total PLC mean

score followed by Group 2 (35-46 years old). Group 3 (47 years old or older) recorded the lowest total PLC mean scores. When calculating the effect size, the eta-squared value was .02 indicating a small effect size (Cohen, 1988). Although there was a significant difference, the very low effect size suggests the difference is not meaningful.

Hypothesis B. The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics. To examine the characteristics of the DuFour and Eaker (1998) professional learning communities in the OVUSD, the second hypothesis examined the collective efficacy levels within the OVUSD as a characteristic of the DuFour and Eaker (1998) PLC model. Hypothesis two was addressed in a similar manner using descriptive statistics to determine the positionality of collective efficacy as it relates to a PLC. Table 4.8 presents district mean scores by collective efficacy statement, standard deviation, and percentages for each survey category of a 1 or 2 score, 3 score, and a 4 or 5 score.

Table 4.8: District Descriptive Collective Efficacy Statistics

Survey Statement	Mean	Std. Dev.	% 1/2 Not at all/ Very little	% 3 Some degree	% 4/5 Quite a bit/ A great deal
1. Challenging students	4.27	.841	2.8	15.5	81.8
2. Motivate students	4.32	.705	1.7	7.2	91.2
3. Master curriculum	4.55	.756	1.7	7.2	90.7
4. Hard work	4.62	.717	1.7	5.5	92.8
5. Have needed skills	4.28	.845	2.3	13.8	84.0
6. Close learning gap	4.05	.755	2.3	17.7	80.1
7. Engaging lessons	4.17	.729	1.2	14.4	84.6
8. Motivated to learn	4.54	.678	1.1	3.9	95.0
9. Structures/practices	4.35	.750	1.2	11.6	87.3
10. Safety concerns	4.79	.516	0.6	1.7	97.8
11. Home life difficulties	3.32	.880	15.5	45.9	38.6
12. Critical thinking	3.85	.897	6.1	28.7	65.2

Note: Items 4, 5, 8, and 10 were reverse coded.

The collective efficacy scale designed by Goddard (2002) consists of 12 statements utilizing the same 5-point Likert scale. The survey asked the study participants to evaluate the perceived levels of collective efficacy, in this case within a district implementing the DuFour and Eaker (1998) professional learning community model. The collective efficacy scale was divided into two subscales: (a) task analysis and (b) group competence. Task analysis is a reflection by the individual teacher regarding their belief that their team can collectively complete an assigned task effectively. Group competence is an evaluation by the individual teacher regarding how well and/or at what level they believe their team will accomplish or have accomplished the assigned task.

A third ANOVA test was conducted to compute and compare the teachers' perception regarding the levels of collective efficacy within each school's site PLC and individual grade-level teams. This third ANOVA test was conducted because an area of research interest for this researcher was whether collective efficacy exists in a DuFour

and Eaker (1998) professional learning community model and if so, at what perceived level. Teachers were asked to respond to a 12-question collective efficacy survey designed and tested by Goddard (2002). The 12-question survey used a 5-point Likert scale with the following format: (a) 1: Not at All, (b) 2: Very Little, (c) 3: Some Degree, (d) 4: Quite A Bit, and (e) 5: A Great Deal. The Cronbach alpha value for the collective efficacy survey instrument is ($\alpha = .94$). The presence of a high mean ANOVA score when comparing schools regarding their total collective efficacy scores would indicate whether teachers within a positive PLC environment, (a result found in the first ANOVA test) would in fact be operating in a highly efficacious environment, a perceived by-product of highly effective professional learning environments. Table 4.9 below shows the total collective efficacy mean scores derived from a one-way ANOVA analysis between each of the eight schools analyzed in this study.

Table 4.9: ANOVA Between Groups-Total Collective Efficacy Mean Scores

N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for		Minimum	Maximum
				Mean			
				Lower Bound	Upper Bound		
S1: 16	51.2500	4.79583	1.19896	48.6945	53.8055	43.00	60.00
S2: 26	45.2692	9.11946	1.78847	41.5858	48.9527	12.00	59.00
S3: 21	54.3333	4.86141	1.06085	52.1204	56.5462	39.00	60.00
S4: 13	51.7692	3.70031	1.02628	49.5332	54.0053	46.00	60.00
S5: 26	50.6538	5.35120	1.04946	48.4924	52.8152	38.00	58.00
S6: 21	53.5238	4.66497	1.01798	51.4003	55.6473	45.00	60.00
S7: 22	52.2727	5.26608	1.12273	49.9379	54.6076	38.00	58.00
S8: 36	51.3611	5.05486	.84248	49.6508	53.0714	37.00	59.00
181	51.1105	6.21816	.46219	50.1985	52.0225	12.00	60.00

A review of the Levene's test for homogeneity reveals no violation of the homogeneity of variance with (Sig.) at .105, greater than the minimum value of $p > .05$. When reviewing the between-groups and within-groups sum of squares, there appears to be a significant difference in the mean scores between schools: $F(7, 173) = 5.5$, $p = .00$. To determine which schools presented with significant differences in their total collective efficacy mean scores, it was necessary to review the post-hoc tests. The results of the post-hoc tests showed that School 2's total collective efficacy mean scores were significantly lower than the other seven schools at the $p < .05$ levels. When reviewing the Post-hoc comparisons using the Tukey HSD test, School 2 ($M = 45.26$, $SD = 9.11$) was significantly different from the remaining seven schools. In reviewing the mean plots, School 2 presented with the lowest total collective efficacy mean score across the district

compared to the remaining seven schools with mean scores statistically similar to each other. A review of the effect size by calculating the eta squared indicates a small effect size at .18. Total collective efficacy mean scores based on the 12-question, 5-point Likert scale indicates a per question collective efficacy average of 4.25 per question indicating a higher than average collective efficacy score across the district when a 2.5 out of 5 score is considered average and a 5 out of 5 score would indicate a highly efficacious professional learning community environment.

A fourth ANOVA test was run using the same three composite age groups in relation to each group's recorded total collective efficacy to determine whether there was more variance in the total collective efficacy mean scores for each group as compared to no significant variance in each group's previously discussed total PLC recorded mean scores. Table 4.10 presents the One-Way Between Groups ANOVA for each of the three composite age groups in relation to each group's total collective efficacy mean score.

Table 4.10: ANOVA Between Composite Age Groups in Relation to Total Collective Efficacy Mean Scores

Age Groups	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound		
23-34	51.9104	4.87955	.59613	50.7202	53.1007	37.00	60.00
35-46	51.2400	6.77603	.78243	49.6810	52.7990	12.00	60.00
47 or >	49.4872	6.96560	1.11539	47.2292	51.7452	33.00	59.00
N = 181	51.1105	6.21816	.46219	50.1985	52.0225	12.00	60.00

In reviewing the Levene's test for homogeneity of variances, there appeared to be no violations with (Sig.) = .110. The ANOVA table representing the between-groups and within-groups sum of squares indicates the lack of a significant variance regarding the total collective efficacy mean scores between the three composite age groups: $F(2, 178) = 1.9$, $p = .15$. with (Sig.) = .150. (Sig.) values less than or equal to .05 would indicate a significant variance in the mean scores between the three composite age groups. When reviewing the mean plots to compare the total collective efficacy mean scores between each of the three groups, Group 1 (23-44 years of age) recorded the highest total collective efficacy mean score, followed by Group 2 (35-46 years of age) recording the second highest total collective efficacy mean score, and Group 3 (47 years old or older) recording the lowest total collective efficacy mean score. The effect size calculating eta squared was .02 indicating a small effect size. These small differences followed a similar pattern to the differences in mean score responses on the PLC questions.

A fifth and final ANOVA test was computed comparing the survey respondents' years of teaching experience in relation to their perceived levels of collective efficacy and perceived levels of professional learning community implementation. In order to effectively conduct a one-way ANOVA between groups, it was necessary to create three newly formed composite groups relating to years of teaching experience. The original years of experience survey choices were: (a) 1-5 years, (b) 6-10 years, (c) 11-15 years, (d) 16-20 years, (e) 21-25 years, (f) 26-30 years, and (g) 31 or more years. The composite years of experience categories were created as: (a) 1-10 years, (b) 11-20 years, and (c) 21 or more years. Table 4.11 below represents the one-way between groups ANOVA findings.

Table 4.11: ANOVA Between Groups for Total PLC and Collective Efficacy

	Mean	Std. Dev.	Lower Bound	Upper Bound	Minimum	Maximum
Total PLC						
1-10 years	50.4651	8.88978	48.5591	52.3711	30.00	65.00
11-20 years	50.0156	9.04573	47.7561	52.2752	23.00	65.00
21 or more years	48.8387	9.65090	45.2987	52.3787	25.00	64.00
N = 181	50.0276	9.04521	48.7010	51.3543	23.00	65.00
Total Collective Efficacy						
1-10 years	51.3953	6.44302	50.0140	52.7767	12.00	60.00
11-20 years	50.6094	6.22748	49.0538	52.1650	33.00	60.00
21 or more years	51.3548	5.66597	49.2765	53.4331	38.00	59.00
N = 181	51.1105	6.21816	50.1985	52.0225	12.00	60.00

To check whether the variance in mean scores was the same between each of the three composite groups formed regarding years of teaching experience, the Levene's test for homogeneity of variances was reviewed. For both total PLC ($p = .905$) and total collective efficacy ($p = .592$), the (Sig.) values were greater than $p > .05$, indicating no violation of the assumption of homogeneity of variance. When reviewing the ANOVA table, it was noted that there was not a significant difference in the mean scores at the $p < .05$ between each of the three years of experience groups for both total PLC: $F(2, 178) = .366, p = .694$ and total collective efficacy: $F(2, 178) = .320, p = .727$.

Hypothesis C. Schools that exhibit high levels of PLC characteristics also show high levels of collective efficacy. The descriptive statistical analyses presented in Table 4.6 indicate the district as a whole is operating with high levels of collective efficacy within their professional learning community as defined by DuFour and Eaker (1998) when calculating percentage sum totals for each collective efficacy statement. When factoring in only response choices of “3” - Some Degree, “4” - Quite a Bit, and “5” - A Great Deal, all collective efficacy statements received a “3”, “4”, or “5” from a minimum of 84.5% of the survey respondents suggesting a majority of teachers in the OVUSD have the efficacious perception that they can successfully accomplish their activities in their respective professional learning community environment. Fewer than 15.5% of the teachers selected a “1” or a “2” on any statement. The collective efficacy statement with the highest percentage indicated by teachers selecting a “3”, “4”, or “5” was statement 10 (99.5%) where teachers feel very positive about the lack of safety concerns at their school sites. The lowest percentage was given to statement 11 where 84.5% of the respondents chose a “3”, “4”, or “5” when asked to evaluate their skills regarding the possession of

strategies for supporting students who face home life difficulties. The mean percentage of teachers who selected a “3”, “4”, or “5” for all 12 collective efficacy statements was 97%.

Research Question 1a: What is the relationship between PLCs and teacher collective efficacy?

Hypothesis D. There is a direct relationship between PLC implementation and teacher collective efficacy. In order to ascertain the relationship between PLCs and teacher collective efficacy, a correlations test was conducted. Table 4.12 presents the results of the correlations test results showing a positive relationship between PLCs and collective efficacy.

Table 4.12: Correlations Matrix Between Total PLC and Total Collective Efficacy

		TOTAL PLC	TOTAL COLLECTIVE EFFICACY
TOTAL PLC	Pearson Correlation	1.000	.415**
	Sig. (2-tailed)		.000
	N	181	181
TOTAL COLLECTIVE EFFICACY	Pearson Correlation	.415**	1.000
	Sig. (2-tailed)	.000	
	N	181	181

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

The Pearson correlation coefficient is ($r = .39$) and the Spearman rho value is ($r = .41$). According to Cohen (1998, pp. 79-81), the relationship between the composite total PLC and the composite total collective efficacy presents as a medium strength relationship (small: $r = .10$ to $.29$, medium: $r = .30$ to $.49$, and large: $r = .50$ to 1.0). The relationship between PLCs and teacher collective efficacy is significantly positive at the

0.01 level (2-tailed). To determine how much variance the composite total PLC and the composite total collective efficacy share, the coefficient of determination was reviewed. With a correlation of $r = .42$, there is a 17% shared variance between the variables, which indicates that total PLC explains nearly 17% of the variance in total collective efficacy and vice versa. When reviewing the total PLC ($M = 50.02$) as compared to the total collective efficacy ($M = 51.11$) there does not appear to be a significant difference between the two. It should be noted that the total PLC mean score is based on a 13-question survey as compared to the total collective efficacy mean score, which is based on a 12-question survey. Therefore, when reviewing the per-item total PLC mean score as compared to the per-item total collective efficacy mean score, there appears to be a significant non-parametric difference with the total PLC per-item mean score of 3.85 as compared to the total collective efficacy per-item mean score of 4.25. The results indicate that there is a positive relationship between a higher total PLC mean score and a higher total collective efficacy mean score.

Research Question 2: What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?

Hypothesis E. There is a positive relationship between PLC characteristics, teacher collective efficacy, and leadership. To answer the second research question, an additional correlations test was run to evaluate the relationship between PLC characteristics, teacher collective efficacy, and leadership. Table 4.13 presents the findings.

Table 4.13: Correlations Matrix Between Total PLC, Total Efficacy, and Total Leadership

	1	2	3	4	5	6	7	8	9	10	11
1. PLC Total	-										
2. CE Total	.415*	-									
3. Leadership Total	.432*	.398*	-								
4. Collective Goals	.936*	.460*	.457*	-							
5. Collective Actions	.931*	.343*	.345*	.810*	-						
6. Focus on Results	.888*	.317*	.374*	.730*	.763*	-					
7. Group Competence	.342*	.688*	.265*	.410*	.309*	.191	-				
8. Task Analysis	.391*	.788*	.357*	.443*	.345*	.263*	.734*	-			
9. Transform Org.	.422*	.385*	.972*	.447*	.341*	.359*	.271*	.361*	-		
10. Support Actions	.417*	.380*	.969*	.444*	.326*	.365*	.258*	.365*	.920*	-	
11. Modeling the Way	.325*	.358*	.919*	.354*	.252*	.276*	.225*	.289*	.861*	.875*	-

*Correlation is significant at the 0.01 level (2-tailed) $p < .01$

.191 between Group Competence and Focus on Results is significant at the 0.05 level (2-tailed) $p < .05$

The sample size (N=181) indicates that all survey respondents were represented

with scores on all three variables analyzed in the correlations test. It is also indicated by reviewing Table 4.13, that there is a positive relationship between the three variables of total PLC, total collective efficacy, and total leadership, with total PLC having a stronger correlation relationship at $r = .432$ with total leadership, as compared to total PLC's correlation relationship with total collective efficacy at $r = .415$ as mentioned earlier. The lowest correlation relationship between composite variables is total leadership and total collective efficacy at $r = .398$. In determining the strength between each composite variables of total PLC, total collective efficacy, and total leadership, all have a medium positive relational strength between them. When reviewing the coefficient of determination the r -value was squared to compute the variance between each of the three composite variables. The variance between total PLC and total collective efficacy is .17 indicating a 17% shared variance between total PLC scores as compared to survey respondents' scores on total collective efficacy. The variance between total PLC and total leadership is explained with an 18.6 r -squared value indicating almost a 19% shared variance between these two variables. The variance between total leadership and total collective efficacy at r -squared is 15.8 indicating an approximate 16% shared variance indicating total PLC helps to explain 16% of the variance in respondents' scores on total collective efficacy. It appears that total PLC and total leadership have a higher shared variance at 19% between each other as compared to total PLC→total collective efficacy at 17% and total leadership→total collective efficacy at 16%.

Hypothesis F. Transformational leadership predicts PLC, which predicts collective efficacy, which predicts student outcomes.

To further analyze research question two, the independent transformational

leadership exogenous variables of transforming the organization, supporting actions, and modeling the way were analyzed in a structural equation model (SEM) to postulate a confirmatory relationship to the endogenous dependent variables of total PLC and total collective efficacy to enhance the results found in question 2 above. No more than five variables were loaded into the SEM analysis due to the smaller sample size of this study ($N = 181$). To assess the “Goodness of Fit” of the model, a sample size of between 100 to 200 (Hoyle, 1995) or 10 to 20 times as many observations as variables (Mitchell, 1993) improves the goodness of fit in SEM models. From an earlier ANOVA test, it is known that a positive relationship between the variables of professional learning communities, teacher collective efficacy, and leadership does exist, which is another important precursor to running the SEM model (Baron & Kenny, 1987). As stated earlier, the SEM model is a series of statistical procedures testing for the “goodness of fit” regarding the data used in the study and the postulated relational theoretical framework model. The variables and their pathways were used in a structural equation model (SEM) to postulate whether transformational leadership predicts PLCs when there is the presence of collective efficacy, which in turn influences student outcomes based on prior research. SEM is a series of statistical methods where the “goodness of fit” in terms of the data “fitting” the proposed model of predictive influence is evaluated. The researcher used SEM with EQS 6.1 for Windows to fit the hypothetical path analysis model to the study’s data to address research question 2.

Figure 4.1 displays the goodness of fit statistics regarding the relationship between the exogenous independent variables of transforming the organization, supporting actions, and modeling the way, and the endogenous dependent variables of

total PLC and total collective efficacy. Model fit decisions were based on four indices: (a) comparative fit index (CFI), (b) normed fit index (NFI), (c) goodness of fit index (GFI), and (d) root mean square error of approximation (RMSEA). The literature regarding SEM suggests that the model fit presents as excellent when the coefficient for CFI, NFI, and GFI is greater than 0.95; and the model fit for these three indices is considered adequate if the coefficient is greater than 0.90 (Byrne, 2006; Hu & Bentler, 1998), with a perfect fit indicated by a perfect 1.0 score. A coefficient of less than 0.05 represents an excellent fit however; a coefficient of 0.08 indicates an acceptable fit for the RMSEA (Kline, 1998) and should therefore fall between the 90% Confidence Interval for RMSEA. Cronbach's Alpha should be at least 0.70.

For this study's proposed model where transformational leadership predicts PLCs, which influences collective efficacy, which positively impacts student outcomes, all model fit indices demonstrate an excellent fit of the data to the model at: CFI = .979, NFI = .978, and GFI = .968. The data also revealed the RMSEA to be .282, greater than the recommended .08 but within the 90% Confidence Interval of RMSEA. Cronbach's Alpha of .836 indicates a strong reliability of the model.

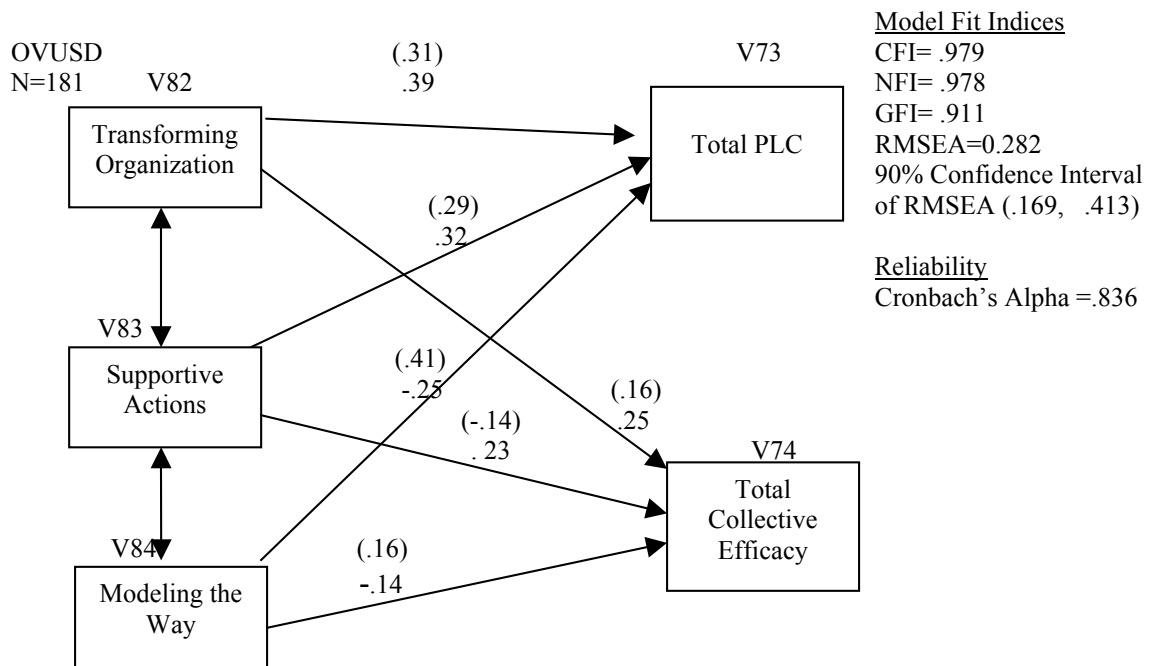


Figure 4.1: Relationship between Transforming the Organization, Supportive Actions, Modeling the Way to Total PLC and Total Collective Efficacy with standardized (and unstandardized) coefficients.

Figure 4.1 also displays the SEM results for both standardized and unstandardized coefficients. The unstandardized coefficients are in parentheses. According to Tabachnick and Fidell (2007), it is often quite difficult to interpret unstandardized regression coefficients due to the differences in the scales used. As a result, the researcher examined the standardized coefficients for this study. The paths from each of the leadership variables of V82, V83, and V84 to the total PLC variable of V73 and the total collective efficacy variable of V74 are standardized factor loadings. The results of the SEM demonstrate a significant predictive relationship between the transformational leadership variables of transforming the organization, supportive leadership actions, and leadership by modeling the way relative to total PLC and total collective efficacy as evidenced by positive relationship between all variables expect for two; V84 to V74 and

V84 to V73. For example, increased transformational behavior in leadership is a significant predictive indicator of increased total PLC and increased total collective efficacy. In addition, the supportive actions of transformational leaders are a significant predictive indicator of increased total PLC and an increased total collective efficacy. Modeling the way does not appear to positively increase the amount of total PLC or total collective efficacy even though, modeling the way is an important exogenous independent variable in the SEM model. The skewness was also reviewed and found to be acceptable with a range of -0.5288 to -1.8377 as shown in Table 4.14.

Table 4.14: Skewness of Grouped Variables (n=181)

	Transform Organization	Supportive Actions	Model Way	TPLC	Total Collective Efficacy
Skewness	-0.5578	-0.5288	-0.7556	-0.5929	-1.8377

A second SEM model was tested to predict the influence of three exogenous variables within the PLC construct to the two endogenous dependent variables within the collective efficacy. The three independent PLC variables are: (collective goals, (b) collective actions, and (c) focus on results analyzed with the two dependent collective efficacy variables of: (a) task analysis and (b) group competence. Figure 4.2 displays the goodness of fit between the three independent PLC variables and the two dependent collective efficacy variables.

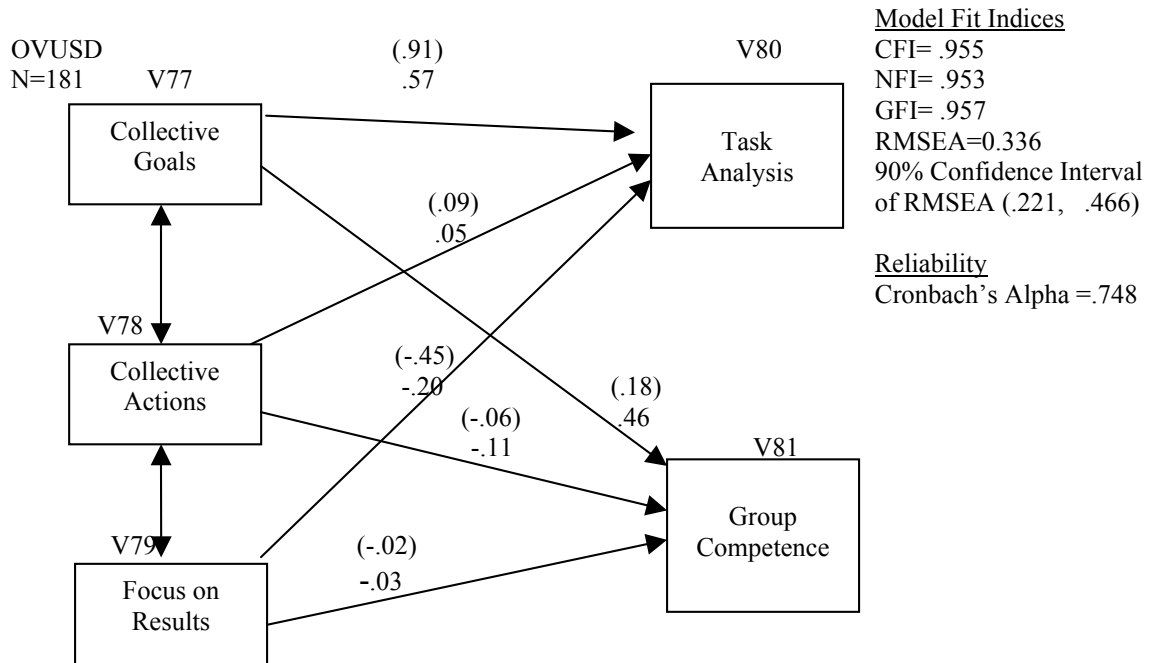


Figure 4.2: Relationship between Collective Goals, Collective Actions, and Focus on Results to Task Analysis and Group Competence with standardized (and unstandardized) coefficients.

Model fit decisions were based on four indices: (a) comparative fit index (CFI), (b) normed fit index (NFI), (c) goodness of fit index (GFI), and (d) root mean square error of approximation (RMSEA). As stated earlier, the literature regarding SEM suggests that the model fit presents as excellent when the coefficient for CFI, NFI, and GFI is greater than 0.95; and the model fit for these three indices is considered adequate if the coefficient is greater than 0.90 (Byrne, 2006; Hu & Bentler, 1998), with a perfect fit indicated by a perfect 1.0 score. A coefficient of less than 0.05 represents an excellent fit however; a coefficient of 0.08 indicates an acceptable fit for the RMSEA (Kline, 1998) and should therefore fall between the 90% Confidence Interval for RMSEA. Cronbach's Alpha should be at least 0.70.

For this second SEM model where the elements of PLC as in collective goals,

collective actions, and focus on results, which positively impacts the level of collective efficacy within the professional learning community, all model fit indices demonstrate an excellent fit of the data to the model at: CFI = .955, NFI = .953, and GFI = .957. The data also revealed the RMSEA to be .366, greater than the recommended .08 but within the 90% Confidence Interval of RMSEA. Cronbach's Alpha of .748 indicating a reliable goodness of fit regarding the three independent PLC variables of collective goals, collective actions, and focus on results positively influencing the two collective efficacy dependent variables of task analysis and group competence within the model.

Figure 4.2 also displays the SEM results for both standardized and unstandardized coefficients. The unstandardized coefficients are in parentheses. The paths from each of the PLC variables of V77, V78, and V79 to the two collective efficacy variables of V80 and V81 are standardized factor loadings. The results of the SEM demonstrate a significant predictive relationship between the professional learning community variables of collective goals, collective actions, and focus on results relative to the collective efficacy variables of task analysis and group competence as evidenced by positive relationship between half of the relationships presented in Figure 4.2. For example, increased collective PLC goals are a significant predictive indicator of increased task analysis and group competence levels. In addition, collective PLC actions are a significant predictive indicator of increased task analysis. Collective actions do not appear to positively increase the amount of task analysis or group competence even though; collective actions are an important exogenous independent variable in the SEM model. The skewness was also reviewed and found to be acceptable with a range of -0.2911 to -1.8377 as shown in Table 4.15.

Table 4.15: Skewness of Grouped Variables (n=181)

	Collective Goals	Collective Actions	Focus on Results	Task Analysis	Group Competence
Skewness	-0.7488	-0.4516	-0.5482	-1.8377	-0.2911

The SEM findings for both models described above are not surprising when reviewing the data used in this study. In the first SEM model, the leadership characteristics are highly correlated within each grouped IV, as are the total PLC and total collective efficacy DVs. In the second SEM model, the three PLC characteristics are highly correlated within each grouped IV to the two collective efficacy DVs.

Major Quantitative Findings

In addition to the findings of the SEM analyses presented above, results from the balance of the statistical analyses used in this study produced findings conducive to and in support of the quantitative research questions. The following is a synopsis of the findings in relation to each of the quantitative research questions.

Research Question 1: *What is the level of implementation of the characteristics of PLCs in a district implementing the DuFour and Eaker (1998) model for over six years?*

Results from an ANOVA test showed there was a significant difference at the $p < .05$ levels in total PLC scores between School 5 and School 7 of the eight schools. The effect size, calculated using eta-squared, was .09, indicating a small effect size. When reviewing the Post-hoc comparisons using the Tukey HSD test, School 5 ($M = 46.54$, $SD = 9.68$) was significantly different from School 7 ($M = 54.40$, $SD = 5.76$). The remaining six schools did not differ significantly from each other nor did they differ significantly from School 5 or School 7. When reviewing the total mean score for the district as a

whole ($M = 50.03$, $SD 9.05$), Total PLC mean scores based on the 13-question, 5-point Likert scale indicates a per question PLC average of 3.85 out of 5 representing a higher than average PLC implementation score across the district when 2.5 out of 5 score is considered average. These findings indicate that teachers perceive there is a relatively high level of PLC implementation.

In terms of the total collective efficacy mean scores for each of the eight schools, the data presented a significant difference in the mean scores between schools: $F(7, 173) = 5.5$, $p = .00$. The results of the post-hoc tests showed that School 2's total collective efficacy mean scores were significantly lower than the other seven schools at the $p < .05$ level. School 2 ($M = 45.26$, $SD = 9.11$) was significantly different from the remaining seven schools. In reviewing the mean plots, School 2 presented with the lowest total collective efficacy mean score with the balance of the remaining seven schools presenting with actual mean scores very similar to each other. A review of the effect size by calculating the eta squared indicates a small effect size at .18. Total collective efficacy mean scores based on the 12-question, 5-point Likert scale indicates a per question total collective efficacy average of 4.25 indicating a higher than average total collective efficacy score across the district when a 2.5 out of 5 score is considered average and a 5 out of 5 score would indicate a highly efficacious professional learning community environment.

The results of an additional ANOVA test comparing the survey responses between three distinct age groups: (23-34 years of age), (35-46 years of age), and (47 or older years of age) focusing on the professional learning community questions, showed no significant statistical difference among each of the three composite age groups: $F(2,$

178) = 2.5, $p = .08$. In reviewing the mean plots for the three composite age groups, Group 1 (23-34 years of age) recorded the highest total PLC scores followed by Group 2 (35-46 years old), and Group 3 (47 years old or older) recorded the lowest total PLC scores. When calculating the effect size, the eta-squared value was .02 indicating a small effect size.

Results of a forth ANOVA test comparing the same composite age group mentioned above, indicated the lack of a significant variance regarding the total collective efficacy mean scores between the three composite age groups: $F(2, 178) = 1.9$, $p = .15$. When reviewing the mean plots to compare the total collective efficacy mean scores between each of the three groups, Group 1 (23-44 years of age) recorded the highest total collective efficacy mean score, followed by Group 2 (35-46 years of age) recording the second highest total collective efficacy mean score, and Group 3 (47 years old or older) recording the lowest total collective efficacy mean score. The effect size calculating eta squared was .02 indicating a small effect size.

A final ANOVA test was conducted to compare teachers' perceptions of the level of the professional learning community implementation at their respective school sites based on years of teaching experience. The analysis also compared the same years of teaching sub-group perceptions regarding the level of collective efficacy present in the professional learning communities. The results showed no significant difference in the mean scores at the $p < .05$ between each of the three years of experience groups for both total PLC: $F(2, 178) = .366$, $p = .694$ and total collective efficacy: $F(2, 178) = .320$, $p = .727$.

Research Question 1a: *What is the relationship between PLCs and teacher collective efficacy?*

Results of a correlation test to ascertain the relationship between professional learning communities (PLCs) and collective efficacy revealed a medium strength relationship between the two variables. The Pearson correlation coefficient presented at ($r = .39$) and the Spearman rho value was ($r = .41$). The relationship between PLCs and teacher collective efficacy is significantly positive at the 0.01 level (2-tailed). To determine how much variance PLC and collective efficacy share, the coefficient of determination was reviewed. With a correlation of $r = .41$, there is a 17% shared variance between the variables, which indicates that total PLC explains nearly 17% of the variance in total collective efficacy. When reviewing the Total PLC ($M = 50.02$) as compared to the total collective efficacy ($M = 51.11$) there does not appear to be a significant difference between the two.

Research Question 2: *What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?* To answer the second research question, an additional correlation test was run to evaluate the relationship between PLC characteristics, teacher collective efficacy, and leadership. The results show a positive relationship between the three variables of total PLC, total collective efficacy, and total leadership, with total PLC, having a stronger correlational relationship at $r = .432$ with total leadership, as compared to total PLC's correlational relationship with total collective efficacy at $r = .415$. The lowest correlational relationship between variables is between total leadership and total collective efficacy at $r = .398$. In determining the strength between each composite variables of total PLC, total collective efficacy, and total

leadership, all have a medium positive relational strength between them. The variance between total PLC and total collective efficacy is .17 indicating a 17% shared variance between total PLC scores as compared to survey respondents' scores on total collective efficacy. The variance between total PLC and total leadership is explained with an 18.6 r-squared value indicating almost a 19% shared variance between these two variables. The variance between total leadership and total collective efficacy at r-squared is 15.8 indicating an approximate 16% shared variance indicating total PLC helps to explain 16% in the variance in respondents' scores on total collective efficacy.

The significant quantitative results discussed in Chapter 4 communicate first and foremost, the positive existence of a professional learning community modeled primarily from DuFour and Eaker's (1998) theoretical framework. The quantitative findings also presented a strong presence of collective efficacy; framed using Goddard's (2002) theoretical framework. The quantitative data also presented a positive relationship between each of the study's variables: PLCs, collective efficacy, and leadership. In addition, the quantitative findings showed a significant statistical difference between two of the eight schools researched in relation to the composite independent variable total PLC with one of the eight schools presenting with a significant statistical difference in relation to the dependent variable total collective efficacy. When analyzing differences between groups regarding the factors of age of survey respondents and their years of teaching experience, the data found no significant statistical differences between the groups though, the age group: (23-34) presented with both higher levels of total PLC and total collective efficacy. When reviewing years of teaching experience, Group 1 (1-10 years) and Group 3: (21 or more years) both showed higher levels of total PLC and total

collective efficacy than did Group 2 (11-20 years). Two SEM models were developed to predict transformational leadership's predictive influence on the professional learning community and collective efficacy constructs, as well as, the predictive influence of the independent PLC variables of collective goals, collective actions, and focus on results in relation to the two dependent collective efficacy variables of task analysis and group competence. Results of the first SEM analysis demonstrates a significant predictive relationship between the transformational leadership variables of transforming the organization, supportive leadership actions, and leadership by modeling the way relative to total PLC and total collective efficacy. The results of the second SEM analysis demonstrates a significant predictive relationship between the professional learning community variables of collective goals, collective actions, and focus on results relative to the collective efficacy variables of task analysis and group competence.

In Chapter 5, the remaining three research questions will be analyzed using qualitative research techniques. The remaining questions to be answered are: (a) In what ways do school leaders build and support PLCs?, (b) In what ways do school leaders foster collective teacher efficacy?, and, (c) Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

CHAPTER FIVE: QUALITATIVE RESULTS

From the analysis of the study's 181 quantitative surveys completed by 84% of the "Oceanview Union School District (OVUSD)" teachers, four of the district's eight schools were selected as individual and unique qualitative case study units of analysis. Within each of the four individual school-site case studies, principal and teacher interviews were conducted, transcribed, and coded using a constant comparative analysis approach (Glaser & Strauss, 1967; Miles & Huberman, 1994) looking for relational themes connected to the study's three overarching and interconnected theoretical frameworks of: (a) collective efficacy, (b) transformational leadership, and (c) professional learning communities (PLCs); relationships that were quantitatively proven in chapter four using a correlation test and structural equation model (SEM). The interview analyses used an inductive approach to identifying the codes, which then led to identifying patterns in the data to support the development of emergent themes. The emergent themes garnered from the interview data were then deductively analyzed in comparison to the existing thematic framework lenses of collective efficacy, transformational leadership, and professional learning communities, all of which guided the focus of this study. In addition, the use of the qualitative software program HyperRESEARCH, assisted the researcher in the organization and management of the study's qualitative data.

Purpose of the Study

As stated in chapter one, the purpose of this study was to explore the role of leadership in developing and sustaining collective efficacy within a professional learning community; more specifically, the role leadership plays in the development and

sustainability of collective efficacy among teachers within a specifically designed DuFour and Eaker (1998) professional learning community (PLC) model. Little is known about the role leadership plays to best support the efficacious collaborative process within a DuFour and Eaker modeled PLC, which helps make a convincing argument in support of the relevance regarding the results of this current study. The results from this mix-methods study will reduce any current gaps that may exist in professional learning community research by examining the level of implementation of professional learning communities in one district, which has systematically implemented the DuFour and Eaker PLC model for over six years.

Qualitative Research Questions

The study had six research questions of which, three were answered in chapter four using quantitative methods with the remaining three questions aligned more closely with qualitative research methodologies. The three qualitative research questions guiding the analyses of chapter five were:

- (a) In what ways do school leaders build and support PLCs?
- (b) In what ways do school leaders foster collective teacher efficacy?
- (c) Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

The last question (c), *Is there a relationship between PLCs, leadership, teacher collective efficacy, and student-learning outcomes* was also addressed in the quantitative chapter regarding the correlation between PLCs, leadership, and collective efficacy. As a reminder, Table 5.1 presents the correlations matrix between each of the three variables as first presented in chapter four. A structural equation model (SEM) was also presented

in chapter four regarding this question in order to analyze the predictive influence of transformational leadership to the total PLC and total collective efficacy composite variables. The results of the SEM indicated transformational leadership's significant predictive influence on the level of effective PLC implementation and the level of positive collective efficacy. The SEM model produced positive results indicating that transformational leadership as described by Kouzes and Posner (2002), is a significant and positive predictive influence on the level of professional learning communities (PLCs) implementation as described by DuFour and Eaker (1998), leading to an increase in positive collective efficacy as described by Goddard (2002). The remaining variable "student-learning outcomes" from the last question will be addressed through the interpretation of the qualitative principal and teacher interviews conducted at each of the four selected K-6 elementary schools in relation to student outcomes.

Table 5.1: Correlations Matrix Between Total PLC, Total Collective Efficacy, and Total Leadership

		Total PLC	Total Collective Efficacy	Total Leadership
Total PLC	Pearson Correlation	1.000	.415**	.432**
	Sig. (2-tailed)		.000	.000
	N	181	181	181
Total Collective Efficacy	Pearson Correlation	.415**	1.000	.398**
	Sig. (2-tailed)	.000		.000
	N	181	181	181
Total Leadership	Pearson Correlation	.432**	.398**	1.000
	Sig. (2-tailed)	.000	.000	
	N	181	181	181
**. Correlation is significant at the 0.01 level (2-tailed).				

Qualitative Study Participants

As stated previously, four schools out of eight OVUSD schools were selected to voluntarily participate in one-on-one interviews with the researcher. From a preliminary analysis of the quantitative data, the four schools were individually selected based primarily on the school's total PLC mean score and then chosen secondarily based on the school's total collective efficacy mean scores; two of the three constructs researched in this study. To effectively design a case study analysis, the researcher chose two schools out of the eight schools with the highest level of PLC characteristics as indicated by the schools' total PLC mean scores from the results of the quantitative survey and then chose two schools out of the eight schools that presented with lower but still positive total PLC mean scores as indicated by the schools' total PLC mean score. No school in the OVUSD

presented with negative total PLC mean scores. All eight schools in the district were found to have above average total PLC mean scores when comparing them to an average score of 2.5 out of a possible 5. Table 5.2 presents the total mean scores for each of the eight district schools, the average score per question, and the schools researched in this study in bold.

Table 5.2: Total PLC Mean Scores Between Schools

School	Mean	N	Std. Deviation	Average Score Per Question	Std. Error of Mean
1	49.2500	16	9.73995	3.79	2.43499
2	48.8077	26	9.23913	3.75	1.81194
3	53.4286	21	10.10233	4.11	2.20451
4	49.8462	13	7.20932	3.83	1.99951
5	46.5385	26	9.67566	3.60	1.89755
6	53.0476	21	7.73612	4.08	1.68816
7	54.4091	22	5.76243	4.19	1.22855
8	47.4167	36	8.94866	3.65	1.49144
District:	50.0276	181	9.04521	3.85	.67233

From the results of Table 5.2, the four schools selected as the sites for the one-on-one qualitative interviews were School #5 (M = 46.54, SD = 9.67, N = 26) and School #8 (M = 47.42, SD = 8.94, N = 36) representing two OVUSD schools with lower positive levels of total PLC as compared to School #3 (M = 53.43, SD = 10.10, N = 21) and School #7 (M = 54.41, SD = 5.76, N = 22), two OVUSD schools that presented with the highest levels of total PLC in the district. A review of each school's total collective efficacy mean score reveals that School #5 presenting with a lower positive total PLC mean score of: (M = 46.54, SD = 9.67, N = 26) also presented with a lower positive total collective efficacy mean score of: (M = 50.65, SD = 5.35, N = 26). In addition, School

#8, the other lower positive total PLC mean score of: ($M = 47.42$, $SD = 8.94$, $N = 36$) also presented with a lower positive total collective efficacy mean score of: ($M = 51.36$, $SD = 5.05$, $N = 36$). In comparison, School #3: ($M = 53.43$, $SD = 10.10$, $N = 21$) had a higher positive total collective efficacy mean score of: ($M = 54.33$, $SD = 4.86$, $N = 21$) as did School #7 ($M = 54.41$, $SD = 5.76$, $N = 22$) with a total collective efficacy mean score of: ($M = 52.27$, $SD = 5.26$, $N = 22$).

At each of the four schools selected using the professional learning communities (PLC) DuFour and Eaker (1998) theoretical lens, each of the four principals and classroom teachers representing both primary (K-3) teachers as well as upper-grade (4-6) teachers were asked via an email invitation (see Appendix D) to participate in a one-on-one face-to-face interview with the researcher to gain additional insights and perspective regarding the qualitative questions to be answered in this study. An initial methods decision was to interview complete primary and upper grade-level teams for the qualitative portion of this study. However, the researcher found it difficult to obtain full voluntary support from complete or whole grade-level teams. Therefore, it was necessary to amend the initial methodology design of this study regarding the qualitative interviews making it then necessary to seek out and interview at least two primary (K-3) teachers and two upper grade (4-6) teachers at each of the four sites.

The study's qualitative participants were purposefully selected in order to hone in on a central phenomenon such as professional learning communities because the study's participants were "information rich" with regards to the current status of the DuFour and Eaker (1998) professional learning community model that has been implemented in their

district for over six years (Creswell, 2008). Table 5.3 presents the qualitative interview numbers for each of the four schools used for the qualitative analysis.

Table 5.3: Qualitative Interview Participants per School

	School #3	School #5	School #7	School #8	
Principal	1	1	1	1	
K-3 Teacher	3	5	3	2	
4-6 Teacher	3	3	2	2	
Sub Total	7	9	6	5	Study Total = 27

The interviews were conducted during the summer months of June and July 2010, by the researcher who digitally recorded and then transcribed each of the 27 interviews. The teacher interviews averaged between 30 to 45 minutes in length and the principal interviews lasted on average between 45 minutes to an hour. Each qualitative interview was conducted using a structured interview protocol. To provide a deeper understanding and interpretation of the quantitative data, the interview protocol was developed to probe the study's three major constructs of collective efficacy, leadership, and professional learning communities (PLCs) (See Appendix E).

The interview began with an open-ended exploration of typical PLC meetings and/or grade level meetings. Of particular interest to the researcher during the collecting of the qualitative data was how well the participants felt they were able to meet the needs of all learners individually, as well as in a group environment. Finally, the interview explored leadership both within the PLC and between the PLC and the school administration. The interviews provided data triangulation with the survey responses and enabled a more detailed response to the research questions. Upon the completion of the

27 qualitative interviews, the researcher transcribed each interview and then uploaded the interview word documents as .txt files into the qualitative software program

HyperRESEARCH.

In keeping with an “appreciative inquiry” perspective regarding the gathering and analyzing of research data, the following discussion of the four OVUSD schools is presented not as a comparison of each of the four schools to the other, but as a research presentation of the data reality existing at each individual school. As a reminder, four OVUSD schools were not included in the qualitative portion of this study because they were not the highest total PLC mean scores in the district nor were they the lowest total PLC mean scores within the district; their scores falling somewhere in between the four chosen schools. The researcher, with significant positionality, is aware of the sensitivity of the topics being discussed in this study and has taken great care to focus on what is working across the district in order foster collegiality rather than discourse. Many OVUSD employees were well aware of this study including the 27 individuals who were so willing to participate in the qualitative interview process. With this in mind, the researcher took special care to maintain the confidential integrity regarding the identities of the participants. Each of the four selected OVUSD schools interviewed for the qualitative portion of this study as well as, the balance of the OVUSD schools, presented with positive total PLC mean scores indicating that each school’s individual implementation methods in terms of the tenets of a professional learning community have both their merits and diverse qualities. The following then begins a discussion on the professional learning communities of the four selected OVUSD schools.

The Professional Learning Communities of the Four Selected OVUSD Schools

School #3 and School #7, two of the four schools (out of a possible eight schools) where interview data were gathered, are considered small schools within the OVUSD. Of the four schools selected using the criteria described above, School #3 and School #7 are the two schools producing the strongest total PLC mean scores across the district: School #3: (M = 53.43, SD = 10.10, N = 21) and School #7: (M = 54.41, SD = 5.76, N = 22) relative to School # 5: (M = 46.54, SD = 9.67, N = 26) and School #8: (M = 47.42, SD = 8.94, N = 36). Based on a 5-point Likert scale, School #3 received an average of 4.11 out of 5 per question with School #7 receiving an average of 4.18 out of 5 per question in contrast to School #5 (3.58) and School #8 (3.65).

School #5 and School #8 obtained positive total PLC mean scores from teachers though not at the higher levels as obtained by School #3 or School #7. School #5 and School #8 both had PLC scores in the positive range overall where on average, the perceived PLC implementation at these two schools received a 3.85 out of 5 and 3.65 out of five respectively, based on a 5-point Likert scale where an average score of 5 would indicate a perfect PLC school. School #5 and School #8, two of the four schools (out of a possible eight schools) where interview data were gathered, are considered large schools within the OVUSD. Table 5.4 presents a summary of the relevant data for the four schools participating in the qualitative interviews. Following Table 5.4, each school's demographic and academic performance data will be presented in depth.

Table 5.4: Summary of Relevant Data for the Four Schools Participating in the Qualitative Component of the Study

	School 3	School 7	School 5	School 8
PLC Mean Score	53.43	54.41	46.54	47.42
Collective Efficacy Mean Score	54.33	52.27	50.65	51.36
Leadership Mean Score	26.64	25.24	24.60	18.49
Year School Opened	1980	2005	2007	2002
Number of Teachers	30	30	40	40
Enrollment	400	400	650	650
Major Ethnic Groups	White: 74% Asian: 18% Hispanic: 5%	White: 53% Asian: 36% Hispanic: 9%	White: 57% Asian: 39% Hispanic: 3%	White: 54% Asian: 39% Hispanic: 6%
% English Proficient	93%	82%	89%	83%
Principal Tenure	10 years	5 years	2 years	4 years
Average Teacher Tenure	12 years	9 years	13 years	7 Years: with 17% less than two years
Pre-PLC API Score	2004 – 916	2006 - 921	2008 – 953	2003 - 942
Post-PLC API Score	2009 - 948	2009 - 959	2009 - 975	2009 - 962
API growth	32 points	38 points	22 points	20 points

Demographics of School #3

School # 3, located west of the north/south interstate highway, is a K-6 elementary school with approximately 400 students and 30 teachers rounded for this study for confidentiality purposes. The school has 93% of their students identified as English-proficient and 7% identified as English learners. Languages spoken at home include Spanish (17%), Vietnamese (3%), Cantonese (7%), Korean (7%), and Other (66%). The ethnicity of students at School #3 includes African American (3%), Asian American/Pacific Islander (18%), Hispanic/Latino (5%), and White/European American/Other (74%). School #3's principal has been at the school for over ten years coming from outside of the district. The principal is very structured in terms of the production of goals; more specifically, SMART goals. The teaching staff at School #3 has for the most part, been with their principal for the duration of her tenure with an average of 12 years teaching experience with 10% of the teachers having less than two years of experience. 45% of the teachers have a Bachelor's degree with 55% of the teachers have earned a Master's degree or higher. The ethnicity of the teaching staff is primarily White/European American/Other (97%) and Asian American/Pacific Islander (3%). There appears to be less teacher movement from School #3 as compared to other district schools.

API Data. During the 2004/2005 school year, the OVUSD began the process of incorporating the tenets of a professional learning community (PLC) at all eight K-6 elementary schools; more specifically, a PLC as defined by DuFour and Eaker (1998). Prior to implementing the professional learning community methodology, School #3's academic performance index (API) for the 2003/2004 school year was 907 out of a

possible score of 1,000. Since the 2004/2005 PLC implementation year, School #3's API score has improved 32 points over time to 948. This growth is in contrast to the minimal growth of +1 between the 1999 (1999 is the earliest API record available from the California Department of Education) and 2003 school years prior to the implementation of the DuFour and Eaker (1998) professional learning community model. Table 5.5 represents the API performance for School #3 beginning in 1999 through the 2009/2010 school years.

Table 5.5: API Performance of School #3 Between the 1999 and 2009 School Years

1999	2000	2001	2002	2003	2004*	2005	2006	2007	2008	2009	+/-
906	901	902	889	907	916	925	946	964	948	948	+32

*Implementation year of the DuFour and Eaker PLC model

Demographics of School #7

School #7 is located in the northeastern corridor of the OVUSD and also has approximately 400 students and 30 teachers. The school has 82% of their students identified as English-proficient and 18% identified as English learners. Languages spoken at home include Spanish (25%), Vietnamese (3%), Cantonese (1%), Korean (12%), and Other (52%). The ethnicity of the students at School #7 includes African American (1%), Asian American/Pacific Islander (36%), Hispanic/Latino (9%), and White/European American/Other (53%). The principal of School #7, who was instrumental in selecting the staff when she was the founding principal, has spent 15 years in the OVUSD as a classroom teacher and assistant principal. The principal is very structured in terms of the production of goals; specifically, SMART goals. The teaching staff at School #7 has an average of nine years teaching experience with 8% of the

teachers having less than two years experience. 46% of the teachers have earned a Bachelor's degree with 54% of the teachers having earned a Master's degree or higher. The ethnicity of the teaching staff is primarily White/European American/Other (93%) and Asian American/Pacific Islander (7%). The transitory movement of teachers at School #7 is within normal limits and expectations due to the natural attrition process.

API Data. School #7 opened after the implementation of the DuFour and Eaker (1998) professional learning community model. The first available API score for School #7 was in 2006 where the school presented with an API score of 921 out of a possible score of 1,000. Table 5.6 represents the API performance for School #7 beginning in 2006 through the 2009/2010 school years. Between 2006 and 2009, School #7's total API growth over time was 38 points, a result similar to School #3's total API growth over time of 32 points.

Table 5.6: API Performance of School #7 Between the 2006 and 2009 School Years

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	+/-
N/A	N/A	N/A	N/A	N/A	N/A	N/A	921	937	926	959	+38

N/A= Data not available due to School #7 not opening until 2005

Demographics of School #5

School # 5, located in the southeastern corridor of the OVUSD and east of the north/south interstate highway, is a K-6 elementary school with approximately 650 students and 40 teachers rounded in this study for confidentiality purposes. The school has 89% of their students identified as English-proficient and 11% identified as English learners. Languages spoken at home include Spanish (4%), Vietnamese 11%), Cantonese (1%), Korean (18%), and Other (66%). The ethnicity of the students at School #5

includes African American (2%), Asian American/Pacific Islander (39%), Hispanic/Latino (3%), and White/European American/Other (57%). The teaching staff at School #5 has an average of 13 years teaching experience with 3% of the teaching staff having less than two years experience. 64% of the teaching staff have a Bachelor's degree and 36% have earned a Master's degree or higher. The ethnicity of the teaching staff is primarily White/European American/Other (97%) and Asian American/Pacific Islander (3%). School #5's principal has been principal of the school for less than two years after transferring from an assistant principal's position.

API Data. As stated earlier, the OVUSD began implementing the tenets of the DuFour and Eaker (1998) professional learning community model at all eight district schools in 2004. School #5 opened in the 2007/2008 school year, after the PLC implementation phase. School #5's first academic performance index (API) for the 2008/2009 school year was 953 out of a possible score of 1,000. The following year, during the 2009/2010 school year, the academic performance index for School #5 was 975, a 22-point gain over the prior year.

Demographics of School #8

School #8 is located in the southeastern corridor of the OVUSD and also has approximately 650 students and 40 teachers. The school has 83% of their students identified as English-proficient and 17% identified as English Learners. Languages spoken at home include Spanish (13%), Vietnamese (1%), Cantonese (1%), Korean (40%), and Other (45%). The ethnicity of the students at School #8 includes African American (1%), Asian American/Pacific Islander (39%), Hispanic/Latino (6%), and White/European American/Other (54%). The teaching staff at School #8 has an average

of seven years teaching experience with 17% of the teaching staff having less than two years teaching experience. This is an indication that School #8 has the least experienced teaching staff as compared to the other three schools in the qualitative portion of this study. 63% of the teachers at School #8 have earned at least a Bachelor's degree and 37% have earned a Master's degree or higher. Most of the teaching staff at School #8 identifies as White/European American/Other (82%) and Asian American/Pacific Islander (8%). School #8's principal garnered assistant principal experience outside the district before being hired as the principal approximately five years ago.

API Data. School #8 opened before the implementation of the DuFour and Eaker (1998) professional learning community model. The first available API score for School #8 was in 2003, where the school presented with an API score of 942 out of a possible score of 1,000. Table 5.7 represents the API performance for School #8 beginning in 2003 through the 2009/2010 school years. Between 2003 and 2009, School #8's total API growth was 20 points, a result similar to School #5's total API growth over time of 22 points.

Table 5.7: API Performance of School 8 Between the 2003 and 2009 School Years

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	+/-
N/A	N/A	N/A	N/A	942	941	950	950	950	953	962	+20

N/A= Data not available due to School #7 not opening until 200

The four selected schools chosen for the qualitative data analysis all presented with API growth over time, however; School #3 and School #7's API growth were 32 and 38 points respectively as compared to school #5 and #8's API growth of 22 and 20 points respectively. The following section is a review of the interview responses as they

relate to the three PLC independent variables of collective goals, collective actions, and focus on results to determine the variance in interview responses regarding these variables garnered from data collected at both the higher PLC schools represented in School #3 and School #7, as compared to the variance in interview responses from the PLC schools of School #5 and School #8.

Qualitative Professional Learning Community Variable Analyses

This section provides a review of the interview responses gathered from all four schools focusing on the three professional learning constructs of collective goals, collection actions, and focusing on results. The initial coding phase involved reading and rereading the transcripts to identify possible typologies or categories for codes in relation to the construct of professional learning communities (PLCs). The typologies emerging from the data were evaluated against current professional learning community characteristics found in current literature. In terms of the themes used for analyzing the qualitative interviews focusing on the attributes of a professional learning community, the DuFour and Eaker (1998) PLC characteristics were used to support the thematic approach when analyzing the qualitative interview data. The major themes of the DuFour and Eaker PLC are: (a) shared mission, vision, values, and goals, (b) collective inquiry into “best practices” and “current reality”, (c) collaborative teams focused on learning, (d) action orientation and experimentation, (e) commitment to continuous improvement, (f) results orientation. Based on DuFour and Eaker’s six professional learning community themes presented above, the qualitative PLC variables were placed into three categories: (a) collective goals, (b) collective actions, and (c) focus on results. The qualitative responses relevant to and in support of answering the qualitative research questions were

analyzed using the three PLC constructs mentioned above. In coding the qualitative interviews, it was at times, difficult to categorize certain segments of the interviews into specific codes pertaining to the explicit characteristics of PLCs. This was evident when coding the three independent but highly correlated PLC sub-constructs of collective goals, collective actions, and focusing on results. In a high functioning professional learning community, collective goals, collective actions, and focus on results are collaboratively designed at various intervals during the year in the cyclical format. The next sections present the data on how teachers at the four schools set goals, take actions, and focus on results.

Analysis of the PLC Variables for the Four Selected OVUSD Schools

In reviewing the qualitative transcripts for the four OVUSD schools, many themes consistent with a strong professional learning community emerged from the data though at varying degrees at each of the four schools suggesting differing levels of effectiveness in the implementation of the model. The following discussion centers on the three PLC independent variables of collective goals, collective actions, and focus on results. In coding the qualitative interviews, it was at time, difficult to categorize certain segments of the interviews into specific codes pertaining to the explicit characteristics of PLCs. The three sub-category variables in the DuFour and Eaker (1998) professional learning community model are interconnected and addressed in a constant cycle of review. Collective goals are reflected in teacher teams creating goals to achieve collective actions leading to results by establishing the goals collectively through the school-wide lens of shared mission, vision, leadership, and values. Collective actions are communicated through teacher team behaviors during professional learning community (PLC) time

where they are organizing for collective inquiry and actions into “best practices” and “current reality” by being collaborative teams focused on learning through action orientation and experimentation. Collective focus on results stems from specific PLC grade-level meetings that review data and continuously work to improve practice. The following is a discussion of the PLC variables reflected in the qualitative interviews conducted at each of the four selected OVUSD schools where Table 5.8 reflects the frequencies of the PLC sub-variables of collective goals, collective actions, and focus on results.

Table 5.8: PLC Sub-Variable Frequencies in Qualitative Interview Data

PLC Sub-Variables	Frequency (<i>f</i>)	Mean	Standard Deviation
Collective Goals	35	1.30	2.15
Collective Actions	103	3.82	4.90
Collective Focus on Results	57	2.11	2.65

From the frequencies in Table 5.8, it appears that there is a higher occurrence of collective actions at $f=(103)$ as compared to collective focus on results at $f=(57)$ and collective goals at $f=(35)$. When recalling the quantitative results using multiple regression analyses, collective goals presented as the strongest influence on the dependent collective efficacy variables in addition to being the strongest influence on the transformational leadership dependent variables as evaluated in the model when loaded with all three independent PLC variables of collective goals, collective actions, and collective focus on results. The total mean scores of each of the three PLC sub-variables were collective goals ($M = 19.39$, $SD = 3.88$), collective focus on results ($M = 15.47$, $SD = 2.80$), and collective actions ($M = 15.17$, $SD = 3.13$) presented from greatest to least total mean score. It should be noted that a high frequency in one category doesn't

necessarily indicate an area of greater importance as compared to the other factors.

Based on mean PLC scores, School #3: (M = 53.43, SD = 10.10, N = 21) and School #7: (M = 54.41, SD = 5.76, N = 22) are considered strong PLC schools. School #5: (M = 46.54, SD = 9.67, N = 26) and School #8: (M = 47.42, SD = 8.95, N = 36) based on overall mean scores could be considered moderately strong PLC schools in the OVUSD because of their scores being lower than the balance of the district schools. The following begins a discussion on the collective goals produced by the professional learning communities found at School #3 and School #7.

Analysis of the Variable: Collective Goals for School #3 and School #7. DuFour and Eaker (1998) believe that collective goals are an important element of an effective professional learning community when focusing on the learning for all students. In addressing collective goals, DuFour and Eaker state:

A PLC is composed of collaborative teams whose members work *interdependently* to achieve *common goals* linked to the purpose of learning for all. The team is the engine that drives the PLC effort and the fundamental building block of the organization. It is difficult to overstate the importance of collaborative teams in the improvement process. It is equally important, however, to emphasize that collaboration does not lead to improved results unless people are focused on the right issues. Collaboration is a means to an end, not the end itself. In many schools, staff members are willing to collaborate on a variety of topics as long as the focus of the conversation stops at their classroom door. In a PLC, *collaboration* represents a systematic process in which teachers work together interdependently in order to *impact* their classroom practice in ways that will lead to better results for their students, for their team, and for their school (All Things PLC.com).

As stated earlier, a review of the quantitative results using both multiple regression analysis and structural equation modeling (SEM) indicate that of the three independent sub-variables of PLC, collective goals, as compared to collective actions and focus on

results, was the independent sub-variable of PLC presenting with significant influence on the variance in responses found in the dependent collective efficacy variables of task analysis, group competence, and the leadership variables of transforming the organization, supportive actions, and modeling the way.

It is evident from reviewing the qualitative data that both School #3 and School #7 have experience in designing and implementing both school-wide and grade-level specific collective goals. At the beginning of each school year, the principals of both schools present trailing data (STAR) results during the first week of school to provide teachers with information regarding how their students performed the previous year on the state assessment, in addition to, reviewing the performance scores of the students in the teachers' current school year. Teachers are then required to assess their current students in language arts and mathematics to obtain leading data (formative and summative assessments) to develop both school-wide and grade-level specific SMART goals in the areas of language arts and mathematics. SMART goals are described as S=Specific, M=Measurable, A=Attainable, R=Results Orientated and Relevant, and T=Timely (DuFour & Eaker, 1998). A teacher at School # 7 shares her thoughts on the development of SMART goals:

At a team grade level meeting, our principal asks our teams to create goals for each trimester. Then, at a whole school staff meeting, we get together and present our goals to the entire staff. We present to the entire staff about our goals, why we came up with those goals by looking at CST data etc. and, how we are proposing to measure progress towards these goals. At the beginning of the year, in our grade level team PLC meetings, we are looking at our data and deciding what kinds of goals we want to have for the year. In later meetings, we are looking at pre-assessments to see where we have gaps, we're talking about sharing strategies for teaching to meet our goals, and then, we discuss our progress towards our goals. A lot of times we will do a pretest and then at the end, we will have post-test

data. We cycle through this process three times per year. We then create common assessments together from this pre and post test data.

In School #7, the principal not only requires grade-level teams to design SMART goals, she then requires each grade-level team to present the goals in front of the entire teaching staff so that collectively, the balance of the teachers can provide the presenting grade-level team with feedback on each grade-level team's SMART goals. This process supports the DuFour and Eaker (1998) concept of all teachers feeling responsible for the academic progress of all students at the school, not just the students in each teacher's individual classroom. The presentation of SMART goals is completed at the beginning of the school year and then again at the second and third trimester reporting periods. Grade-level teams share out initial SMART goals at the beginning of the school year and then repeat this process when they share out the results of the first trimester goals at the end of trimester one including the presentation of new goals for trimester two to support students who have not yet met the benchmark requirements. In addition, grade-level teachers present "push on" goals for students who have already mastered the SMART goals from the first trimester. The process is repeated again at the end of the second and third trimester grading periods. When comparing both School #3 and School #7, School #7 has a firmer "loose-tight" requirement regarding the design, presentation, and analysis of the grade-level specific SMART goals. This is evident to the researcher when reviewing comments made by teachers at both schools. At School #7, where SMART goals are presented in a more formal fashion as described above, another teacher had the following comment:

With regards to SMART goals, you would see vertical teams K-6 sharing out their specific grade-level SMART goals. We would have our initial

goals to present to our colleagues. At the initial PLC SMART goal meeting, we would present our goals using STAR test data in addition to data gathered from assessments given during the first few weeks of school. At the second trimester PLC school-wide meeting, we would present data on how we did regarding our first semester goals and then report out on what our second semester goal will be based on the first semester progress. The final PLC school-wide goal meeting would take place at the end of the year to show evidence of how we met or did not meet our second semester goal. That is what we would typically do at our school-wide PLC meetings. During the share out and the report out, we talk about how our results inform us on the current situation of our students and how those results will guide our future instruction. This is all focused using our SMART goals, specific and measurable. It is data. Everything that we report out is based on data using the common assessment that our team has created and how we performed on that as a team. It's based on data.

The principal at School #7 is a strong proponent of the PLC process and has made it very clear to her staff that there is an expectation that every grade-level will collaborate together. There is also an expectation that teachers at her school will work hard in the business of educating all students, an element of the DuFour and Eaker (1998) model.

The principal at School #7 shares the following:

When teachers sit down with me, we create Stull goals and our Stull goals are very SMART. It is all about building capacity, in taking little steps, and by modeling for them. I also demonstrate how to write SMART goals and show them samples. And, if the goals are not met, we identify why it might have happened. That is, maybe it was something that went a stray in the instructional steps. Was it in the instructional practices? Was it in the way the goal was written? You have your instructional path but sometimes you take a detour and you make adjustments, regroup and then come back. I believe that this staff is a very high functioning PLC. I believe that the teachers think that teaching and learning is serious business [...] I also feel that the teachers are awarded. They feel a sense of reward; a sense of efficacy because they feel their work makes a difference. This school site is unique. We have a very diverse group of students [...] And yet, we are making gains in our subgroups, and our AYP, and our API, so the teachers know this and they feel really good about the work that they're doing, about the SMART goals they are writing and monitoring, and about the difference that they're making.

School #3 is also required to write SMART goals based on data derived from STAR test

and beginning of the year assessments. The difference in the presentation of SMART goals between School #3 and School #7 is that teachers at School #3 are not required to present their SMART goals to the entire staff. Each grade-level has a leadership representative to present SMART goals to the principal three times per year at the beginning of each of the three trimesters. The principal meets with each K-6 grade-level team leader representative to review the SMART goals at the beginning of the year then another meeting is held between the principal and grade-level team leader representative at the completion of trimester one and then again at the end of both the second and third trimesters. In discussing SMART goals at School #3, this teacher had this response:

I think that the teams that I have been on have been really honest about our PLC work but incredibly efficient with it too. I think that it's been invaluable because we look at data and student work examples [...] as well as looking at student work and assessing not only the quality of what we are doing but making improvements, trimming things, changing things, and really kind of making sure that we are meeting their needs. We also look at all of the students then depending on the makeup of the actual grade level, where we needed more help, and what we needed for our SMART goals, and what our aim was for that year. From the SMART goals, we plan together our lessons and assessments because we have the luxury of having the same planning time.

Grade-level teams working together on a common academic concern can also address collective goals. There were many examples in the qualitative data from School #3 and School #7 where grade-level teams worked together on a common or collective goal centered around a variety of school related issues. A teacher at School #3 supports the essence of effective and collective collaboration among grade-level team members when she stated:

I think having common goals contributed a lot to the collaborative process because it laid the foundation for what the model is suppose to look like when you meet with your team including how data and information is

suppose to drive your instruction. I think we always did that but the implementation of the PLC process formalized it. The expectation was there. And, once the expectation was there and you had records of everything to show someone you then thought about it and you realized that you had all of the data there in front of you to discuss and analyze. I think, as a professional, it validates what you are doing and it allows you to clearly and more accurately look at results and see where you are lacking in a more efficient way. So, I think PLC has allowed us as a team and a school to be more efficient and effective and do more for kids. And at the same time, have a record of everything, which I think is very important because for too many years, teachers haven't had to have records of anything.

Another example of a collective goal at School #3 was when one particular grade level decided to teach the same math lesson with the principal observing each of the individual lessons gathering talking points to share with the entire grade-level team in a follow-up meeting with the team. The teachers all communicated the desire to collectively improve on the teaching and learning process for this particular lesson by asking their principal for feedback in order to take the “best practices” of each individual teacher’s classroom back to their own individual classroom to implement the new instructional strategies. Once the grade-level team members agreed to the collective goals, each teacher individually returned to their respective classrooms to engage in the process of teaching and learning.

The principal of School #3 reflected positively on the collective goal described above:

When I think of something that was fun and effective was when one team all wanted to do the same the same math lesson for me to observe. We have done this type of activity for several years. The teachers all had the same goal and they would all teach the same lesson. We would then get back together and review what happened in each individual lesson and then talk about what were the similarities, differences, or who was the strongest in a particular part of the lesson. I love the process and I wish more teams would participate. One of the lessons that were a little bit challenging was that they had been working on their model drawing. It really wasn't to the level that it should have been because they were missing some pieces. They were missing some elements that they just didn't understand. So by going through this process of everyone teaching

the same lesson and receiving feedback together.

At specific and agreeable time intervals, grade-level teams came together to collectively analyze their actions with the discussion centered on the collective goals previously implemented.

Analysis of the Variable: Collective Goals for School #5 and School #8. At both School #5 and School #8, collective goals are also developed at each grade-level. Documentation gathered by the researcher indicates that collective goals are written in reading and writing as a prescribed district-wide requirement and collective goals are also written in areas of need from results of the STAR test. At the beginning of the school year all schools including School #5 and School #8 assess their students in the area of writing, reading, and mathematics. Each grade-level has a grade-level specific writing prompt for the beginning of the year writing prompt followed by a mid-year, and then an optional end of year writing assessment prompt. To address reading performance of students district-wide, K-3 students are given the Diagnostic Reading Assessment (DRA) and 4-6 students are given the Qualitative Reading Inventory (QRI) at the beginning of the year. Collective goals are then written based on the results of these two beginning of the year assessments. From the results, grade-level teams generally write SMART goals to track the performance of students in the areas of reading and writing. At both School #5 and School #8, teachers interviewed stated that SMART goals are also written based on an area of academic need depending on what skill sets the students are working towards. At the beginning of the year, teachers at both schools used STAR test results to review the essential standards that the majority of students in a particular grade-level might be having difficulty mastering. A teacher at School #5 explains the process

completed by her team with this comment:

I think we are really good about writing our Stull Bill goals at the beginning of the year and we often will have similar Stull Bill goals because we write our SMART goals together. I think we are really good about revisiting the goals and following through on it. We come back together after gathering our data. For last year's SMART goal, we realized that on the STAR test for the second graders; it was difficult for them to find information from various sources like a dictionary, thesaurus, or atlas etc. Based on this, we wrote our SMART goals, wrote common assessments together, did pre and posts, and compiled all of our data. We came together and analyzed the students' performance and looked at our next steps to providing additional opportunities for students who hadn't mastered the goals as well as creating additional goals for those students who had demonstrated their proficiency. That was a long-term goal for the year and we as a team were successful. I think we worked exceptionally well together.

The principal at School #5 understands that his recent arrival to the school will necessitate a rebuilding of a culture of collaboration centered on data analysis collectively gathered by grade-level teams in collaborative professional learning communities where the focus is on ensuring that all students are learning. When reflecting on collective goals, the principal of School #5 commented:

It's our challenge in that so many of our kids already perform well so it's very easy to kind of say we did a good job at looking at the data when developing our goals. Deming states, "Without data, all you have is an opinion." I really like that we help some of our teachers become more acclimated with data using more short-cycled formative assessments. I think we are pretty good in terms of standard common data assessments like DRA, QRI, and DWA, etc. However, I would argue that a majority of those assessments are still primarily being used as summative assessments. When I meet with grade-level teams, I'm very pleased that I can actually come in and see the teachers talking to varying degrees about data. I have this data, the data shows these children either already knew the content begin taught, or excelled at it, or didn't learn it. What can we do? How do we provide re-teaching? How do we provide that additional scaffolding?

Teachers at School #5 have communicated through the avenue of the principal's leadership transition team that they feel like the collaborative atmosphere has gone by the

wayside and they are hopeful that with additional training, the grade-level teams and cross-grade level articulation teams, can begin to foster the original intent of professional learning communities. Teachers are wanting more collaboration and want to revisit exactly what a PLC is and what expectations will be required of all grade-level teams after re-training, structures, systems, and accountability measures have been reinstated. Collected goals are being written at both School #5 and School #8 but primarily in the areas of reading, writing, and mathematics as is typical across the district. A teacher at School #5 shared what her grade-level team does in the area of collected goals:

We have evolved where we try to have an agenda and we try to stick to the agenda. We also try to set what we are going to accomplish in the time frame that we will be together during our PLC time. We don't always work on academic goals, sometimes it's more logistical goals like what's coming up, themes coming up, fieldtrips coming up, a basic discussion on curriculum, on what you are going to be covering etc. We are kind of individual entities on our particular team and there's a little bit of fractioning off but there is also a little bit of meeting of the minds. We are still evolving [...] We do set a common goal. Our goals have been based on writing where last year we had 85% of our students successfully writing a certain number of sentences according to a rubric. Another SMART goal was with reading. We wanted 85% of the students to reach a certain DRA level by the end of May but then one of our goals was to meet and look at our DRA scores in February because we don't evaluate until right before conferences.

A teacher at School #8 expressed her feelings regarding the need for collective PLC goals with this comment:

I would say that half the time, there were definitely days where we didn't feel like we had a lot of direction PLC wise so we would be there going asking what are we going to do this week? When that happened, we tended to just do lesson planning kinds of things. This particular year, we didn't meet that often. There were a lot of things that took the time away from us whether it was a whole staff meeting or other things would come up taking precedence. We didn't focus as much on PLC this year as we have in the past. When we did meet for PLC the meetings were not so structured. When we met as a whole school, there was more structure

because the principals were running the meetings where all of the grade-level teams met together where we were either working vertically. We still need more structure and guidance. Our PLC is pretty weak. In some of our PLC meetings though, we do talk about data and student work and how it might guide our instruction. In the beginning of the school year, we reviewed STAR data to determine what SMART goals we should write based on how the students did on the STAR test.

These quotes suggest that the PLC process is not a firmly in place in School # 5 and School #8 as compared to School #3 and School #7.

After reviewing the transcripts for School #5 and School #8, it is evident to the researcher that some teachers at both schools are not using PLC time to effectively review data, write collective goals, or discuss the outcomes of assessments in order to determine whether it is necessary to adjust the goals, curriculum, pacing, or assessments being used to gather student achievement data. Teachers at both School #5 and School #8 do meet and discuss school related topics at least once during the week because the time is provided to them during their weekly schedule. The structure of the meetings for most teams is informal and flexible with no specific discussion on individual student achievement results if the individual grade-level team meeting is held in isolation. If the site principals of School #5 and School #8 organize the PLC meetings, the structure, flow, and expected outcomes are more formal. Teachers who have transferred from other OVUSD schools have noted that there are similarities and significant differences among the district's PLC environments.

At the time of this study, the district's eight principals were beginning to develop their own professional learning community cohort working towards at least one common goal together such as a similar writing goal at each school across the district. With the recent arrival of the new Assistant Superintendent of Curriculum and Instruction as well

as, the arrival of the new district Superintendent, the idea of a principal PLC group is slowly coming to fruition with principals being paired together to observe instructional practices at each of their respective schools. Accompanied by the Assistant Superintendent of Curriculum and Instruction, the paired principals visit each of their respective schools where the focus is typically centered on the elements of effective instructional practices. They observe classrooms as a triad in order to gather observational classroom data to evaluate, compare, and contrast the teaching and learning processes within a professional learning community as found in each respective school. The principals participate in the paired observational triad to begin the collaborative process, which has long been absent among the principals in the OVUSD regarding a shared leadership vision towards the development of standardized PLC strategies across the district, in order to develop and sustain common core instructional practices.

Many of the teachers interviewed for this study from School #5 and School #8 communicated the desire to have common district-wide goals, assessments, and interventional strategies to improve the teaching and learning cycle across the district. One teacher at School # 8 stated her feelings about collective goals based on her experience at her former school where according to her; the PLC process was farther along at other schools than it is at her current school:

I come from a school with a very strong PLC background. We did a lot of curriculum development together and developed common assessments together so I was sharing a lot of that material with my new teammates at this school. My new teammates were thirsty and so that was good. Unfortunately, at this particular school, I don't think PLC is as developed yet. We are working on it. We have started with some team norms of bringing your plan book and bringing your curriculum teaching editions. I think establishing norms for the team was the first order of business. I had to walk quietly being the new team member but I think that's kind of now

the starting point and then now that we have our tools, we can go forward. Some of the topics discussed were on math for instance because we were evaluating the new program. We looked at the baseline assessment. Did it measure what we wanted it to measure? What is rigorous enough in terms of meeting standards? How did my students do compared to someone else's students in the grade level? We looked at test data and student work, not day-to-day student work but more of the formative and summative assessments in order to develop our common goals together.

Teachers at School #5 and School #8 communicated a strong desire for more site leadership direction regarding the PLC process. The teachers have stated that for the most part, PLC meetings are left up to individual grade-level teams to decide what the focus will be based on the needs of the specific grade-level team. During the school year, School #5 and School #8 did conduct school-wide principal led PLC meetings but not at the level nor at the frequency as was experienced and expressed by the teachers from School #3 and School #7. A review of the PLC variable collective actions will be discussed next for School #3 and School #7 followed by the collective actions results for School #5 and School #8.

Analysis of the Variable: Collective Actions for School #3 and School #7. In an effective PLC, teams engage in collective inquiry regarding “best practices” of the teaching and learning process found in both the individual grade-level team member’s repertoire, as well as, within the collective grade-level team as a whole. This is accomplished by reviewing current practices and realities using honest dialogue regarding the true achievement levels found within the grade-level. As table 5.8 above presented, collective actions had the highest frequency of occurrence ($f=105$) as presented in the qualitative data as compared to collective goals ($f=35$) and collective focus on results ($f=57$). As was stated earlier, the researcher believes that collective

actions and collective focusing on results would naturally have higher frequency numbers as compared to collective goals because once initial goals are designed and implemented, they are monitored and adjusted through the ongoing collective actions of grade-level team members when they are focusing collectively on the results of their current collective goals adjusting them as necessary.

In the qualitative data from School #3 and School #7, there were many examples of grade-level teams working collaboratively on the ongoing analysis of their collective grade-level goals. Teachers at both schools feel like the work they are doing is valuable because they are focused on the collective achievement of not only the students in each teacher's individual classroom, but on the collective grade-level achievement of all the students. In most of the qualitative interviews from School #3 and School #7, the teachers communicated a clear objective with regard to the collective actions of their grade-level teams. The collective actions included, but were not limited to, reviewing student data, reviewing student work, analyzing standardized instructional practices, reviewing and adjusting (if necessary) SMART goals, designing common curriculum including unit lesson plans, and monitoring the grade-level instructional pacing etc. One teacher at School #3 expressed his thoughts on the collective actions of his grade-level team regarding curriculum:

We talk about pacing and how to extend or modify assignments to meet individual needs. We also focus on staying on track with our annual curriculum map. We are constantly evaluating our assessments particularly in the area of writing. We share what has worked and what has not worked for our students. We analyze math assessments to identify areas to re-teach. My grade level team meets once a week for about 60 minutes. Structure is informal, but all of us come prepared with planners, and note pads.

Other teachers at School #3 also communicated the importance of the collective actions of the grade-level teams in order to effectively and efficiently produce the desired results within a grade-level team. There was though a sense of a more relaxed and shared-leadership style atmosphere at School #3 among the grade-level teachers interviewed for this study. The expectation of shared collaborative leadership within the grade-level is expected by the principal but expressed in a more informal manner when she states:

In our school, we totally have shared leadership. That is, there is no leadership structure within this school and that's very purposeful. We all have an understanding at this school that if you have a talent, you share it. If you need to learn something more, we seek it out and we help you. If you need stay two hours late and you can do it, you 're the one who does it. If you need to get home to your kids, you do it. It all works out, it all balances out.

At School #7, collective actions were designed in a more formalized and structured manner with the principal frontloading the required PLC topics for the grade-level teams to analyze and then respond back to the principal using a PLC feedback document provided to the grade-level teams by the site principal. Each PLC meeting is structured using a required agenda either developed by the grade-level team or the site principal depending upon the type of PLC activity being addressed. The most significant example of collective actions among teachers at School #7 is the tri-annual SMART goals share-out where each individual grade-level team presents their SMART goals and subsequent data findings to the balance of the school's teaching staff three times each year. The three SMART goal presentations occur at the beginning and end of each of the three semesters. The vertical school-wide SMART goals articulation was valued by the teachers at School #7 because they began to understand the importance of the cross grade-level communication piece when gathering input across the grade-levels,

kindergarten through sixth grade, seeking high-yield strategies involving “best practices” to achieve the desired results. When speaking to a teacher at School #7 regarding the collective SMART goal share-outs, she felt that the process was invaluable and beneficial:

We have three times to report out at either a staff or Wednesday meeting time where we share out to everyone. We share out the goal first, then the materials that we will be using, and finally, the strategies that we will use to try and meet our goal. At the next meeting at the end of semester one, we share out K-6 on our results of the goal by reporting out if we made the goal or not, what we did to meet the goal, and if we didn't meet the goal, what we would do differently the next time to try and meet the goal. My principal shares out her feedback after every grade level team reports out to give us ideas of what we might use. My principal makes constructive comments after every share out. We then use a PLC binder to keep all of the feedback we received from the other grade-level teams.

Another area of collective actions at School #7 was centered on the development of effective assessments to drive instruction. At initial school-wide PLC articulation meetings, there were significant discussions regarding what constitutes effective assessments using Stiggins’ (2006) seven core strategies to develop assessments “for learning” rather than assessments “of learning.” The principal at School #7 communicates the importance of effective assessments that are collectively designed by the grade-level teams when discussing the outcomes after using assessments “for learning” as compared to assessments “of learning”:

I think the reward is in seeing that assessment for learning is making a difference in student achievement and, in the really, really, positive experiences that teachers are feeling working in a team. Teachers are for the most part, very social beings and they recognize that they can't do everything alone. Teaching is a really big job and no one can do it alone. It takes collaboration to make a difference and I think that the teachers understand how important it is to collaborate.

Through the process of collective actions, effective grade-level teams reflect on

their individual and collective processes while focused on the teaching and learning cycle analyzed through the lenses of co-constructed instructional strategies. The use of both common formative and summative assessment data is also used to make informed decisions regarding their instructional practices. Teachers at School #3 also communicated the collective actions they took regarding the collective goals focused on in their grade-levels. The process of developing collective goals at School #3 was completed in an informal but expected manner with the decisions about the development of the collective goals left up to the individual grade-level teams to decide based on data but clearly communicated to the site principal via the individual grade-level leadership representative. A teacher at School #3 articulated her thoughts regarding how her team approaches all of the necessary collective actions on her team:

I think that the teams that I have been fortunate to be on have been really honest about the PLC work by begin incredibly efficient with the process so I think that it's been invaluable. One of our collective actions is to always look at data together. We look at data and student work examples to decide collectively on our team goals. It was a nice opportunity to look at student work and assessing not only the quality of what we were doing but also making improvements, trimming things, changing things, and really kind of making sure that we are meeting student needs. We look at all of the students and then depending on the make of the actual grade level, we decided where we needed more help, and what we needed for our SMART goals, and what our aim or focus was for that year sort of like a bigger picture idea. We also plan together our lessons and assessments because we had the luxury of having the same planning time. We honored the time to go through and plan out the curriculum together and then pulled materials to support each other.

In the following section, a discussion on the collective actions of School #5 and School #8 will be presented.

Analysis of the Variable: Collective Actions for School #5 and School #8. School #5 and School #8, two of the OVUSD's larger schools have grade-level teams ranging

from two to three teachers per grade-level up to seven to eight teachers per grade level making it sometimes difficult to arrange concurrent grade-level team planning time for all team members who work together on the larger teams. With larger grade-level teams, the teachers' schedule is usually designed to allow half of a specific grade-level team to meet together for planning with the balance of the grade-level team meeting on a different day or time for their planning. The smaller grade-level teams have schedules that permit all grade-level team teachers with the opportunity to meet together each week.

When interviewing teachers at both School #5 and School #8, a sense of specific grade-level collaboration focused on collective actions was evident depending on the grade-level. Based on the qualitative interviews, most grade-level teams participate in collective actions to improve the teaching and learning process though there were a few grade-level team members operating as individual islands of expertise. School #5 has a very seasoned staff with teachers transferring in from other OVUSD schools when School #5 opened. The level of collective actions on any grade-level team at School #5 seemed to be dependent on what school the individual teacher had transferred from prior to coming to School #5. Some of the transfer-in teachers felt that the PLC implementation was inconsistent across the district. This feeling was evident in comments made by a teacher from School #5:

I think it is dependent upon each individual site, it's dependent on the principal, and, I think school size can be a factor too. When I was at my previous smaller school, I think there were more PLC and a lot more was expected of us. We were much stronger at PLC. There was a lot more coming together as a whole school and doing things. Having left and gone to a bigger school, and having had a principal who kind of you know, I don't think it was that he didn't buy into PLC; I think that he just didn't really get it all. I definitely don't do as much PLC style work as I did before. I just think it is really up to individual grade-level teams because I

don't really think that there is any district guidance or leadership in regards to PLC anymore. It is really dependent upon each site and each site is doing it a little differently.

Teachers at both School #5 and School #8 felt positive about the conversations they were having regarding how lessons had played out in each of their individual classrooms, taking feedback, from each other to then return to their individual classrooms to implement the new strategies shared with each other. There were solid examples at both School #5 and School #8 where teachers were collectively working together to improve student outcomes. Grade-level teams meet each week either as a whole grade-level or as a split grade-level depending on how many teachers were on each team. During these PLC meetings, teachers would support each other in areas of instructional need based on individual teacher requests. Collective actions at School #5 and School #8 centered around data but not as intensely as was done at School #3 and School #7. At School #8, the following teacher responded to how her team collective worked together to solve an issue with reading:

I had a first/second grade combination class this year and there was a student who came in reading at a very low-level because of a lack of English language proficiency. This student was in a different homeroom class than mine but because we had our PLC goals regarding reading strategies and reading comprehension, students were placed in our individual classroom during reading depending on their individual reading level. I think the support of the team was important because collectively, we took action to support the reading skills for all of our grade-level students. I had students reading more and also had some students at a level where they needed some support with decoding, fluency, and reading comprehension etc. For reading, students were placed into teacher's classroom based on their individual reading needs in order to offer specific and tailored instruction based on the needs. I think being flexible with your PLC team and working together to help students was the best part of that whole situation.

The following discussion regarding focusing on collective actions is an important

and key element reflected in the qualitative data gathered from both School #5 and School #8. Present in both schools was the focus on the use of common curriculum to assess standards using common assessments agreed upon by the entire grade-level. Teachers at both School #5 and School #8 are responsible for monitoring the progress of their SMART goals by collectively coming together to discuss the necessary action steps in order for all students to meet the benchmark proficiency level required for each individual SMART goal. Both principals at School #5 and School #8 have provided grade-level teams with certain autonomous opportunities to monitor, readjust, and reapply the necessary strategies to meet their SMART goals. The principal of School #8 reflected on the notion of collective grade-level team actions:

I try to set up a structure where there is some time for supporting teachers as they collectively address the learning needs of their students by offering other lessons that would be accomplished through our academic learning program (ALP), scheduled within our existing extended studies curriculum (ESC) called "Intervention Time." As you know, one of the difficulties as teachers is finding individual time as an individual teacher to provide individual students with the support that they might need. In primary grades the extra support seems to be naturally built into the routines of the day with your guided reading groups and your mathematics groups. In upper grades it is more difficult because it is not as much a part of the upper grade routine to break up into small groups unless it's to take 10 minutes with a student while the others are working on the follow-through from a whole group lesson. Therefore, I try to help structure periods of ALP time where teachers can meet with students on one on one or in a small group basis by using as many available teacher resources as possible to free up the classroom teacher so that they can collectively work with our struggling population.

Though there was evidence that teachers at both School #5 and School #8 were collectively working together, there was more evidence provided from School #3 and School #7. From a review of the transcripts from both School #5 and School #8, there was evidence of teachers collaborating on typical grade-level topics when teachers met

weekly for their PLC team collaboration time. There was also evidence of grade-level teams using the PLC time for generic grade-level topics such as specific unit design or specific lesson plans, planning for fieldtrips, divvying up specific task responsibilities like prepping or the copying of materials etc. Discussions regarding SMART goal performance were primarily conducted at time intervals that were dependent upon when the SMART goal scores were due to the principals. A teacher at School #5 shares an example of the variety of grade-level team collective actions:

We generally talk about what we taught, what we are going to teach, and share ideas and examples of lessons or handouts. Sometimes our discussions were more in depth and sometimes we just met because it was expected but we soon returned to our own classrooms to grade after collaborating briefly. Our collaboration is kind of situational. We all take turns at the PLC meetings regarding what needs to be accomplished from our collective efforts at the PLC meeting. We fill out a PLC form even though there was no direction to do so but it was a habit so we just kept doing the same thing. We talk about initial math common assessments and we grade each other's district writing assessments to calibrate the scores. We talk about the 16 essential math skills after coming up with one sheet per essential math skill. It was amazingly effective in seeing how these kids performed. We knew where these kids were in terms of math because we had leveled the students for math. We taught the essential skills in our homeroom, which was huge because we did them at different times instead of in our regular math class. This provided an opportunity for the higher kids in their own homerooms to help the struggling students by being math role models. This was a huge point because I had the most students who seemed to struggle with math so by having given the essential skills assessment in homeroom, these low students had stronger students who modeled strong math skills.

Another teacher at School #5 describes the work she does with her team when they work as a collective grade-level unit. This same type of example did surface in other interviews from School #5 and School #8 though not at the data-driven levels found at School #3 and School #7:

In our PLC grade-level meetings, we would have our assessments out to

openly share our individual classroom results. We would also have our recording sheets to record and show our progress of all of our students. Last year and the year before we had come up with rubrics and scoring documents as a way to analyze the class as a whole. We looked at not only how our individual students were doing in our class but in how our grade as a whole was doing to help us better understand our own strengths and needs as individual teachers and as a grade-level as a whole. From there, we would develop lessons based on the needs of our students and then review examples of proficient student work done by one of my team member's students so that we could then turn to that particular teacher for advice on what she does with her students and how she goes about teaching a particular skill or content area. We would then collectively come up with lesson plans for all of us to use accordingly in our class.

It is evident from the transcripts produced from the interviews at School #5 and School #8 that discussions regarding collective actions are occurring at the individual grade-levels but not necessarily at a school-wide K-6 share-out. The following teacher describes her experience with collective grade-level team action when she discusses what her team does when focusing on mathematics:

We were working on our math goals to try and differentiate instruction by placing students into ability groups. At the beginning of the year, we grouped students for math in a high, medium, and low configuration based on individual student ability. We then realized that we should have formed the groups differently by having had one high and two medium math groups. I think we really worked well with each other to try and figure out our testing so that we could form the one high and two medium groups. We decided how we were going to split everyone up, who was going to take which level, and how that was going to work. It was a good collaboration. This positive experience benefited me as a teacher because everyone was working together to decide what was best for the students. We all had the same expectations and wanted everyone to do well so we had the same focus and communicated that this would be best for the students. It was a positive experience because of the collaboration and knowing that we were all on the same page and that we were focused and driven to get things done.

Next, a discussion regarding School #3 and School #7's efforts to focus collectively on the results produced from the collective goals and collective actions of the

grade-level teams.

Analysis of the Variable Focus on Results for School #3 and School #7. At both School #3 and School #7, teachers used common curriculum and common assessments in the specific areas of reading, writing, and mathematics. In the areas of science and social studies, most teachers are compartmentalized allowing individual grade-level teachers the opportunity to use curriculum specifically designed by them individually or taken from the core curriculum publisher for each unit of study relating to science or social studies. Both schools are centered on the notion that the work they are doing is focused on the collective learning and achievement of all students in the grade-level. A teacher at School #3 states her understanding of the process of focusing on results by stating:

It is a nice opportunity to look at student work and assessing not only the quality of what we are doing but also making improvements, trimming things, changing things, and really kind of making sure that we are meeting student needs. We look at both the cohort class, grade-level, as well as individual students to see where we needed more help, what we needed to accomplish our SMART goals, and what our aim or “big” picture idea was for that particular year. We are constantly comparing our STAR results to our ongoing formative and summative assessments to see how much gain we are making. We talk about how our lessons have gone and give suggestions to each other. We go over all of our weekly or bi-weekly test data results and we talk about what we need to continue to re-teach while providing each other with curriculum ideas and lesson guidance.

At both School #3 and School #7, staff incorporates research-based methodologies when analyzing student data results, which help them, use data correctly, therefore minimizing the misuse of data. The emphasis on data analysis is not only on the class average per assessment or individual performance task but also on individual student performance on key essential standards as well, to ensure that all students are learning and making progress in order to ensure that “no child is left behind.” Grade-level

teams and individual teachers at both School #3 and School #7 take a very close look at student work, assessments, and classroom performance using this information to decide what to teach, how best to teach it, and then how best to evaluate it in order to ensure that all students are learning. The teachers at both schools feel very confident about the progress they are making from their efforts regarding the teaching and learning process, which includes a focus on results in order to make adjustments to the content of the curriculum and/or how the curriculum is delivered. The principal at School #7 feels strongly about the use of data to inform the teachers regarding their teaching practices stating:

Last year every single student in second grade was proficient in both English language arts and Math, every single student. I've said to the third grade team, you've got students who are really capable here in both subjects. Are you going to have goals for any at-risk students? No, you are going to have push on goals. What are you going to do for extension since a majority of your students are coming to you proficient or advanced in these two areas? What are you going to do for enrichment? My philosophy is, and we've tried a coupled of different things, is that I've had a school-wide goal based on student achievement results. But, I've gotten to the point now where I'm going to let the data drive the goal. The teams are going to be looking at the data because that what's going to identify the rigor.

A teacher at School #3 also communicates the importance of using the results from both formative and summative assessment data to collectively focus on the results of individual students as well as the grade-level in total. The following are her comments regarding the importance of focusing on results:

When we find that the results we have gathered from our assessments are not acceptable to us as a grade-level team, we usually try to pull resources from each other. My team is not afraid to ask each other what the other person is doing or what we can do better. We have done a number of things. Each grade level has a special person that pushes in to support them so we use push in support in math for example to help support some

of the kids who are not meeting grade level standards for stronger instruction. We have also created menus together as a team to try and challenge them so that they have choices. It is offered to all students but primarily geared toward the enrichment menus. We do pre and post tests to determine who needs more enrichment. We have done a lot of work in math and science. In reading we do kind of a workshop type setup so that we can differentiate. In math and science we do enrichment menus and we created those as a grade level team.

There were many of the above-mentioned comments regarding focusing on results that were made from teachers at both School #3 and School #7. The same teacher at School #3 also mentioned how valuable it was to have school-wide conversations about SMART goals and the resulting conversations centering collectively to focus on results. This teacher felt that with all teachers collectively focusing on the results of individual grade-level team's SMART goals, the entire school began to feel a sense of urgency not only for the students in their individual classrooms but more of a collective focus on the results produced by all of the students:

It's usually during our school wide PLC share out or report out when we get to share our goals and listen to everybody and what they are also working on. Sometimes when you're the previous grade level, you realize that the next grade-levels are also working on the same standard and you weren't aware that they have some additional standards that spiral from yours. Hearing all of the individual grade-level presentations regarding the results of their SMART goals was always kind of like an "aha" moment for most of us. For some goals, students have been working on that standard since second grade and that's amazing to me because now I can kind of see what they are working on in fifth grade. You can also ask other grade levels to work on a specific standard because students needed more help. That's process has been really helpful. I think the school-wide focus on results has benefited me as a teacher because it allowed me to communicate with my team and other teams in helping with the student transitions from year to year because it has been a lot easier. We now feel like the students are better prepared when they come into the grade level because we have had conversations with the previous grade-level and we have also had the same conversations with the grade-levels above so that our students are better prepared. The process of teaches focusing on results together and not in isolation benefits our students because it helps them

prepare for the next grade level and we are just more aware as teachers. And definitely through the process, we have been able to hone in on the essential standards and to really focus on what the students definitely need to know. The process has been very helpful in finding creative ways within the standards to reach all students. The process was positive because of the communication and the ability to dialog with everybody.

Teachers at School #3 communicated that the school-wide SMART goal discussions regarding individual grade-level team's goal attainment focused on whole grade levels at the high, medium, and low sub-group learning cohorts. It was noted that the discussions were not centered on one particular student during the share out of results. Teams had created SMART goals at all three learning levels and monitored progress towards these three sub-group learning cohorts. If an individual student requires support, the school's student study team (SST) begins the remedial process to provide assistance to the individual student in need. The following teacher describes her understanding of the difference between SMART goals for individual grade-level teams and individual student goals supported through the SST process:

During PLC, it is a great model for addressing the needs of the majority or a group of students, but it is difficult for addressing the needs of any one particular student. Often times, we are looking at the whole cohort of the grade level to see a need across classrooms. It is highly effective because our goals include students above grade level, at grade level, and below grade level - but as a group. Often times, there is a definite growth towards our goal. Bottom line, our PLC work addresses the needs of our grade level, but when it comes to individual students, our SST process is strong resource at our site.

Teachers at both schools were asked what the team does when focusing on the results of assessments given in the classrooms. The first response given by most teachers was that a review of the assessment given was necessary to see if in fact, the assessment was designed to ask the students the appropriate levels of understanding and analysis. A

teacher at School #3 put it this way:

I guess that depends on the subject area and the context but when we take a look at our assessments whether they're formative assessments or summative assessments, we look at the number of students who have made the benchmark, the number of students have exceeded the benchmark, and the number of students who have not made the benchmark at all. We then disaggregate each teacher's data to determine which class performed better on each specific strand of the formative or summative assessment. Based on these results, we take a portion of each week and regroup the students based on how they performed on the assessments pairing them with the teacher who had the better results on the assessments. We create an at-grade-level group, an at-risk level group, and a push on or extension group. Each teacher is then responsible for addressing the needs of the group that they have. This process is completed regardless if the student is below, at, or above grade level expectations.

Both School #3 and School #7 have extensive whole-school discussions regarding what constitutes effective assessments. The schools are evaluating the use of both formative and summative assessments making sure that data derived from the assessments is in fact providing teachers with information to make informed decisions. The teachers at School #3 and School #7 communicate the desire to formulate uniformed standards-based assessments derived from the core curriculum taught in the district. According to the teachers, this standardized approach will ensure for accurate data analysis not only at a particular school site, but also across the entire district as a whole. Both principals communicate a strong desire to work with the newly formed language arts and mathematics curriculum committees led by the assistant superintendent of curriculum and instruction to support their efforts in deciding on common core curriculum as well as common formative and summative assessments. In the following discussion, School #5 and School #8 have also focused on results from the teaching and learning process in order to hone their skills to be used for future instructional practices but not as a whole

school-wide discussion.

Analysis of the Variable Focus on Results for School #5 and School #8. Both School #5 and School #8 assessed students on curriculum standards using both formative and summative assessments. The data was then used within each respective grade-level team where they decided the best course of action regarding student performance outcomes. Teachers at both School #5 and School #8 articulated that the SMART goals were only discussed with the principals at the beginning and end of the school year. Grade-level teams would meet with the principal at the beginning of the year to share out their goals and then return at the end of the year to inform the principal on whether or not they had met their specific grade-level SMART goals. When probed on this discussion, the following teacher from School #8 responded with:

Every once in awhile, my principal talks about PLC at a staff meeting or on our Wednesday PLC collaboration afternoons. Last year, we really didn't have a lot of PLC discussions except at the beginning of the year regarding our SMART goals and then at the end of the year to share the results of our SMART goals with our principal.

Another teacher at School #8 reported that her team supported her in the area of writing when she discussed the results of her writing scores with her team. The teacher stated that without the help of her whole team where they focused not only on the writing results of this particular teacher's classroom, but on the grade-level as a whole. The teacher was very encouraged by the collaboration and feedback provided to her by her teammates. Her feelings on the process are reflected here:

I went to my team and asked for advice about improving my teaching of writing. My team was very receptive and supportive. For that goal, we had created a little rubric that just had all of the parts and all of the things that we were trying to hit for letter writing. And, I had just this one line I had highlighted of kids who got all five parts of the letter correctly. Having

that rubric in front of me helped me realize that I was doing the other parts of the letter correctly but this one part that is really standing out. My team has always been very receptive with that and that's been one good thing having a team where you don't feel that you are a bad teacher because yours kids don't put the comma where they are suppose to. I think that we are always trying to improve in everything as it is. It is the kind of thing when you go home and you are thinking about that one kid who just isn't getting it and you think about that kid all night. You are always trying to be better and by yourself, it's hard to have all of the answers. Having a team that you can go to just really makes you a better teacher because you are just getting more information from people who worked directly with the same kind of students that you are working with everyday and you are getting their perspective on things and it just makes students benefited from this process because they can all write letters now. But, I think more importantly, that if I'm learning more, than they are going to be learning more. If I'm feeling good about my teaching, my students will also have more confidence in what they are learning.

It appears that at both School #5 and School #8, the focus on results happens primarily within each respective grade-level team with a presentation to the principal at the beginning and end of the school year. There was not a sense from the interviews that any dip sticking by the principals occurred as the school year progressed. This may change for School # 5 where the principal has communicated the desire to ramp up the discussion on goals, curriculum, assessments, and most importantly, results. A teacher at School #5 responded to this potential change by saying:

Honestly, I can't say that we have had this experience of focusing on results as a whole school with regards to our individual grade-level goals like our common SMART goals in writing and math because we all know each other's students who are exceeding, meeting, or struggling to meet benchmark goals in each of these areas. As a team, we all work collaboratively in making sure that each of us has the resources and materials to be successful in supporting our students.

The principal of School #8 shared thoughts on the area of focusing on results where it was felt that the individual grade-level teams were primarily responsible for the discussion regarding results with some support from the principal in terms of flexible

intervention times:

It's a team responsibility. One of the things that I do is I try to set up a structure where there is some time for doing other lessons outside of the regular classroom schedule through academic learning program (ALP), something we have through our extended studies curriculum (ESC) schedule called Intervention Time. One of the difficulties we have as teachers is in the area of assessment. Teachers assessed that students need a little bit more time and/or intervention. When do teachers find the time to give those students what they need? I have instituted the Intervention Time where teachers can sign up to use the ESC teachers for support while they work with small groups in their classrooms. In primary grades that seems to be more built into the routines of the day with guided reading groups and sometimes also with mathematics groups. In upper grades, you might be able to sneak in these mini-intervention times by breaking up into groups to take 10 minutes with a few students while the other students are working on a follow-through from a whole group lesson.

The researcher got a sense that at both School #5 and School #8, a collective focus on results was happening more within each grade-level team but that the principals were supporting the process by soliciting support from other teachers such as, the ESC teachers, who may have flexible time built into their work schedules. ESC teachers at School #5 and School #8 were used to provide extra support to teachers who have students requiring additional reinforcement. From the qualitative data, both School #5 and School #8 are developing into effective PLC environments by having systems in place such as using other staff members to support the intervention process at each of the schools. By focusing on results, the teachers at School #5 and School #8 can be classified as a professional learning community, however; consistent examples of PLC school-wide implementation are inconsistent at both schools as compared to the evidence found at both School #3 and School #7. The principals of both School #5 and School #8 both feel that the professional learning community process of collective goals, collective actions, and focus on results is paramount for the future successes of their two respective schools.

The principal of School #8 expressed her feelings about the PLC process of focusing on results in the following manner:

PLCs establish a culture where teachers feel very empowered as an individual teacher, as a teacher within their teams, and as a teacher within the entire school. They feel very empowered to say that they don't agree with PLC regarding how whole group things are done. As a principal, I'm constantly challenged in a positive way as an administrator because my teachers don't just sit back and say let's do PLC however you want to do it. They will tell me, especially, in the area of results that they don't like doing it a certain way. They want to do it a different way that will meet their needs better. So, they are very communicative and it's very much an exchange between us and I don't think that would occur if we didn't have that culture of Professional Learning Communities because they make each teacher feel more powerful, smarter, and better thinkers around the area of results.

When focusing on results, the teachers at School #5 and School #8 work closely with their grade-level team members to solicit advice and support in order to move as many students to proficient and advance levels. Both schools have pockets of PLC teams depending upon the composition of the grade-level teams. When reviewing the total PLC ANOVA mean scores between specific teacher age groups, the 21-34 age group presented with the highest total PLC mean score ($M = 51.93$) with teachers 35 - 46 years old presenting with ($M = 49.28$), followed by teachers 47 years or older at ($M = 48.21$). Nothing in the qualitative interviews showed any indication that a specific teacher age group had stronger PLC implementation levels compared to the other age-groups. One teacher at School #5 did report strong feelings that newer teachers right out of teacher credentialing programs and veteran teachers like herself, with more than 10 years experience, implemented a stronger PLC program within their grade-levels though she admitted that her observations were only anecdotal:

A typical PLC meeting at our site is pretty self-directed. However, our

team is pretty focused and we feel strongly about PLC so you would see us coming together with let's say our math tests. We would be looking at the chapter and seeing how all the kids did as a whole. Even though our classes are leveled, we still sit down as a whole team to look at the whole grade level to figure out what it was that all of the kids didn't understand. Then on Fridays, we take those kids who didn't get for example, order of operation. No matter what level of class they are in, if they didn't get order of operation on test A or B, or C etc., they are still coming to one of us on Friday's to relearn order of operations and then we quiz them out again. I think for my team, the data that we sit down and use drives our week. Week by week we do this and it is really effective. We decide on common assessments for the benchmarks at the beginning, middle, and end of the year. In math though, we take the different leveled math tests and call one our common assessment test because it tests the same concepts at each level. The standards are the same but we are going to use differentiated common assessments.

Collective Efficacy

Another construct researched in this study was the variable collective efficacy.

The study focused on the development of collective efficacy in a DuFour and Eaker (1998) professional learning community. The collective efficacy variables were derived from Bandura's (1986, 1997) four sources of efficacy: (a) mastery experiences, (b) vicarious experiences, (c) social persuasion, and (d) affective state, all of which, were placed into two qualitative categories: (a) task analysis and (b) group competence as described by Goddard (2002) analyzed in the qualitative coding as one total construct. Teachers were asked several questions during the interview pertaining to how efficacious their team felt in the professional learning community process when working on collective goals and collective actions while focusing on student outcomes through the data analysis process. Both School # 3 and School #7 demonstrated high levels of collective efficacy when working within their grade-level teams and with their site principals as the guiding forces. School # 5 and School # 8 also demonstrated positive

collective efficacy though more evident at the individual grade-level, not at the school-wide levels as found at School #3 and School #7. The following will be a discussion of School #3 and School #7 in terms of building the collective efficacy across the grade-level teams.

Analysis of the Variable Collective Efficacy for School #3 and School #7. At both School #3 and School #7, the teachers communicated a sense of efficacy and empowerment at both schools because the principals have created a culture of empowerment and collegiality by working together to improve the academic, social, and emotional standing of all students. Both principals run a “loose-tight” PLC environment though School #3’s principal has a more informal approach. Both principals provide their teachers with the parameters and expectations required of them regarding the implementation of the schools’ PLC plan by communicating the shared vision and goals, by providing the structure, systems, and procedures, and ensuring that the resources and time necessary is available to be an effective and efficient PLC. The principals of School #3 and School #7 then participate in the collaborative PLC activities. The principals also treat the teachers as professionals by allowing them the flexibility to deliver the PLC plan in a manner that suits both the individual teacher needs as well as, the individual needs of each respective grade-level team. There were many examples at both School #3 and School #7 regarding the leadership behaviors or actions of the principals, which helped develop and sustain collective efficacy levels in grade-level teams across the two campuses. A teacher at School #7 shared during her interview that her principal was a guiding force in terms of the PLC process because she goes out of her way to ensure that teachers receive the necessary training, modeling, and coaching by her in order to

increase the capacity of each individual teacher, as well as, the capacity of the grade-level teams. This capacity building then promotes a positive atmosphere of efficacious collaboration across the campus. The following remarks from the teacher at School #7 express her thoughts on how important it is for teachers to feel positive and good about the work they do and how her principal supports this positive process through her behaviors and actions:

When she comes in during a lesson, she leaves a positive note. I guess when you are working hard, having your work acknowledged is motivating and it makes you feel like you are doing the right thing. It goes back to that PLC process too where you get those moments where you're thinking that you've been doing a lesson and you start to feel like it's working for everybody else except you. But when she walks in and leaves the note, it communicates to me that I've been doing the right thing. When you have your work validated by her coming into the room, you get some type of positive acknowledgement. It makes you feel supported for your all of your hard work. To be recognized when it is put into action makes you feel comfortable knowing that you are on the right track. We all know that she truly believes the PLC process will work. I just think when someone is passionate about something then you are going to have more buy in. She also provides professional articles that she has previewed to make sure that they are relevant. I appreciate the opportunity to be exposed to professional development when it isn't being offered in our district. It is nice to be able to get that through your work. She has also modeled some of the lessons out of the professional books that she has read. We have also done jigsaw activities of books that we have read as a staff to share out the parts of the books that we have liked. It has been helpful. She helps us grow professionally, which makes us feel good about the work we are doing.

The sentiment described above was also shared by all of the teachers interviewed at School #7, as well as, School #3. Teachers uniformly communicated that it was the principal who created the shared vision, passion, and focus for the work teachers would be doing in their PLC grade-level teams. Teachers at School #3 and School #7 believe that their principals strongly believe that a professional learning community was the

avenue for potentially reaching all students. The principal at School #3 shared her thoughts on the PLC process by reminding the researcher that the history and purpose of professional learning communities was a means to an end goal; the goal of collaborating effectively to ensure that learning for all students is occurring in every classroom on campus. She feels that PLCs are a delivery method to try and achieve whatever the “end” is, which is to help all children and to maximize what we are doing for children.

The principal of School #7, who was described by her teachers as a passionate advocate for the PLC process, made a significant effort to ensure that grade-level teams were designed with the right mix of teacher personalities to ensure effective and shared team collaboration. When interviewed, she had the following comments regarding how she views PLCs at her school:

At the foundation of a PLC, it requires trust amongst the individuals in the organization. In a school setting you are going to have a wide range of teacher experience whether it's teachers who are veteran teachers, brand new teachers, teachers who have had experiences in the past where their administrators have been very hands on, held them very accountable, and a whole spectrum of teachers who have been allowed to do basically whatever they wanted and it could or could not include teaching the standards etc. I think at the foundation, my approach in opening this school and working with a brand new staff was to focus on culture and focus on establishing norms. We focused on what is it that we're about as a business of educators and what are our goals were going to be and how we were going to get there. I spent, 75% of the staff meetings and staff development time dip sticking to find out about the values of my staff and sharing with them what I valued in order to be able to forge my expectations that yes, we are all here to educate all of the children. So I think culture is critically, critically, important because if you do not have a positive culture, you are not going to have trust, and if you don't have trust, you are not going to have honest conversations about teaching and learning. And without trust and open and honest dialogue, no one will feel good about the work that they are accomplishing. I want my teachers to feel good or efficacious as you stated earlier in our conversation together.

Teachers at School #3 and School #7 feel that the work they are doing is vitally important

and they feel good about their efforts by really focusing on student learning and by focusing on the collective achievement of not just the kids in their individual classrooms, but the achievement of all students. The teachers know and understand that it is expected of them to focus on the achievement of all students because of the structures, expectations, and systems put in place to make it happen. Most importantly, the teachers are feeling positive that they are making a difference. The teachers and principals at both School #3 and School #7 believe it's all about having a system and a structure in place to make PLCs more effective. They believe that if structures within the system are not firmly held in place, there exists a lack of accountability because some teachers will go off in a lot of different directions.

Teachers at both School #3 and School #7 both feel strongly about having guidance from their principals because it allows the teachers to focus on the learning process knowing that their principals already established the organization of the PLC. Teachers are feeling rewarded because their work is making a difference. The principal of School #3 shared her thoughts on making her teachers feel good about the hard work that they are doing:

I think the reward is in seeing that PLC is making a difference in student achievement. And, I think a big difference is in the really, really, positive experiences that they are feeling and working in a team. Teachers are for the most part, very social beings and they recognize that they can't do everything alone. Teaching is a really big, big, job and no one can do it alone that it takes collaboration to make a difference and I think that they feel that. I think that I am a huge factor because of the expectations that I have established but I think that the teachers respect that I walk my talk. I think that they know that my passion is in curriculum and instruction so they believe that the information and the feedback that I give them will be meaningful and constructive. They know that I care very much about them but they know that I have very high expectations of them. I feel really good about our PLC process and I think that the teachers also feel the

same way.

Teachers at both School #3 and School #7 have also shared their excitement regarding the narrowing of the achievement gap for all student groups. Teachers at School #3 and School #7 have been directed by their principals to make sure that all students within a grade-level are moving forward by demonstrating academic improvement. Though the START results for some individual sub-groups are not statistically relevant due to the low percentage representation, teachers understand that an effective professional learning community focuses on the learning for each individual student and less on the learning cohort. A teacher at School #7 shared her thoughts on this subject:

I think that's really evident at our school-wide PLC meetings because everybody takes a personal ownership in all students learning. When teachers are sharing out a goal and let's say 75% of the class is meeting that goal, they really can tell that the other teachers are really trying to look for solutions to help meet the needs of the other 25% of the students. The teachers really take it upon themselves to reach out to the presenting team and kind of figure out how better to reach those kids. I think that's huge. The vertical articulation has empowered us to take ownership for all students learning. It is a process because we first take time to come up with a goal, and then share the goal, and then report out on the results of the goal. The principal supports this process by setting up the environment to make this vertical articulation possible.

Almost all of the teachers interviewed at School #3 and School #7 communicated their support for the PLC process not only because it benefits students but also because the teachers believe that their instructional strategies and the effectiveness of their teaching styles improved because of the PLC process. Teachers felt that they could share both their successes and failures as a teacher, which is a significant departure from the traditional isolationistic design still found in most public schools today. A teacher at School #7 shared her enthusiasm and support for the PLC process:

When we are given the time for PLC, I've felt that we have produced exceptionally well. Furthermore, when we have our cross grade-level share-outs, also known as vertical articulation during our PLC time, I feel that it supported and expanded my philosophy of teaching, which in turn, altered my teaching style. PLC reminded me to work smarter and not harder because I had more confidence in my instincts because I was able to think "big picture." I started to trust where my teaching was going because my teaching decisions were a lot more clearly delineated and backed up by data. Through the vertical articulation, I could see what my colleagues needed from the primary grades and how we then needed to hone in on the essential standards. PLC is a positive experience because of its team approach to our work. People in a PLC share their practices without fear of judgment or retribution. Our PLC teams are not prideful in a way where people try to impress and show each other up. Our PLC is very much a forward thinking type environment. We don't do flashbacks or side flashes, we keep flashing forward to the next goal. It is a very positive experience. We've been working very hard to become an effective school-wide PLC team and our results are paying off.

Teachers at both School #3 and School #7 are very appreciative of their principals in terms of how resourceful each principal was in securing the necessary resources requested by teachers in order for them to do their jobs effectively. Even when the district was experiencing a strain on their financial picture, the principals of School #3 and School #7 were effective in delivering to the teachers what they needed. The following teacher at School #3 shared her thoughts regarding the resourcefulness of her principal:

She has a good way of questioning and supporting everyone in generalizing and showing us how powerful PLCs are but, she does not micromanage you. When you suggest resources, she is a skilled questioner to help us understand if the resources we are seeking will in fact, support our progress. She has a way of trusting your intellect and trusting your abilities, which makes you feel empowered and excited to do the hard work of PLCs. She supports you in a way that makes you feel empowered. I think most of the teachers do a really good job at doing PLCs because they feel empowered and supported. She finds resources and helps us get excited about helping kids in a way that empowers the students too. The principal helps the teachers feel like professionals, like very competent, capable professionals. She provides us with resources, staff development

training, and the time to let us work as teams. She is reflective and asks us reflective questions that make us think. They are not questions that make us think that we are being reprimanded. She is very trusting and dedicated to us as teachers. She is collaborative but does not micromanage us unless she feels that we need additional guidance and support.

Teachers at School #5 and School # 8 have expressed concern regarding the level of PLC implementation at each of their sites though both site principals, under the direction of the Assistant Superintendent of Curriculum and Instruction, have made positive improvements to their school-site PLC plan. A discussion regarding the levels of collective efficacy found at both School #5 and School #8 is presented next.

Analysis of the Variable Collective Efficacy for School #5 and School #8.

Teachers at both School #5 and School #8 feel confident about ensuring the achievement of all students because they believe that they have the necessary skills and abilities to improve on the current student performance levels of their students. However, they do believe that they would benefit from additional staff development and training centered specifically on how to effectively design, implement, and assess standards-based curriculum. One of the areas that sets School #3 and School #7 apart from School #5 and School #8 is in the area of modeling and staff development provided by the principals when focusing on curriculum and staff development. A teacher at School #5 shared her thoughts on her desire to develop the skills necessary to be an effective PLC team member including, sharing how her principal can and should support them by modeling and participating in the PLC process in order to improve school-wide teacher skills:

I think my principal should find out what the needs are of the teachers. Teachers always have needs and we always have needs within our classrooms and within the school so finding out what the needs are of the teachers and then collaboratively working with each team on these needs is important. I think to work collaboratively with principals is important in

order to discover some of the teacher needs so that the principals can offer some information, do an in-service, or offer to bring someone in, to find out what we are interested in learning about. I think that would be a positive thing. And, every grade level is a little different too so principals need to be flexible by letting grade levels find what their needs are and then find ways to support the various grade levels in how to meet those needs.

Teachers at both School #5 and School #8 believe that with a renewed focus on building and sustaining professional learning communities supported by the efforts of the assistant superintendent of curriculum and instruction, the OVUSD will have the opportunity to exemplify the characteristics of an effective PLC necessary to ensure learning for all students. The following teacher at School #8 feels strongly that the district PLC direction should be communicated from the top down to create a uniformed professional learning community delivery system across the OVUSD:

There is a lack of district-wide professional training/ staff development, which might be getting in the way of sustaining PLCs. I think we need more training at a district level to understand exactly what the next PLC step is. Are we using best practices? Are we choosing goals that are really benefiting our students? Are our goals too small? Whatever the case may be, I think more professional training, more principal feedback, and more district office direction is necessary because some of our principals have more knowledge regarding PLCs than others.

In speaking with teachers at both School #5 and School #8, it appears that the teachers feel efficacious enough to communicate strongly to their principals about their desires regarding the PLC process. The principal of School #8 stated that the teachers at her school feel empowered enough to question suggested methodologies regarding the implementation of the school's PLC improvement plan. The principal has communicated that as long as the desired teacher generated method stems from sound research, she will support the teachers' decisions. At School #5, teachers have garnered their collaborative

experiences across the district because of the influx of district teachers to the school when it opened a few years ago. The following teacher has responded to the newness of her principal and how he has already begun the process of developing the efficacy in his teachers as the new principal:

My principal is newer to the school. He is extremely on top of the PLC process. He has high expectations and is very involved in what teachers are doing and helps them throughout the PLC process by helping them choose goals and then figuring out how they can use these goals to meet the needs of the students. He also supports what we are going to provide the students in class by making sure that we have the materials that we need. He supports everyone to meet these expectations. I think that he has a lot of knowledge about PLC. I think that he will definitely be hands on in the PLC process. I think he gives us education on how the model works. He gives us the tools in order to implement the most successful PLC model so that student progress is made and achieved.

Teachers at both School #5 and School #8 shared that with additional time, resources, and a renewed district-wide PLC focus, they can collaboratively develop their grade-level team's abilities to improve their instructional practices. According to teachers at both School #5 and School #8, School # 3 and School #7 are known in the district as exemplar examples of PLCs though not without their own unique set of difficulties regarding how efficacious teachers at School #3 and School #7 might feel regarding the laser focus on PLCs at their schools. Teachers at School #5 and School #8 strongly believe the work accomplished in their PLC regardless of their principal's involvement or district direction is key to closing the achievement gap. The teachers also feel that it is imperative for principals to be the guiding force in terms of the implementation of PLCs.

Teachers also feel self-empowered. They feel that what contributed to their individual self-empowerment was each team member's personal investment in the PLC process and the team's collective understanding of the value and importance of PLCs.

Teachers at School #5 and School #8 believe that having those conversations on a weekly basis regarding the teaching and learning process has helped build their confidence levels. Teachers ask questions of each other. For example, how are you teaching this? What did you notice about this particular student? What did you add or what did you have to re-teach? The conversations that come out of a PLC, allows teachers to grow and try new things becoming skilled and confident. The students also benefited in the PLC process because their needs were met to a greater degree. The teachers believe it was such a positive experience because it was structured in a way that forces them, willingly, to do the important part of teaching, which is effectively assessing, reflecting, and differentiating the curriculum to meet the needs of all students. With regards to individual student needs, teachers at School #5 and School #8 feel confident in collaborating on the performance of the entire grade-level and individual students, similar to the teachers at School #3 and School #7. The following teacher at School #5 discusses what her team does to meet individual student needs:

I had one student in particular who was struggling in reading and was below grade-level coming in at the beginning of the year and was of course Basic on the CST testing both on language arts and in math. Math is easier to support but we went through lots of different strategies in terms of how to help her in the classroom because she was a student who did not qualify for special education services because the discrepancy was not great enough. The need was there but she did not meet the qualifications. I worked with my team a lot and pulled the strategies that they were using with their readers. Then I took my experience of 15 plus years and each of their five years giving us 25 years of experience and possibilities for this student. I want to tell you how proud I am of that student. She came up not only from a basic to a proficient but from a basic to advanced. It showed me the power of collaboration. It also showed me the power of collaboration not only in the school but also with the parents and the child. Everybody on the same team can produce remarkable results. I felt very efficacious with this experience. I wish everyday was like that, and every year was like that, and every student was like that.

This particular teacher felt strongly in the belief that every teacher on a PLC team needs to believe in their own self-efficacy first, the standards second, and finally, the abilities of their students. And whether they like NCLB or not, they need to get onboard until something else in the legislature has been drafted. She believes that teams must have an understanding that they want all kids to leave with the same skills or knowledge no matter what classrooms they are learning in, knowing and appreciating, that as teachers, we get there in different ways. This process can be empowering for the junior teachers to know that they can try out all of the things that they have learned in their credentialing program while the veteran teachers, can take what the junior teachers are doing and weave in their experience to change perhaps the way that the lesson is delivered.

There appears to be two types of professional learning community teams at School #5 and School #8. One type of PLC team is self-directed and follows the tenets of a PLC without much principal direction or guidance because they feel that the process of analyzing data is important in order to promote the learning of all students. The other PLC team is the “standard” grade-level team of teachers who appear to be operating as PLCs but do not discuss curriculum, assessments, student learning needs, nor student outcomes. The standard team members who were interviewed for this study believe that the status quo will remain unless there is more concrete direction not only at the site administrative level but at the district office level as well. The standard grade-level teams are made up of teachers who might believe in the PLC process but are overpowered by the opinions of other standard grade-level teachers who are waiting for the next shift in the school reform pendulum. The following teacher expresses her disappointment in her grade-level team, which is a sentiment, felt by more than a few teachers at both School #5

and School #8:

First of all, I have been at three different sites since PLC began in our district. Each site does it their own way, although it's all considered and worded in the right lingo. One of the problems I see is that new people come in and are not trained or brought up to speed. Also, the original training for the district was on optional training days, so we were never all on the same page for understanding the concept, getting buy-in, or gaining from the great training we had. Unfortunately, there are schools that strongly incorporate PLC, and others who do not. I'm not trying to point the bad finger at my current site/team. I just wish we operated differently. The school is highly successful, so criticism often isn't given or heard. I do have concerns for those low students, those who fall between the cracks because even in very high performing districts, we all have them, and PLC is such a great way to address that and share our great ideas. "Lone rangers" are usually good teachers, but I believe we all become better by working together sharing strengths and weaknesses by participating in PLCs.

School #3 and School #7, the two schools with the highest total PLC mean scores in the district demonstrate stronger collective efficacy levels as compared to School #5 and School #8 though all four schools share strengths as well as share areas of potential improvements in their PLC processes. The next section will discuss the qualitative data gathered from the principals and teachers centering on the transformational practices observed in the site administrators.

Analysis of the Variable Transformational Leadership. The leadership constructs were from Kouzes and Posner's (2002) leadership practices inventory (LPI) where five dimensions of transformational leadership were analyzed: (a) challenge the process, (b) inspiring a shared vision, (c) enabling others to act, (d) modeling the way, and (e) encouraging the heart. Based on prior research using the Kouzes and Posner LPI survey instrument, the leadership variables were restructured into three transformational leadership behaviors: (a) transforming the organization (challenging the process and

inspiring a shared vision), (b) supporting actions (enabling others to act and encouraging the heart), and (c) modeling the way. The LPI leadership qualitative codes were then analyzed in total as a complete construct.

When interviewing the teachers for this study, a predominant theme in the discussion of effective professional learning communities was the importance of the site principal. In every qualitative interview, some of the principals were lauded for their efforts in improving the outcomes for all students while also improving the efficacy regarding the teaching and learning process. In almost every single question asked during the qualitative interview, some principals were acknowledged in the teacher responses for their vision and passion regarding the PLC process. All principals received positive feedback from teachers. The desire though for some of the teachers interviewed is to work with principals in order to develop a stronger PLC community at their respective school sites. All four principals interviewed for the qualitative portion of this study have extensive backgrounds and knowledge regarding professional learning communities. The responsibility of the researcher then is to communicate the similarities and differences in each of the four leadership styles in order to develop a solid understanding of the type of leadership required and desired to develop and sustain a PLC. There are three remaining qualitative questions not yet addressed in this study centering on the leadership behaviors necessary to develop and sustain collective efficacy in a DuFour and Eaker (1998) designed professional learning community. The following were the qualitative leadership questions pertaining to leadership:

(a) In what ways do school leaders build and support PLCs?

(b) In what ways do school leaders foster collective teacher efficacy?

(c) Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

In What Ways do School Leaders Build and Support PLCs?

In interviewing the teachers for this study, the remarks they provided indicated that principals are instrumental in building and supporting the PLC process. One interview question asked the participants about the factors that seem to be sustaining PLCs at their school sites. A majority of the teacher responses unanimously indicated that principals were instrumental in developing and sustaining the PLC process in conjunction with the efforts of individual teachers and grade-level teams. Comments regarding the principals included:

“I would say definitely number one is the leadership.”

“She is very involved with the kids on both ends whether it's high risk or the kids that are high performing.”

“She is very involved and knows the kids well and is up on what is being done to help those kids.”

“My principal floats to every PLC meeting.”

“She is reflective and realistic. She asks the questions to get to know the group of students.”

“She listens to us and our concerns.”

“She was supportive and she followed through getting the necessary curriculum to support us.”

“She has a good way of questioning and supporting everyone in generalizing and showing us how powerful PLCs are but, she does not micromanage you in a way that you are like, ugh, this is one more thing.”

“She has a way of trusting your intellect and trusting your ability that makes you feel empowered and excited to do this.”

“She also has a way of supporting you, your ideas, and not micromanaging you.”

“She supports you in a way that makes you feel empowered.”

“She finds resources.”

“She helps us get excited about helping kids in a way that empowers them and has them not feeling micromanaged, has them feeling like professionals, like very competent, capable professionals.”

“She provides us with resources, staff development training, and the time to let us work as teams.”

“She is very trusting and dedicated to us as teachers.”

During the interviewing of teachers, various themes surfaced regarding leadership behaviors observed in highly effective professional learning community principals. The leadership themes found in the qualitative interviews were vision, accountability, communication, and resources.

Vision. The comments shared above by the teachers interviewed, establishes the fact that leadership is a guiding element in the construction and sustainability of an effective professional learning community. Teachers shared that their principal’s vision and passion were significant factors in the development and sustainability of their PLC. A teacher at School #7 shared her thoughts on the passion of her principal regarding PLCs:

The leadership passion of our principal drives our PLC. She doesn't waste our time. She is organized and always has an agenda even though they are sometimes really maxed. She respects our time by keeping a timekeeper to keep us on track. When your leader starts a meeting on time and ends on time - you get results. It has definitely evolved, but giving us a clear direction and some time to follow-through on it is another way we've been able to sustain PLC. In any company, time is always complementary to quality. If you want sustainability in PLC, you've got to use the time wisely and efficiently; in order to do so, you have to be organized.

The teachers and principals of effective PLCs are committed to working collaboratively as a staff. Teachers understand that when PLC collaboration time is provided to them by the district or principal, they need to be productive and collaborate effectively. Principals support PLCs best by holding teachers accountable to the PLC process by helping them write effective SMART goals, by expecting that the goals will be implemented, monitoring and adjusted as necessary, and that the teachers will evaluate their results with meaningful review and reflection. The teachers and principals working at effective PLCs view professional learning communities as an opportunity to share and document the wealth of knowledge and experience that exists at their respective schools so that students can reach their full potential by having teachers working more efficiently.

Accountability. Accountability measures monitored by the effective principals play an important factor in the development and sustainability of a PLC. Effective principals concurred, and interviewed teachers communicated, that knowing that they were being held accountable for their PLC outcomes created a moral imperative to ensure that the collection, analysis, interpretation, and adjustments made because of the data, be communicated clearly to all parties concerned through an accountability system. A teacher at School #3 commented on what his principal did to ensure that their PLC was held accountable:

Our principal supports PLC best by holding us all accountable to her and ourselves. She takes SMART goal setting seriously and insists that we follow through with meaningful review and reflection. Our principal leads monthly meetings and solicits ideas for topics of discussion. She holds each team accountable for setting goals and establishing and implementing a plan to achieve them. Our principal also meets with grade-level teams each month expecting all of us to be timely, attentive, and prepared for the meetings.

The use of appropriate assessments was a conversation at effective PLC schools where principals worked towards supporting the development of effective assessments. The development of effective assessments “for” learning instead “of” learning was the focal point of discussions during the interviews as it relates to accountability. One teacher at School #7 shared her principal’s passion concerning assessments:

I believe one of the goals for our site's PLC is to have assessments that are more descriptive for our students so that they are able to learn from their mistakes or teacher's comments. In order to do so, it is a matter of shifting assessments FOR learning to assessments OF learning. I think our principal would like us to create more programs and learning activities that are more complementary to descriptive type feedback on our part, which can be difficult, because it takes a lot more time when grading. These types of assessments are more comment writing from teacher, meeting one-on-one, and a more open approach to assessing the student, which can be hard because as students progress to the secondary level of education, it is mostly numbers/grades/percentages, with hardly any face time with their teachers. Overall, I think our principal wants our students to be more reflective about the assessments they take. That it isn't just, I took the test and that's it. It is, I took the test and I wonder how I did and why did I get the ones I got wrong?

Communication. Teachers working in effective PLC schools appreciate their principal’s efforts regarding communication. Effective PLC principals are known as reflective listeners and are solution-oriented. Comments centering on communication included:

“Our building principal is a great listener and open and enthusiastic to new ideas.”

“She brings out the best of PLC's.”

“Our principal is our biggest cheerleader when it comes to that stuff if it's a good idea.”

“She'll be the first to say what's possible or not and we will be the first to tell her when it's just one too many things.”

“She loves to meet with us at lunch and talk with our team.”

“Administration is really dedicated to the practice of PLC because she believes in it. And, because she believes in PLC, I think that's why the staff believes in it. She leads by example. She definitely tries to model that for us.”

“I think because we all know that she truly believes the PLC process will work. I just think when someone is passionate about something then you are going to have more buy in.”

“She has also modeled some of the lessons out of the professional books that she has read.”

“She helps us grow professionally.”

Resources. Effective principals are instrumental in the procurement of resources necessary to operate as an effective professional learning community. The resources mentioned by the teachers included on-site staff development, research-based articles associated with effective PLCs, principal modeled lessons and strategies, additional time, cost-effective curriculum, accountability measures including; timeframes and documents etc. One question asked of the interview participants was regarding what the principal could do if they wanted to ensure that teachers had more positive experiences during PLC collaboration time? The responses were quantified for this question with the resource type mentioned by the teachers during the interview followed by the number of times it was mentioned in parentheses. The resources requested included, but are not limited to: full documentation/outline/structure (24), accountability measures (12), focus on learning (6), balanced teams (4), maintain E.S.C. pull-out schedule (4), effective principal feedback/teacher reflection (9), time (22), common standards/curriculum/goals/assessments (9), professional development/resources (10), and district office guidance (4).

Through the development of professional learning communities, teachers and teams will self-evaluate through the techniques of task analysis (self) and group competence (grade-level team) to determine the effectiveness of their grade-level team members and teams. According to the quantitative and qualitative data, principals play an integral and responsible role in how individual teachers and grade-level teams feel about the work that they do on a daily basis as it relates to the teaching and learning process. The following discussion will center on the ways school leaders can foster collective efficacy in their teachers and staff members as reflected in the data.

In What Ways do School Leaders Foster Collective Teacher Efficacy?

Based on the quantitative data collected for this study, Table 5.9 represents the total mean scores of the Kouzes and Posner (2002) Leadership Practices Inventory (LPI) for each of the four interviewed schools based on the how teachers perceived these behaviors in their principals.

Table 5.9: LPI Total Mean Scores

School	Challenge the Process	Inspiring Shared Vision	Enabling Others to Act	Modeling the Way	Encouraging the Heart	Total LPI Mean Score
S3						
Mean	25.52	26.24	28.81	26.48	26.14	26.64
N	21	21	21	21	21	21
Std. Dev.	3.62	3.56	3.09	3.41	3.82	3.50
S5						
Mean	25.67	24.27	23.96	25.69	23.42	24.60
N	26	26	26	26	26	26
Std. Dev.	5.08	5.17	5.41	3.96	4.88	4.90
S7						
Mean	25.73	25.05	25.55	25.14	24.73	25.24
N	22	22	22	22	22	22
Std. Dev.	4.67	5.16	4.70	4.77	4.45	4.75
S8						
Mean	18.00	16.86	17.42	21.25	18.94	18.49
N	36	36	36	36	36	36
Std. Dev.	3.70	3.80	3.13	3.24	4.08	3.59
Total Mean	22.83	22.11	22.51	23.97	22.24	22.73
N	181	181	181	181	181	181
Std. Dev.	5.15	5.79	5.52	4.54	5.26	5.25

Many principals in the OVUSD have shown through positive examples of how they foster collective efficacy in their teachers and staff members. When interviewing teachers at School #3, School #5, School #7, and School #8, all presented the researcher with qualitative data to substantiate effective principal behaviors with the principals at School #3 and School #7 given higher marks in most areas. For the quantitative portion of this study, the Kouzes and Posner (2002) Leadership Practices Inventory (LPI) was used to quantify the effective leadership behaviors of the site principals. In the statistical analysis completed in chapter four, the leadership behaviors were factored as: (a) transforming the

organization, (b) supporting actions, and (c) modeling the way per the results of a factor analysis. The original LPI survey was designed with five leadership behavior categories reduced to three after the Varimax rotated factor analysis demonstrated a three-factor rotation. The original five factors were: (a) challenging the process, (b) inspiring a shared vision, (c) enabling others to act, (d) encouraging the heart, and (e) modeling the way. The three-factor solution used for this study combined “challenging the process” and “inspiring a shared vision” as “transforming the organization” and also combined “enabling others to act” and “encouraging the heart” to form “supporting actions.” The third factor, “modeling the way” was unchanged from the original survey source.

From the results of Table 5.9, both School #3 and School #7 received higher total LPI mean scores when computing all five leadership practices as one total mean statistic, a similar finding in the quantitative analysis in chapter four, when total PLC mean and total collective efficacy mean scores were computed. As was evident in previous quantitative and qualitative data, School #5 and School #8 received lower total LPI mean scores; though School #5 received higher mean scores for “challenging the process” (higher than School #3) and “modeling the way” (higher than School #7). Total LPI leadership mean scores for each of the four schools selected for the qualitative portion of this study are listed from lowest to highest: School #8: ($M = 18.49$, $SD = 3.59$), School #5: ($M = 24.60$, $SD = 3.50$), School #7: ($M = 25.24$, $SD = 4.75$), and School #3: ($M = 26.64$, $SD = 3.50$).

These results are consistent with results found earlier in the study when choosing four schools for the qualitative interviews where total PLC mean scores were used as primary predictor followed by total collective efficacy mean scores as a secondary

measure. In the OVUSD, principals are exhibiting the LPI leadership behavior characteristics in multiple pathways and at varied levels. The total district LPI mean scores for all five leadership practices categories in order from least exhibited to most exhibited is: (a) inspiring a shared vision ($M = 22.11$, $SD = 5.79$), (b) encouraging the heart ($M = 22.24$, $SD = 5.26$), (c) enabling others to act ($M = 22.51$, $SD = 5.52$), (d) challenging the process ($M = 22.83$, $SD = 5.15$), and (e) modeling the way ($M = 23.97$, $SD = 4.54$). In chapter four, an SEM was designed and analyzed, which also produced similar results in terms of the specific transformational leadership behaviors having the strongest influence on total collective efficacy. The SEM model showed that “transforming the organization”; a combination of “inspiring a shared vision” and “encouraging the heart” had a stronger predictive influence on the outcomes of collective efficacy. When reviewing comments made by teachers interviewed for this study, the principals of highly effective professional learning communities also had highly efficacious teachers and staff. Results from the qualitative interviews were also comparative to the quantitative LPI results presented above, where teachers described their principals as “transforming the organization” with their actions and words. Transforming the organization (inspiring a shared vision and encouraging the heart) was the leadership behavior most represented in both the quantitative and qualitative data.

To gather additional qualitative data on efficacy, teachers were asked to share how their school leadership fostered collective teacher efficacy at their respective school sites. The researcher explained the definition of collective efficacy to the research participants and provided the interview participants with examples of typical efficacy enhancing behaviors as described in the Kouzes and Posner (2002) Leadership Practices

Inventory (LPI) in the areas of inspiring a shared vision, encouraging the heart, enabling others to act, challenging the process, and modeling the way. From the interview data, it was shown that principals engaged in a multitude of behaviors that enhance the abilities of teachers in terms of their effectiveness in the teaching and learning process. As evidenced in the quantitative findings, the correlations test indicated a moderately positive relationship between the total LPI leadership construct and the total collective efficacy construct represented in a Pearson's r Correlation of .398 ($p = 0.01$, 2-tailed) indicating that behaviors of principals does have an affect on the collective efficacy levels of teachers. Teachers shared the following statements when they expressed the behaviors of their principals that made them feel efficacious:

“The principal also respects our whole team's decisions and wants to know the outcomes, how it was good, and what else we can do to improve.”

“Our principal shares a lot of things at the staff meetings.”

“The compliments not only make us feel good, but give us all great, detailed ideas that we can do at our own grade level.”

“She is so supportive of us working together, needing time to observe others etc.”

“She is always happy that we watch each other's class while we go observe another teacher at our school to get ideas.”

“She is a supporter of the PLC process and allows us to observe other teachers.”

“She knows us as educators but also knows each individual.”

“Our principal is our biggest cheerleader because she has been able to find the means and a way to get us what we needed.”

“She is the one to really facilitate that process.”

“She is always teacher driven.”

“She supports our ability to work by she leaving us alone because she trusts our professionalism and she knows we want the best too for our students.”

“We are usually supported and encouraged”

“She supported the teachers by finding the funding to provide the training, materials, and provided multiple opportunities for the staff to learn the program as well.”

“Our principal supports our efforts by communicating our curriculum plan and goals effectively to parents.”

“Our principal is very flexible with our time.”

“Our principal loves us and we know she would do anything she could for us.”

“She supports us by giving us time and resources.”

“We have such a great relationship with our principal.”

“She is flexible and professional. She listened to our concerns.”

“She has a way of trusting your intellect and trusting your ability that makes you feel empowered and excited to do this.”

“She also has a way of supporting you, your ideas, and not micromanaging you.”

“She helps us get excited about helping kids in a way that empowers us and has us not feeling micromanaged making us feel like professionals; like very competent, capable professionals.”

“She is a great listener and open and enthusiastic to new ideas.”

“She brings out the best of PLC's because she is in the trenches being the model.”

“She is walking the walk not just talking the talk.”

“She has been extremely supportive and the communication lines are always open.”

“I feel like our administration trusts us and backs us if it is good for students.”

“We feel extremely supportive. I have felt very supported by my principals and I feel like they have a lot of trust in us and they know that we are professionals and they know that we are doing what we need to be doing.”

“There is a really nice balance of knowing they are there and knowing that you are supported but letting us do our jobs in the classroom.”

A multiple regression test also confirmed the comments made by the teachers in the qualitative phase of this study regarding the ways school leaders can foster collective teacher efficacy in a professional learning community where collective goals, collective actions, and a focus on results were the motivational factors. In the multiple regression analysis, the level of principal behaviors focusing on transforming the organization showed that 21% of the variance in the effectiveness of collective goals could be explained by the transformational behaviors of the principals, significant at .471.

Is There a Relationship Between PLCs, Leadership, Teacher Collective Efficacy, and Student Outcomes?

This last question was also addressed in the chapter four regarding the correlation between PLCs, leadership, and collective efficacy. In addition, a structural equation model (SEM) was also presented in chapter four pertaining to this question in order to analyze the predictive influence of transformational leadership to the total PLC and total collective efficacy composite variables. The results of the correlations test showed that all three constructs had a positive medium strength relationship. The SEM indicated transformational leadership’s significant predictive influence on the level of effective PLC implementation and the level of positive collective efficacy. The SEM model

produced positive results indicating that transformational leadership as described by Kouzes and Posner (2002), is a significant and positive predictive influence on the level of professional learning communities (PLCs) implementation as described by DuFour and Eaker (1998), leading to an increase in positive collective efficacy as described by Goddard (2002).

The SEM model from chapter four did not factor in student outcomes in the analysis. The SEM model did produce results that would indicate that transformational leadership behaviors have an impact on the effectiveness of a professional learning community and collective efficacy exists. To determine if positive student outcomes is a result of the triangulated relationship of leadership, PLC, and collective efficacy, teachers in the OVUSD were asked specific questions pertaining to the outcomes of students in a highly effective professional learning community. Comments made by the teachers regarding student outcomes show that positive transformational leadership; effective professional learning communities, and a highly efficacious environment does improve the outcomes for students. The following response from a teacher at School #3 is indicative of the typical interview responses gathered on the topic of improving student outcomes:

PLCs improve student outcomes because it gives students other ways to look at learning and understand objectives. I love how each teacher has a slightly different, more positive, and very beneficial way to add to the students. I love talking with my team! We share re-teaching for lower kids, and higher critical thinking challenge activities for the rest of the kids. Our principal also shares a lot of things at the staff meetings regarding how we are doing in our PLCs. The compliments not only make us feel good, but give us all great, detailed ideas that we can do at our own grade level. We also learn how it is great to work with other grade levels.

Another teacher at School #3 describes how the accountability measures in a PLC have

helped her focus not only on the learning outcomes of the whole classroom, but the learning of individual students.

I think that PLCs helps to pinpoint and analyze particular students. PLCs looks at grade levels as a whole, looks where gaps are, and then reassures me as an educator review my results in order to improve my PLC process. Rather than just assuming the child's going to get it so you move on to the next lesson, PLCs makes you evaluate and hold yourself accountable to those particular gaps. You can then send them to the next grade level feeling assured that not only did you teach it, but you gave them vocabulary that's consistent with what they will get in the next grade level, and that you gave them the best education possible for the standards that they needed from your grade-level.

Teachers interviewed consistently communicated to the researcher that professional learning communities improve student outcomes when principals create accountability systems where both the site principal and the individual grade-level teams have a clear understanding of the continued performance outcomes of the individual grade-level as a whole, as well as, the performance outcomes for individual students. A teacher at School #5 feels that the analysis involved in an effective professional learning community is key to improve the learning outcomes of students.

We are taking a very close look at student work, assessments, and classroom performance using this information to decide what to teach, how to best teach it, and how best to evaluate our teaching effectiveness. I know the PLC process has worked to improve outcomes for students at my grade level. I think it makes us more focused on the quantitative results instead on relying on general conversations that teachers typically have with their peers. We used to teach on assumptions, instincts, and gut feelings. As a professional, I think we have to have data on everyone to show growth because it's just the virtue of not missing any children.

A teacher at School#7 believes PLCs are extremely effective in raising the achievement levels for all students, a belief held by the majority of teachers interviewed for this study.

I think that it is extremely valuable. I think that it does kind of shift your focus and it has made people think about what and why they are teaching a particular lesson or unit. PLCs have made us look at standards first and foremost because the standards should be guiding our instruction. PLCs also makes us more aware of looking at the grade level standards above and below our grade to see where students are coming from and where they need to go.

A teacher at School #8 believes she is a better teacher because of PLCs where she feels more confident about ensuring that all of her students will progress in a positive direction based on each student's individual learning style. This teacher also appreciates the accountability systems in place provided by her principal:

I believe that PLCs are directly related to improving student outcomes because when you collaborate with your team to analyze student work and student data, solutions are found to help support the various learning styles within the classroom. When conversations are held regarding improving student learning outcomes, improvement occurs for all students because the primary focus of the PLC is to ensure that all students are learning. You are accountable for not only recording a grade for PLC, you are accountable for addressing the issues. It's not just a report; it's an action plan.

When teachers were asked to reflect on how student outcomes can be improved in a professional learning community, the following responses were provided:

"I feel like it's in the numbers."

"We can look at a student and see where they are and see their growth."

"As the entire school looks at their assessment results, we can really focus on what they need, what they are doing well in, but more importantly, what they are needing extra support in."

"You just don't teach it and move on. It helps you be really reflective and responsive."

"When the teachers are comfortable with one another, it is easier for them to say, can I have a student come to your kindergarten class to read to your children. For example, when a teacher has an older student with self-

esteem issues, the teacher may ask a kindergarten teacher if he or she could come to their classroom to read to the younger students.”

“When there is rapport between teachers, there is also rapport between students as well.”

“I think by doing more data driven instruction, we will be able to evaluate what the next instructional steps will be for us. We must have the data. I can think whatever I want but if I see the data, it is easier to teach using the data.”

“Yes, I think it does improve student learning. I think that it is making us look together, as a team on how the children overall are scoring when we come together and evaluate the children's work together as a team. And then the kids who are at risk are getting their needs addressed because we are collaborating. More minds are better than one.”

“Well, I really think that it's moved us from the traditional; I'm going to close my door and go teach and whatever happens, happens. We've often operated in teaching as kind of islands of excellence.”

The following are principal responses regarding professional learning communities impact on student outcomes. The principal of School #3 believes strongly that PLCs have positively impacted student outcomes when she states:

Well, it's just the virtue of not missing any children. The idea of PLCs is to really take a good look at the kids and saying ok, these are the ones we need to pick up and these are the ones we need to pick up etc. How do we do it? To me, PLC is just a structure. But, it would be, like you don't give more homework because a child doesn't understand something. You don't do more of the same because that's just stupidity.

The principal of School #5 feels PLCs provide teachers with an opportunity when he states:

PLCs definitely have given us the opportunity. It's the perfect job-embedded staff development. It really is the gold standard. When it's used well, it provides the opportunity for whole group professional learning, small group professional learning within a grade-level team, or core content articulation. It really has built in much more of a collaborate nature to teaching I think. But it's also scary for teachers because they're going to open themselves up regarding their test results. Teachers might

think that this is a reflection of them as a teacher. It really just makes everything concrete and easy to see. It is really the data that is important.

The principal of School #7 believes that by having common assessment data, teachers are able to ascertain which students have mastered the standards, exceeded the standards, or need additional time to reach the standards. When there is common language, common structure, common curriculum and assessments in a non-threatening trusting and collaborative environment, student achievement will improve in a professional learning community.

The principal of School #8 states:

PLCs improve student learning in more general terms because it improves the professionalism of our teachers. PLCs use the synergy of multiple talented people instead of one person working in isolation. It creates a greater voice among our teachers so you know all of those things that we know in general I'm absolutely convinced that it improves student learning. PLC is definitely improving student outcomes because we are continuously challenged and kept accountable of our students' progress during the school year.

Teachers and principals interviewed for this study all believe that student outcomes are directly related to the leadership provided by the principal and the effectiveness of the professional grade-level teams. As a final thought in the qualitative discussion regarding student outcomes, professional learning communities, and leadership, a teacher at School #7 shared her thoughts:

When I think of PLC, this is the metaphor that I've always visualized. PLCs are like the NBA or NFL. Initially you always have a game plan that you anticipate to use on game day, based on past competitions and games with prior teams by studying their defense, etc. Then you get to the game and during the game, you realize the game plan needs to be modified or it just plain stinks; which is why you are allotted a certain amount of time-outs to retreat and change it up - so you have a chance to win. Well PLCs are exactly the time-outs. Without it, there is no time to analyze and modify; but when given the time and tools to address our "weak" points,

our time with the kids become more meaningful and applicable to their success. If your original game plan is the best and works well, then great job - but in my personal experience, I've never been able to do the same exact program each year. I feel like a rookie every year, but PLC makes me feel more confident.

Summary

Twenty-three teachers and four administrators participated in the qualitative interviews for this mixed-method study looking at the role of leadership in building and sustaining collective efficacy in a professional learning community. Study participants at School #3 and School #7 communicated their belief that leadership and high-functioning PLC teams are the desired and essential combination to improve the learning outcomes for all students. Some effective teams were also found to be present at schools with lower positive total PLC mean scores as found in School #5 and School #8. PLCs at the four schools were studied to determine the levels of PLC implementation, PLC effectiveness, and PLC outcomes where results of the qualitative data determined that there were varying degrees of PLC structural differences found between the higher positive PLC and lower positive PLC schools.

Of the four schools interviewed, Schools #3 and School #7 appear to be operating as highly effective PLCs led by principals with positive leadership behaviors as reported by the teachers interviewed and also substantiated by the LPI results found in chapter four. A critical finding from this study is that all schools in the district have been able to maintain positive PLC mean scores and positive collective efficacy mean scores since the systematic implementation of the DuFour and Eaker (1998) model of professional learning communities (PLCs) even though, significant district level administrative personnel changes have occurred since the 2004 PLC implementation year. From these

results, the importance of school site transformational leadership was both quantified and qualified by the study participants' responses to both the survey and interview questions. The schools, especially School #3 and School #7, have also been able to maintain their high achievement levels and have consistently improved their API scores over time including the API scores of the reportable and non-reportable learning cohorts. The quantitative data indicated that the variability among the district's schools in terms of PLC and collective efficacy mean scores was statistically insignificant between individual schools, age of study participants, and study participants' years of teaching experience. School #2's collective efficacy total mean score was the only school with a statistically significant difference as compared to the balance of the schools.

Therefore, the focus of this qualitative chapter was to systematically reveal differences between the district's two highest PLC schools as found in School #3 and School #7 as compared to the lower positive PLC scores found in School #5 and School #8. School #3 and School #7 both presented with higher PLC and higher collective efficacy scores than the balance of the six other district schools. The qualitative data also revealed that significant data-driven collaboration within and between grade-levels is the expected behavior communicated by involved transformational site leadership. The data also indicated that the absence of high levels of collaboration was a precursor to lower individual and collective efficacy levels. These findings suggest an interactive relationship between positive PLC collaboration experiences and the collective efficacy of the individual grade-level teams. Teacher perceptions regarding leadership was consistent within each individual school though School #3 and School #7 Presented with higher positive qualitative experiential experiences with their principals as documented in

the data. Chapter 6 begins with an overview of the study and will provide an analysis of the findings of the research questions. Chapters 6 will also presents conclusions, implications, and suggestions for future research.

CHAPTER SIX: SUMMARY AND DISCUSSION

Chapter six presents a summary of the research study beginning with an overview of the problem, a review of the methodology, and research questions. The results will then be summarized followed by a discussion regarding the implications for current practices. The chapter will close with recommendations for future research studies.

Statement of the Problem

As the date approaches for the No Child Left Behind Act (NCLB) requirement for 100% student proficiency in reading and mathematics, policymakers and practitioners at the local, state, and federal levels with support from efficaciously skilled teachers, continue to seek practical pedagogical reform methods to meet this challenging goal. Many restructuring efforts currently being implemented are seeking ways to strengthen teacher effectiveness using collaborative strategies to improve instructional practices and student outcomes. With the concern of meeting the NCLB act burdened mainly on the shoulders of classroom teachers, school site leaders must ensure that individual teacher and collective group-efficacy is developed, nurtured, and sustained. Individual and collective efficacy as defined by Goddard (2002) is the perception of teachers who work collectively in a collaborative learning environment believing that they have the ability to positively improve student achievement. The desire to improve learning opportunities for students using a reform effort where teachers' sense of self-efficacy and grade-level collective efficacy is influenced through transformational leadership and an accountability system that performs in tandem was the impulsion for this study.

With a constant and necessary focus on improving student achievement, prior research suggests that teacher efficacy may be critical to improving student learning

(Anderson, Green, & Lowen, 1998; Ashton & Webb, 1996; Ross, Hogaboam-Gray, & Gray, 2003); while at the same time, collective efficacy may be difficult to maintain due to increased demands for individual teacher accountability (Mintrop, 2004; Mintrop & Trujillo, 2007). One reform strategy that has shown promise in improving student outcomes is greater teacher collaboration (Bradford, 2008; Dale, 2004; Gallucci, 2003; Grider, 2008; Hord, 1997; Walgamuth, 2007; Wenger, 1998). Collaboration has been extensively studied in both the education and private sector environments with results indicating the benefits of collaboration on organizational processes and outcomes (Boyd & Hord, 1994; Buffum & Hinman, 2006; Bullough, 2007; Darling-Hammond, 1996; Dooner, Mandzuk, & Clifton, 2008; Graham, 2007; Hipp, Huffman, Pankake, & Olivier, 2008; Hord & Rutherford, 1998; Little, 1982; Senge, 2006).

Collaboration is a fundamental element of professional learning communities and has been the primary focus in research regarding PLCs because of the historic difficulty for most organizations to engage in effective collaboration (DuFour & Eaker, 1998). Effective collaboration alone is not enough to improve student academic performance. Even though there is a growing body of research that suggests that when teachers work together, student learning is enhanced (Berry, Johnson, & Montgomery, 2005; Hollins, McIntyre, Debose, Hollins, & Towner, 2004; Phillips, 2003; Strahan, 2003; Supovitz, 2002; Supovitz & Christman, 2003), the structure and norms of many of today's public schools continue to support individual teacher autonomy and isolation. In addition, little empirical evidence has been presented linking professional learning communities to student achievement (Louis & Marks, 1998; McLaughlin & Talbert, 2006) with less research known about the link between student achievement and DuFour and Eaker's

(1998) PLC model. With past research knowledge indicating that teacher efficacy has been linked to student outcomes including higher performance scores, the missing research link, which this study addressed, was the relationship between DuFour and Eaker's PLC and teacher collective efficacy as influenced by transformational leadership behaviors.

To mitigate teacher isolation and enhance teacher collaboration in an effort to improve student-learning outcomes, school site leaders have attempted a plethora of collaborative initiatives. Little attention however, is paid to how teachers internalize these reform efforts including, professional learning communities, as they relate to their individual or collective skill sets. The findings of this study suggest that a sustained focus by school leaders on developing professional learning communities and the concomitant development of collective efficacy led to increasing student achievement in an already high performing district. These results suggest PLCs may be an avenue worth seeking as a method to close the achievement gap because a review of the pertinent literature presents educators with promising data regarding addressing student and teacher needs in a professional learning community model (DuFour & Eaker, 1998; Hord, 1997, 1998; McLaughlin & Talbert, 1993). This study also sought to investigate leadership behaviors necessary to develop and sustain collective efficacy in a specific professional learning community model designed by DuFour and Eaker (1998).

Even with promising anecdotal evidence touting the benefits of a PLC, many schools are finding it difficult to initiative the move towards a PLC and in some cases, once implemented, schools are finding it difficult to sustain the work over the long-term (DuFour & Eaker, 2008). Questions emerge as to why a reform effort that shows

promising potential to improve the learning opportunities for all students has historically had difficulty gaining initial or sustainable support. Even PLCs that begin with solid teacher and staff support find it difficult to continue the work necessary to sustain their efforts over time. This study explored the possible leadership connection to teacher collective efficacy and professional learning communities in initiating, implementing, and sustaining PLCs.

Guiding the study was a proposed theoretical framework as first described in chapter three (Figure 3.1) where confirming study data supported the original model with the exception of teacher demographics, which showed no statistical differences between specific teacher age or teacher experience groups. Based on the results of this study, a revised conceptual framework is illustrated below in Figure 6. 1.

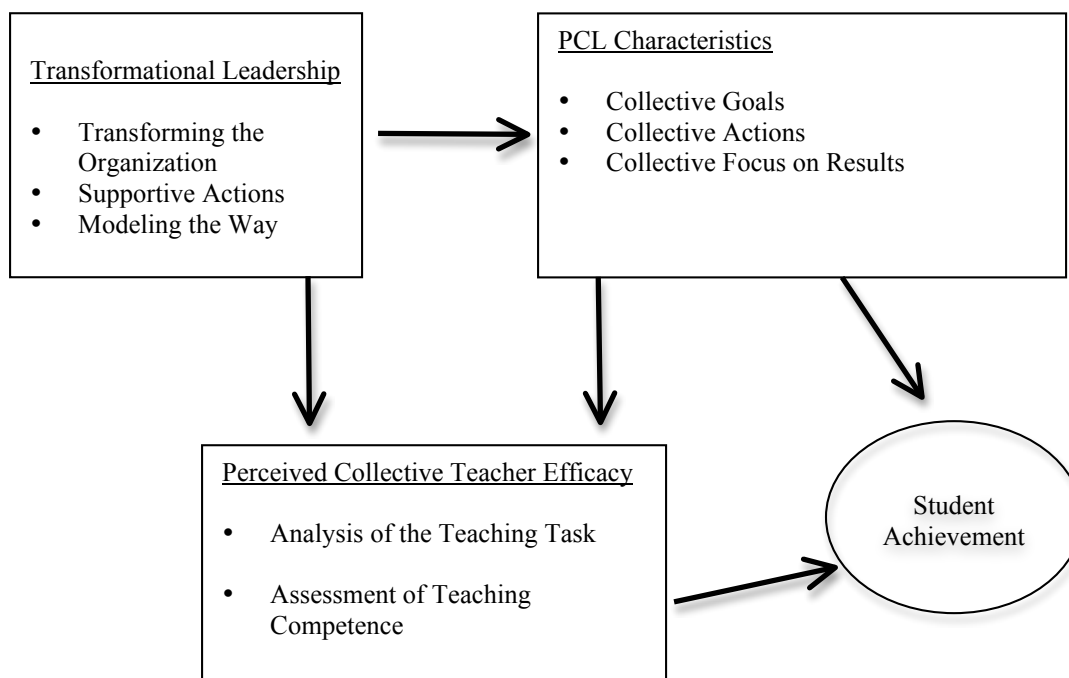


Figure 6.1: Theoretical model based on study results representing the relationships between collective efficacy, professional learning community, and transformational site leadership with potential to increase student achievement.

The theoretical framework presented above in Figure 6.1 was developed based on the results found in this study described in chapters four and five and summarized in this chapter. The new framework links professional learning communities and collective efficacy as influenced through transformational leadership behaviors of principals. With the synergy of these three constructs, student achievement has the potential to increase, as occurred in the case study district and in a related study using the same framework and instruments (Voelkel, 2011). The nuanced framework shown above in Figure 6.1 demonstrates the importance of transformational leadership to enhance and improve the PLC processes as defined by DuFour and Eaker (1998), as well as collective efficacy. As

shown in the SEM model presented in chapter four, strong PLCs were also a predictor of increased collective efficacy.

Review of the Methodology

The study focused on the role of leadership to develop and sustain collective efficacy in a specific professional learning community model designed by DuFour and Eaker (1998). The study was conducted in the Ocean View Union School District (OVUSD), a K-6 school district with eight schools and approximately 250 certificated teachers who predominately identified as Caucasian/White (94%) with an average of 11.5 years of teaching experience. The OVUSD is located in a moderately affluent southern California coastal geographic area educating approximately 4,000 students where 10% of the student population is classified as ELL, 10 % are designated as special education, and 5% qualify for free or reduced lunch. The study focused on the district's current reality six years after implementing the DuFour and Eaker (1998) professional learning community (PLC) model during a time of documented district leadership turmoil after the departure of two superintendents, two assistant superintendents, and three directors. There currently is a newly seated school board after the election of three new school board members. In the past two-year period, the district has hired a new superintendent, assistant superintendent of curriculum and staff development, assistant superintendent of business services, director of personnel, director of pupil services, and director of after-school programs. These new leaders seem to be supporting the PLC model implemented six years ago.

A mixed methods research design was utilized where 192 study participants who volunteered to participate in the study were invited to complete an anonymous survey

followed by 27 study participants voluntarily sitting for one-on-one interviews. The compilation of the quantitative survey instrument used in this study identified the characteristics of a DuFour and Eaker (1998) professional learning community (PLC), the elements of collective efficacy as described by Goddard (2002), and the transformational leadership practices adjudicated by using Kouzes and Posner's (2002) leadership practices inventory (LPI). Additionally, the survey sought demographic information such as age and years of teaching experience of the study participants to determine whether variances between groups existed regarding the levels of both collective efficacy and PLC at each of the eight OVUSD schools. Study participants responded to questions about their professional learning communities using a 5-point Likert scale with "1" representing "Not Likely" and "5" representing "A Great Deal." Only teachers were asked to complete the online survey questions where after dropping cases for lack of data, 181 complete surveys were used in the statistical analyses.

The qualitative face-to-face interviews of participants having first hand knowledge of the PLC implementation efforts in the OVUSD allowed the researcher to triangulate the quantitative findings to determine the effects of transformational leadership on the development and sustainability of collective efficacy in a professional learning community. The qualitative one-on-one interviews with four principals and 23 classroom teachers used a structured and consistent interview protocol with interview questions written to seek data from both primary (K-3) and upper-grade (4-6) teachers on the nature of their collaborative experiences within their individual grade-level team as well as their experiences as a member of a school-wide PLC team. The interviews began with an open-ended exploration of typical PLC meetings (grade-level meetings). Of

particular interest to the researcher as qualitative data were gathered was how well the participants felt they were able to meet the needs of all learners individually, as well as learners in a group environment. Finally, the interview explored leadership both within the PLC and between the PLC and the school administration. The interviews were recorded and then transcribed into HyperRESEARCH. The interviews provided data triangulation with the survey responses and enabled a more detailed response to the research questions.

Summary of the Results

Of the approximately 250 (rounded up for confidentiality purposes) certificated teachers in the OVUSD, 181 (84%) teachers responded to and completed an online quantitative survey seeking experiential data regarding their collaboration efforts in their respective professional learning communities as well as seeking evaluative information on their sense of personal efficacy and grade-level collective efficacy perceptions. The findings are summarized by the three research questions and sub-questions.

Research Question 1: What is the level of implementation of the characteristics of PLCs and the level of collective efficacy present within a PLC in a district implementing the DuFour and Eaker (1998) model for over six years?

Hypothesis A: The level of PLC implementation produced across the district will be similar regardless of school size or teacher demographics. This hypothesis was generally confirmed. Teacher perceptions regarding the implementation levels of PLC at all eight schools indicate the district as a whole is operating as a positive professional learning community with an average mean score of 3.85 on a five point scale. When reviewing results from an ANOVA test, there was a significant difference at the $p < .05$

levels in total PLC scores between School 5 and School 7. The remaining six schools did not differ significantly from each other nor did they differ significantly from School 5 or School 7. The effect size was .09 indicating a very small effect size. Additional ANOVA tests showed no significant statistical difference in total PLC mean scores across the district when factoring age and years of teaching experience of the study participants.

Hypothesis B: The level of collective efficacy produced across the district will be similar regardless of school size or teacher demographics. To test the second hypothesis, collective efficacy total mean scores were determined at each of the eight district schools. Based on a 5-point Likert scale, the district's total collective efficacy mean score was 4.25. Data showed that there was a significant statistical difference between School #2 and the balance of the seven district schools determined as a small effect size (.18). The balance of the seven schools presented with similar total collective efficacy mean scores indicating no significant difference between them though the remaining seven schools were statistically different than School #2. Additional ANOVA tests showed no significant statistical difference in total collective efficacy mean scores across the district when factoring age and years of teaching experience of the study participants. This hypothesis was confirmed.

Hypothesis C: Schools that exhibit high levels of PLC characteristics also have high levels of collective efficacy. This hypothesis was confirmed. The regression analysis showed that schools with high levels of PLC characteristics also had high levels of collective efficacy. Table 6.1 presents the PLC and collective efficacy mean scores for the OVUSD listed from higher positive to lower positive total PLC mean scores including district rankings for the collective efficacy construct for each school as a

comparison to each school's PLC rankings.

Table 6.1: District Total PLC and Total Collective Efficacy Mean Score Rankings

	Total PLC Mean Score Listed From Higher Positive to Lower Positive	Total Collective Efficacy Mean Score including District Mean Score Ranking in Parenthesis ()
School #7	54.41	52.27 (3)
School #3	53.43	54.33 (1)
School #6	53.05	53.52 (2)
School #4	49.85	51.77 (4)
School #1	49.25	51.25 (6)
School #2	48.81	45.27 (8)
School #8	47.42	51.36 (5)
School #5	46.54	50.65 (7)

Research Question 1a. What is the relationship between PLCs and teacher collective efficacy?

Hypothesis D: There is a direct relationship between PLC implementation and teacher collective efficacy. A correlations test was conducted showing a positive medium strength relationship between PLCs and collective efficacy ($r = .411$; $p < .01$) suggesting a positive relationship between the work teachers do collaboratively in a PLC and their sense of personal or group collective efficacy represented by a 17% variance between the two constructs. Further exploration through multiple regression analysis using task analysis and group competence in independent examinations in relationship to the three PLC sub-constructs of collective goals, collective actions, and focus on results also revealed positive correlations.

Multiple regression analysis were also conducted to determine the influence of the independent PLC sub-constructs of collective goals, collective actions, and focus on results, on the dependent collective efficacy sub-constructs of task analysis and group

competence. The multiple regression analysis revealed that the subgroups were significantly correlated at the $p < .01$ or $p < .05$ levels. It was determined that 19% of the variance in task analysis can be explained by PLC characteristics with the PLC sub-construct collective goals having a stronger influence. 11% of the variance in group competence can be explained by the PLC characteristics with the PLC sub-construct collective goals again having a stronger influence.

Then final analysis used to answer question 1a was an SEM test, which showed the PLC sub-variable collective goals is a predictor of higher task analysis and group competence. PLC sub-variables collective actions had only a very modest effect on task analysis and neither collective actions or focus on results had a positive effect on group competency. This interesting finding of the relationship of PLC to collective efficacy will be discussed in the next section.

Research Question 2: What is the relationship between PLC characteristics, teacher collective efficacy, and leadership?

Hypothesis E: There is a positive relationship between PLC characteristics, teacher collective efficacy, and leadership. To answer the second research question and respond to the hypothesis, a correlations test was run to evaluate the relationship between PLC characteristics, teacher collective efficacy, and leadership. The correlations test revealed a medium strength positive relationship between all three variables with total PLC having a stronger correlation at $r = .432$ with total leadership as compared to total PLC's relationship to total collective efficacy at $r = .415$. The lowest correlation was between total leadership and total collective efficacy at $r = .398$. The shared variance between the three constructs shows that PLC and leadership had the highest variance at

19% between each other as compared to total PLC⇒total collective efficacy at 17% and total leadership⇒total collective efficacy at 16%.

An SEM was also run to confirm relationships between the variables being tested. Results from the SEM demonstrated an excellent fit of the data to the model being explored, with the CFI = .979, the NFI = .978, and the GFI = .911. The data also revealed RMSEA to be within the acceptable range of 90% Confidence Interval of the RMSEA with a Cronbach's Alpha of .836 indicating a strong reliability in the model. The SEM model demonstrated that PLC transformational leadership was a potential predictive influence on total collective efficacy and total PLC, which confirms Hypothesis E. The findings also indicate a significant predictive relationship between the transformational leadership variables of transforming the organization, supporting actions to total PLC and total collective efficacy. Modeling the way was not found to be predictive of PLC or CE characteristics.

Research Question 2.1: In what ways do school leaders build and support PLCs? During the qualitative data collection phase, teachers were interviewed to provide insight into the principles necessary to build and support the PLC process. Overwhelmingly, the teacher response was leadership. When principals were also asked the same question, they too confirmed that not only their own individual leadership was instrumental in the effective development and implementation of a PLC, but also the district-level leadership was also influential in the process as well. During the interview process, several leadership themes emerged indicating a desired level of support to the teachers provided by the site leadership. The leadership supportive themes surfacing in this study were vision, accountability, communication, and resources.

Vision. Teachers felt that site principals were the guiding element in the construction and sustainability of an effective professional learning community where a clear vision and passion communicated by the site principal was a mitigating factor in the development and sustainability of the PLC plan. The vision and passion of the site principal was paramount. Once the co-constructed vision was established, it was according to the teachers, fostered by the collective whole on a continual basis with the site principal as the guiding light in order to have created consistent buy-in from all responsible practitioners. Once the vision and passion were established, teachers at high functioning PLC schools were more than committed to working collaboratively as a staff. Teachers understood that the time for collaboration was provided to them by administration and that it was their responsibility to use it effectively.

Accountability. A system of accountability with clear guidelines and expectations was another important theme gathered in the qualitative phase of this study. Teachers communicated the need for the accountability measures to be clear, consistent, and, easy to use and manage, so that PLC documentation can be easily passed from grade-level to grade-level in vertical articulation meetings. Principals support PLCs best by holding teachers accountable to the PLC process by helping them write effective SMART goals, by expecting that the goals will be implemented, monitoring and adjusted as necessary, and that the teachers will evaluate their results with meaningful review and reflection. The teachers and principals working at effective PLCs view professional learning communities as an opportunity to share and document the wealth of knowledge and experience that exists at their respective schools so that students can reach their full potential by having teachers working more efficiently. Effective principals concurred,

and interviewed teachers communicated, that knowing that they were being held accountable for their PLC outcomes through the use of PLC agendas, systems and protocols such as team norms and the use of common curriculum and assessments etc., and principal PLC participation, created a moral imperative to ensure that the collection, analysis, interpretation, and adjustments made because of the data, be communicated clearly to all parties concerned through an accountability system. In terms of the use of appropriate assessments, conversations were continuous at highly effective PLC schools where principals worked towards supporting the research and development necessary to write effective assessments “for” learning instead “of” learning, which was the focal point of discussions during most of the interviews as it relates to accountability.

Communication. Teachers in the study appreciated clear and concise communication from their site principals in order to effectively streamline the PLC process. Staff meetings at highly effective PLC schools were no longer used for dispensing the typical minutiae of information that could be more effectively communicated in an all-school email. Staff meetings were focused on communicating staff development ideas to provide teachers with opportunities to enrich their skills as teachers. Teachers also appreciated the site principal’s willingness to communicate individually with teachers and collectively with grade-level teams to dipstick the grade-level’s PLC progress towards their SMART goals and to offer encouraging words, advice, and redirection when and where appropriate. Communicating the school-wide PLC plan to parents was another successful component at highly effective PLC schools. By involving the community, principals developed a triangulated effort between teacher, student, and parents. Teachers also strongly believed that principals who communicated

by “walking the walk and talking the talk”, and who lead by example using a transformational leadership style, fostered a stronger sense of efficacy in their individual teachers and collective staff as a whole.

Resources. Effective principals are instrumental in the procurement of resources necessary to operate as an effective professional learning community. The resources mentioned by the teachers included on-site staff development, research-based articles associated with effective PLCs, principal modeled lessons and strategies, additional time, cost-effective curriculum, accountability measures including; timeframes and documents etc. One question asked of the interview participants was regarding what the principal could do if they wanted to ensure that teachers had more positive experiences during PLC collaboration time? The responses included were full documentation/outline/structure, accountability measures, focus on learning, balanced teams, maintaining modified school-bell schedule for teacher collaboration purposes, effective principal feedback with teacher reflection, time, common standards/curriculum/goals/ assessments, professional development/resources, and district office leadership and guidance. All four schools interviewed for this study exhibited many positive behaviors and practices of effective PLCs, but the two highest achieving demonstrated more of them.

Research Question 2.2: In what ways do school leaders foster collective teacher efficacy?

The Kouzes and Posner (2002) Leadership Practices Inventory (LPI) was used for the quantitative portion of this study to quantify the effective leadership behaviors of the site principals. In the statistical analysis, the leadership behaviors were factored as: (a) transforming the organization, (b) supporting actions, and (c) modeling the way, per the

results of a factor analysis. The original five factors prior to this study's factor analysis were: (a) challenging the process, (b) inspiring a shared vision, (c) enabling others to act, (d) encouraging the heart, and (e) modeling the way. The three-factor solution used for this study combined "challenging the process" and "inspiring a shared vision" as "transforming the organization" and also combined "enabling others to act" and "encouraging the heart" to form "supporting actions." The third factor, "modeling the way" was unchanged from the original survey source. Total LPI leadership mean scores for each of the four schools selected for the qualitative portion of this study are listed from lowest to highest: School #8: ($M = 18.49$, $SD = 3.59$), School #5: ($M = 24.60$, $SD = 3.50$), School #7: ($M = 25.24$, $SD = 4.75$), and School #3: ($M = 26.64$, $SD = 3.50$).

These results are consistent with results found earlier in the study when choosing four schools for the qualitative interviews where total PLC mean scores were used as primary predictor followed by total collective efficacy mean scores as a secondary measure. In this study, principals are exhibiting the LPI leadership behavior characteristics in multiple pathways and at varied levels. The total district LPI mean scores for all five leadership practices categories in order from least exhibited to most exhibited are: (a) inspiring a shared vision ($M = 22.11$, $SD = 5.79$), (b) encouraging the heart ($M = 22.24$, $SD = 5.26$), (c) enabling others to act ($M = 22.51$, $SD = 5.52$), (d) challenging the process ($M = 22.83$, $SD = 5.15$), and (e) modeling the way ($M = 23.97$, $SD = 4.54$).

An SEM was designed and analyzed, which also produced similar results in terms of the specific transformational leadership behaviors with the strongest influence on total collective efficacy. The SEM model showed that "transforming the organization"; a

combination of “inspiring a shared vision” and “encouraging the heart” had a stronger predictive influence on the outcomes of collective efficacy. When reviewing comments made by teachers interviewed for this study, the principals of highly effective professional learning communities also had highly efficacious teachers and staff. Results from the qualitative interviews were also comparative to the quantitative LPI results presented above, where teachers described their principals as “transforming the organization” with their actions and words. Transforming the organization (inspiring a shared vision and encouraging the heart) was the leadership behavior most represented in both the quantitative and qualitative data.

To gather additional qualitative data on efficacy, teachers were asked to share how their school leadership fostered collective teacher efficacy at their respective school sites. The researcher explained the definition of collective efficacy to the research participants and provided the interview participants with examples of typical efficacy enhancing behaviors as described in the Kouzes and Posner (2002) Leadership Practices Inventory (LPI) in the areas of inspiring a shared vision, encouraging the heart, enabling others to act, challenging the process, and modeling the way. From the interview data, it was shown that principals engaged in a multitude of behaviors that enhance the abilities of teachers in terms of their effectiveness in the teaching and learning process. As evidenced in the quantitative findings, the correlations test indicated a moderately positive relationship between the total LPI leadership construct and the total collective efficacy construct represented in a Pearson’s r Correlation of .398 ($p = 0.01$, 2-tailed) indicating that behaviors of principals does have an effect on the collective efficacy levels of teachers. A multiple regression test also confirmed the comments made by the

teachers in the qualitative phase of this study regarding the ways school leaders can foster collective teacher efficacy in a professional learning community where collective goals, collective actions, and a focus on results were the motivational factors. An earlier SEM model previously described in this study demonstrated PLCs strong predictive influence on the collective efficacy construct, which helps make the connection to transformational leadership when it was analyzed in a different SEM where transformational leadership was found to be a strong predictive influence on collective efficacy. In the multiple regression analysis, the level of principal behaviors focusing on transforming the organization showed that 21% of the variance in the effectiveness of collective goals could be explained by the transformational behaviors of the principals, significant at .471.

Research Question 3.0: Is there a relationship between PLCs, leadership, teacher collective efficacy, and student learning outcomes?

Hypothesis F: Transformational leadership predicts PLC, which predicts collective efficacy, which predicts student outcomes. This last question was also addressed earlier in this chapter regarding the correlation between PLCs, leadership, and collective efficacy. In addition, SEM results were also presented in this chapter pertaining to this question in order to analyze the predictive influence of transformational leadership to the total PLC and total collective efficacy composite variables. The results of the correlations test showed that all three constructs had a positive medium strength relationship. The SEM indicated transformational leadership's significant predictive influence on the level of effective PLC implementation and the level of positive collective efficacy. The SEM model produced positive results indicating that transformational leadership as described by Kouzes and Posner (2002), is a significant

and positive predictive influence on the level of professional learning communities (PLCs) implementation as described by DuFour and Eaker (1998), leading to an increase in positive collective efficacy as described by Goddard (2002).

The SEM model from chapter four did not factor in student outcomes in the analysis. The SEM model did produce results that would indicate that transformational leadership behaviors have an impact on the effectiveness of a professional learning community where collective efficacy exists. To determine if positive student outcomes was a result of the triangulated relationship of leadership, PLC, and collective efficacy, teachers interviewed in this study were asked specific questions pertaining to the outcomes of students in a highly effective professional learning community. Comments made by the teachers regarding student outcomes show that positive transformational leadership; effective professional learning communities, and a highly efficacious environment does improve the outcomes for students in an already high-performing school district.

There is also a strong belief at highly effective PLC schools that by having common assessment data, teachers are able to ascertain which students have mastered the standards, exceeded the standards, or need additional time to reach the standards. When there is common language, common structure, common curriculum and assessments in a non-threatening trusting and collaborative environment, student achievement has the potential to improve in a professional learning community because effective PLCs do not miss any students. The idea of professional learning communities is to take a close look at not only a specific grade-level's performance but also, the performance of individual students within the grade-level to ensure learning for all students is occurring.

Discussion of the Findings Related to the Research

Several points are to be made in reference to this study as they relate to the literature. These points support past research in the concentrated areas of professional learning communities, collective efficacy, and transformational leadership.

Professional Learning Community Research

The findings in this study support the development of professional learning communities as described by DuFour and Eaker (1998). Professional learning communities can be successfully implemented when appropriate pre-implementation, implementation, and PLC sustainable steps are taken in order to take the PLC idea from a conceptual or theoretical model to a practical or pragmatic reality (DuFour & Eaker, 1998; Hinman, 2007; Hord, 1998). The Oceanview Union School district first developed an action plan prior to the implementation phase of the DuFour and Eaker professional learning community model soliciting input from district stakeholders at the teacher, administrator, and community level.

Pre-PLC Implementation Phase. The defining steps necessary to implement a successful professional learning community begins with a vision collectively developed by all teachers and staff members so that all participants are privy to the organization's plan of action (DuFour & Eaker, 1998); Hord, 1997, 1998; Marzano, Waters, & McNulty, 2005; Wenger & Snyder, 2000). The pre-PLC implementation phase in the Oceanview Union School District (OVUSD) began with a vision at the district office level generated by a former superintendent who arrived to the OVUSD one year prior to the implementation phase of the DuFour and Eaker (1998) PLC plan. The evidence provided in this study supports the need for teachers to be able to clearly understand and

effectively communicate the site vision for excellence in order to operate effectively as a member of a PLC. To accomplish the task of communicating the new PLC district strategic initiative, key stakeholders at the teacher, principal, and community levels were asked to attend a DuFour and Eaker professional learning community two-day summer institute. In addition to the two-day PLC training, district office leadership as well as site principal leadership collectively read current PLC research literature, books, and gathered testimonials from geographically close school districts with successful PLC implementation and sustainability track records.

Implementation Phase. After the district office pre-implementation phase, the OVUSD rolled out the DuFour and Eaker PLC model at two of the eight schools to pilot the professional learning community plan during the 2003/2004 school year. After the pilot PLC program and prior to the district-wide implementation, all OVUSD teachers and principals attended a PLC professional development rollout training seminar to prepare for the 2004/2005 district-wide professional learning community model implementation. Current PLC literature and this study provided substantial evidence regarding the effective implementation of professional learning communities as defined by DuFour and Eaker (1998) where creating a shared vision, an important aspect necessary to ensure that all stakeholders involved have a clear understanding of what is expected of them (DuFour & Eaker, 1998; Hord, 1997, 1998; Marzano, Waters, & McNulty, 2005; Wenger & Synder, 2000). A review of the data from the highly effective PLC schools showed that both individual grade-level teams in concert with the balance of the teaching staff were committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve improved results for the students they

serve. This dedication and commitment is one of many prerequisite conditions for the effectiveness of any PLC (DuFour & Eaker, 1998). The teachers at the highly effective PLC schools also appreciated and thrived in an atmosphere of continuous staff development opportunities (DuFour DuFour Eaker & Many, 2006; Hord, 1997).

PLC Sustainability. The findings of this study support the PLC model as designed by DuFour and Eaker (1998) suggesting that their characteristics are important to the success of the professional learning community. An important finding from this study was that although the PLC teams were engaged in collective actions and collective focus on results, the strongest predictor of collective efficacy was collective goals. All of the PLC sub-constructs are important to the effective implementation and sustainability of a professional learning community but collective goals are paramount as a driver of collective efficacy, an important element regarding the sustainability of a professional learning community. One possible reason for this finding is that in all of these schools, the goals of increased student achievement are being realized through the efficacious efforts of the teachers responsible for improving the learning outcomes of their students. As stated in the DuFour and Eaker (1998) PLC literature, professional learning communities operate with four guiding questions: (1) what is it that we want students to learn, (2) how will we learn if they have learned it, (3) what will we do if students don't learn it, and (4) what will we do if some students already know the information before we even begin teaching it. It was also noted in this study that teams that focused on all three sub-constructs of PLCs (collective goals, collective actions, and focusing on results) as interchangeable units of analysis worked more collaboratively and effectively as a team using a laser focus on the achievement of their students. The study also found that

collective efficacy and transformational leadership were two key elements in the successful design, implementation, evaluation, and sustainability of a PLC.

Collective Efficacy Research

This study supported previous collective efficacy literature and reinforced the collective efficacy conceptual framework where teachers process their pedagogical efforts through six collective efficacy elements: (1) mastery experience, (2) vicarious experiences, (3) social persuasion, (4) affective state in addition to the two sub-constructs of (5) task analysis and (6) group competence (Goddard, Hoy, & Hoy, 2000, 2004; Goddard & Goddard, 2001). According to Bandura (1997), positive mastery experiences are key to improving teacher pedagogical practices as well as increasing individual teacher efficacy levels. Results from this current study supported Bandura's research on the mastery experiences of teachers through both the quantitative and qualitative data. Teachers at highly effective PLC schools felt empowered to work together to improve their teaching practices in order to improve the learning outcomes for their students. This collective inquiry into best practices created a renewed sense of synergy to focus on student achievement no matter what internal or external influences may be a hindrance to the implementation plan (Hughes & Krisonis, 2007). This study confirms research by Newman et al. (1989) that reform initiatives such as PLCs, need to address the individual as well as the collective needs of teachers who are responsible for implementing the reform plan in order to build an efficacious learning organization. Teachers participating in this study who felt that they worked in highly effective PLCs communicated their belief that their team's collective efficacy is directly related to the possible improvement in their student outcomes (Leithwood & Jantzi, 2001; Wahlstrom & Louis, 2008), which

replicates earlier research linking teachers' efficacy beliefs with the improved performance of their students (Ashton & Webb, 1989; Bandura, 1993; Goddard, 2002; Smith, Hoy & Sweetland, 2002). Schools in this study presenting with high collective efficacy scores had positive organizational experiences leading to higher efficacy levels as was also found in research conducted by Hoy et al. (2002a). In this current study, the collective efficacy construct was subdivided into two distinct sub-categories of task analysis and group competence as was done in research by Goddard et al. (2002). The results of this study showed that of the three PLC sub-constructs of collective goals, collective actions, and focus on results, collective goals was the stronger predictive influence on both task analysis and group competence making an argument for the implementation of effective SMART goals as was evidenced at the highly effective PLC schools. PLC teams that presented with higher PLC total mean scores and that also used SMART goals to monitor and adjust teaching practices, also presented with higher collective efficacy total mean scores as compared to PLC teams with lower PLC total mean scores. The results of this study suggest that teams that find value in the PLC process and who as a team, produce positive student results, have a higher collective efficacy perspective, which in turn, improves the possible sustainability of the PLC model.

Transformational Leadership Research

The results of this study support the findings of other research, which has shown that school leadership is central to fostering teacher leadership and collaboration in professional learning communities (Wahlstrom & Louis, 2008; Heck & Halinger, 2005; Olsen & Chrispeels, 2009). This study confirmed the predictive influence of

transformational leadership on PLCs and collective efficacy when testing the variables in an SEM as was also confirmed in a study by Ross and Gray (2004), where leadership and perceived collective efficacy were examined using several structural equation models where transformational leadership was also a confirmatory variable when tested with teacher commitment to organizational values and collective efficacy. Several studies have confirmed the importance of transformational leadership and its characteristics, as found in this study, to improve school systems (Fullan, 2005; Hallinger & Heck, 1998; Leithwood et al., 2006; Thompson et al., 2004).

Principals in this study confirmed that the pace of today's complex public school learning environments requires multifaceted leadership to address the multitude of school conditions present on school campuses nationwide. According to this study's data, leadership at highly effective PLC schools was quick to adapt and were able to ascertain and evaluate the challenges faced by them as leaders as well as help mediate the challenges faced by their followers (Bass, Avolio, Jung, & Berson, 2003). According to Leithwood, Louis, Anderson, and Watson (2006), leadership is the catalyst for school effectiveness and change. The qualitative data gathered at highly effective PLC schools confirmed this research when teachers reflected on their site principal's transformational behaviors. As this study confirmed, the lack of effective instructional leadership inversely affects the successful reform implementation therefore making organizational change difficult over time. Additional researchers have noted that the principal's leadership style can have a profound affect on the development and ongoing positive performance of a professional learning community (Boyd & Hord, 1994; DuFour and Eaker, 1998; Graham, 2007; Morrissey, 2000; Thompson et al., 2004). This study also confirmed

research by Boyd and Hord (1994) that stated that specific functional leadership responsibilities are necessary to improve a professional learning community as well supporting its collective efficacy, which was found to evolve from the development of a school-wide professional learning community. The four functions are: (a) to increase staff capacity, (b) to provide a caring, productive environment, (c) to promote increase quality of instruction, and (d) to reduce the opportunities for continued teacher isolation. With these functions promoted in a learning organization, staff member's efficacious attitudes and professional successes increased. Kouzes and Posner (2002) also postulates five key leadership behaviors necessary to increase collective efficacy as was tested and confirmed in this study. The five core practices are: (a) model the way, (b) inspiring a shared vision, (c) enabling others to act, (d) challenging the process, and (e) encouraging the heart. The data from this research confers with prior research that leadership behaviors are directly related to collective efficacy (Chen & Bliese, 2003; Bohn, 2002).

Conclusions

One important conclusion from this study is that in spite of changes in district and school level leadership, the initial professional development provided in the DuFour and Eaker (1998) model seems to have been sufficient to sustain teacher and school leader engagement in the process six years after its initiation. One possible explanation for this result is that the district has maintained the designated time for teacher collaboration that was instituted as part of the model. Another explanation is suggested by the data documenting that teachers saw the benefits of the PLC to their teaching practice. Even in the two schools with the somewhat lower overall PLC scores, the teachers recognized they were benefiting from the meetings with colleagues. A third explanation for

continuance of PLCs is increases in student achievement results. Although there was not a statistical measure of the relationship between PLC implementation and student achievement, the qualitative data and the actual growth in achievement in this already high performing districts seems to suggest a very strong link between the PLC model and student achievement. Certainly these continued gains would be a motivator for persisting in the model.

A second and related conclusion is the model has helped teachers and principals to ensure that even in this high performing district, individual students who struggle academically will not be missed and individual students who require advanced curriculum will also be afforded individualized learning opportunities through a consistent and logical reform plan, a trademark of successful district reform (Massell & Goetz, 2001; Snipes, Doolittle, & Herlihy, 2002; Togneri & Anderson, 2003). The four guiding questions of the model (what is it that we want students to learn, how will we know if they have learned it, what will we do if they do not learn it, and what will we do if they already know it before we begin to teach it?) provide a framework to guide teacher's collective work.

A third conclusion garnered from this study confirms the findings of Leithwood et al., 2002; Hallinger & Heck, 2002) that leadership does not have a direct effect on student learning, but an indirect effect by supporting teacher development and teachers' work. The SEM model showed that transforming the organization through goal setting and supportive leadership practices had a direct effect on the PLC work of teacher teams as well as their sense of collective efficacy, which in turn, affected student learning. By exploring schools that were highly effective and those that were moderately effective,

this study also surfaced that teachers recognize the important leadership practices of their principals and they were able to identify when the principal perhaps was not providing the support they needed to function effectively as a team. These findings suggest the importance of teacher/principal dialogue to enhance team functioning.

A fourth conclusion that helps to inform theories of educational change is that teachers engaging in collaborative, joint work, is a predictor of greater teacher collective efficacy. This supports the literature suggesting that changing behaviors leads to changing beliefs. Since collective efficacy has been shown to enhance student achievement (Goddard, 2003), principal leadership that supports PLC effectiveness may be the quickest way to enhance teacher collective efficacy. Reform efforts conducted by a school district already possessing high API scores is a significant indication that the school district as a whole, is willing to look within to evaluate their belief systems regarding their professional learning communities, which was further confirmed by completing the survey used in this study where both teachers and principals who provided data for this study have continued their PLC quest over time. The continual focus on the effective elements of a DuFour and Eaker (1998) PLC model over several years through effective staff development opportunities has created a bank of knowledgeable PLC practitioners to support the learning of newly hired teachers. In addition, the modification of the instructional day to provide for ongoing PLC team meetings each week was essential to implementing and sustaining the model.

A fifth conclusion from this study is leadership's responsibility to ensure that all teams are fully trained and operational with regards to the school wide PLC goals as well as each teams' PLC SMART goal plan since the study presented findings that high

functioning teams yield solid results in terms of student achievement gains. Both leadership at the top as well as leadership at school sites is important especially, in the area of staff development, where both the district and school site staff development plans should work in concert by providing training and support for an effective PLC process. Leadership at highly effective PLC schools was instrumental in the co-development and co-implementation of professional development opportunities for teachers to focus on enhancing their skill sets providing them an opportunity to increase their sense of efficacy. From the analysis of both quantitative and qualitative data, leadership was found to be a confirming influence on the outcomes of PLC and collective efficacy at both the district and site level. According to the data, PLCs are a predictor of collective efficacy, which has been shown to increase student achievement. If leadership provides effective training and support necessary for teachers to implement successful PLC practices, it is likely that teacher collective efficacy will be enhanced.

A sixth and final conclusion from this study, centers on and understanding that grade-level teams across a campus can and do function at different levels of effectiveness. Strong leadership is an important factor if highly functional teams are to implement the various phases of the school's PLC plan effectively. School site leaders need to factor in the variability of teams when designing, implementing, and evaluating their school's PLC. Additional attention from the site leadership as well as differentiated staff development may be required in order to move all grade-level teams forward in the PLC process.

Implications of the Study

The results of this study inform educational leadership of important implications for practice. First, site and district leadership must work in tandem to develop capacity building strategies, structures, and accountability measures in the area of organizational development in order to promote effective professional learning community implementation. During the PLC design, implementation, and monitoring phase, leadership must simultaneously monitor the collective efficacy status of teachers and grade-level teams. By monitoring the collective efficacy status in teachers, leadership will improve the probability that meaningful learning opportunities are available for students in order to increase student achievement.

District level leadership should also examine principal leadership practices especially, in the area of transforming the organization, a prerequisite skill necessary to develop and sustain a professional learning community. The three confirmatory leadership practices positively influencing PLC and collective efficacy are *transforming the organization*, which includes “challenging the process” and “inspiring a shared vision”, *supportive actions*, which includes “enabling others to act” and “encouraging the heart”, and *modeling the way*. Based on leadership styles and strengths, leadership staff development should then be designed to support the development of necessary site leadership skills to provide principals with effective training in order to develop their teachers as they navigate between their PLC implementation responsibilities and their efficacy status. The relationships between transformational leadership, PLCs, and collective efficacy are all necessary components in an effective learning organization. With transformational leadership strongly influencing both PLC and collective efficacy,

district leadership and school site leaders should focus on the reciprocal relationship between the three constructs to communicate each variables importance to build and sustain collective efficacy in a professional learning community. Teachers who are led by “transformational” leaders who are “supportive” of the PLC process through effective “modeling” practices possess higher levels of collective efficacy when they begin to build both individual and grade-level team clarity of the PLC process; a process that includes analyzing student data, writing collective SMART goals, working collectively together on grade-level actions to implement and monitor SMART goals, and, by keeping a continual focus on student achievement results.

Future Research Recommendations

The results of this study illuminate future research possibilities due to the customary restraints typically found in most research studies where because of the necessary laser focus of individual research plans, data and/or research processes are often revealed, therefore providing implications for future research. One recommendation would be to conduct the study in other school districts that serve a similar demographic population using the framework developed as a result of this study. Using the framework, districts, such as the one researched for this study that have already met their API and AYP benchmarks, may provide researchers with additional data to support or repudiate the results of this study in terms of the causal relationships between collective efficacy and PLCs. When used in other districts and school sites, does the model predict equal differences or similarities regarding the confirmatory relationships between the variables tested in this study? Would similar results be found in districts struggling to meet API and/or AYP benchmarks?

A second area for consideration regarding future research is in the area of collective efficacy building processes at multiple intervals during the PLC process. What measures should be taken prior to the implementation phase of PLC in order to begin with efficacious teachers? Are the measures for efficacy building similar to those used at the implementation phase once PLC has progressed over time? Are their specific elements of collective group efficacy (task analysis or group competence) or individual teacher efficacy (mastery experience, vicarious experience, social persuasion, or affective state) that either enhance or diminish the PLC process?

A third area of consideration is the link between collective goals (a PLC sub-construct) and both task analysis (.443) and group competence (.410) (sub-constructs of collective efficacy). The results of this study confirmed a positive relationship between the sub-constructs found in correlations testing, multiple regression analysis and SEM testing. The SEM presented a stronger predictive relationship between collective goals and task analysis as compared to collective goals and group competence. What practices can continue the predictive strength of collective goals to both task analysis and group competence while at the same time, increasing the independent relationships of collective actions and focus on results to the two collective efficacy sub-constructs of task analysis and group competence?

A fourth consideration for future research is in the area of leadership. This study used the Kouzes and Posner (2002) leadership practices inventory (LPI) survey where through confirming tests, it was determined that transforming the organization, one of the three leadership sub-constructs was a stronger predictive influence on the outcomes of PLCs and collective efficacy. Teachers at high efficacy and high PLC sites, who were

interviewed for this study, communicated several examples of transformational leadership behaviors in their principals while the lower positive PLC schools provided fewer examples. Are there leadership practices that either enhance or diminish the PLC process? In another study with similar demographics, would transforming the organization again be the strongest influence on PLC and collective efficacy or are there leadership practices to create a balance between the three sub-constructs? Would the results of this study be replicated if the five leadership practices of the Kouzes and Posner LPI were used instead of the three used in this study due to factor analysis? Which of the LPI behaviors help support and develop the necessary skills to build and sustain a highly efficacious PLC.

APPENDIX A: DEMOGRAPHICS AND PROFESSIONAL LEARNING COMMUNITY SURVEY QUESTIONS

Directions: Please complete the following items about yourself.

- Please select the choice, which best represents your age range.
 - ☐ 23-28
 - ☐ 29-34
 - ☐ 35-40
 - ☐ 41-46
 - ☐ 47-52
 - ☐ 53-58
 - ☐ 59 or older
- Please indicate your gender.
 - ☐ Male
 - ☐ Female
- Please indicate your ethnicity.
 - ☐ Caucasian (white)
 - ☐ African American
 - ☐ Hispanic
 - ☐ Asian
 - ☐ Native American
 - ☐ Multi-racial
 - ☐ Other: Please specify _____
- Please select the choice, which best represents the number of years you have taught.
 - ☐ 1-5 years
 - ☐ 6-10 years
 - ☐ 11-15 years
 - ☐ 16-20 years
 - ☐ 21-25 years
 - ☐ 26-30 years
 - ☐ 31 years or longer
- Please select the choice, which best represents the number of years you have taught at your current school?

- 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21-25
 - 26-30
 - 31 years or more
- Please indicate your highest educational level completed.
 - Bachelor's Degree
 - Graduate Student
 - Master's Degree
 - Doctorate Student
 - Doctorate Candidate
 - Doctorate Degree
 - Please indicate the school in which you currently work.
 1. Ashley Falls
 2. Carmel Del Mar
 3. Del Mar Heights
 4. Del Mar Hills
 5. Ocean Air
 6. Sage Canyon
 7. Sycamore Ridge
 8. Torrey Hills
 - 8. What grade-level do you currently teach?
 1. K
 2. 1
 3. 2
 4. 3
 5. 4
 6. 5
 7. 6
 8. Other: _____
 - 9. What is the name of your current learning community team?

This section of the survey is designed to determine the degree of professional learning community characteristics demonstrated within your school.

Directions: Please indicate your opinion about each of the statements below by marking one of the five responses from (1) "Not at all" to (5) "A Great Deal".

10. My team works together to clarify the essential outcomes for each unit of instruction using state and local standards and resources as well as student achievement data.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

11. My team works together to establish common pacing for each unit of instruction.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

12. My team works collaboratively to clarify the criteria used to judge the quality of student work.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

13. We practice applying the above-mentioned criteria until we can do so consistently.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

14. My team monitors the learning of each student at least four times each year on essential outcomes through a series of team-developed (common) formative assessments that are aligned with district and state standards.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

15. Students who experience academic difficulty are guaranteed access to a system of interventions that provide more time and support for learning.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

16. Students are required rather than invited to devote extra time and receive additional support until they are successful.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

17. My team members use student achievement results from a variety of assessments to identify strengths and weaknesses in our individual and collective practice.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

18. My team members use the above mentioned student achievement results to improve our effectiveness in helping all students learn.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

19. My team has adopted specific and explicit norms and protocols that guide us in working together.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

20. My team works interdependently to establish and achieve SMART goals (SMART Goals are Strategic, Measurable, Attainable, Results-Oriented, and Time-Bound).

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

21. Improved results, achievement of goals, and the work of teams are the basis for a culture of celebration within classrooms and the school.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

22. The shared vision and values among my school's staff influence policies, procedures, daily practices, and day-to-day decisions of all staff members.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

APPENDIX B: COLLECTIVE EFFICACY SURVEY (N=12)

This section of the survey is designed to help gain a better understanding of the levels of collective efficacy within your professional learning community team. Collective efficacy is the teachers' shared beliefs that the team as a whole has the ability to perform in such a way as to ensure a positive effect on student outcomes/achievement. Please respond to each of the statements below by considering the combination of the team's current ability, resources, and opportunities to do each of the following in your present professional learning community team.

Directions: Please indicate your opinion about each of the statements below by marking one of the five responses from (1) "Not at all" to (5) "A Great Deal".

23. Teachers in this school work together to meet the needs of challenging students.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

24. Teachers here are confident they will be able to motivate their students.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

25. Teachers in this school believe it is their responsibility to help every child master the grade-level curriculum.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

26. If a child doesn't want to learn, teachers here give up.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit

5. A Great Deal

27. Some teachers at my site lack the skills needed to ensure every child can master the grade-level curriculum.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

28. If these students come to school unprepared to learn, teachers have the skills to close the learning gap.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

29. Teachers provide so many engaging lessons that the students here are bound to learn.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

30. Students here just aren't motivated to learn.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

31. The structures, practices, and procedures of this school are designed to help ensure all students learn.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

32. Learning is more difficult at this school because students are worried about their safety.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

33. Teachers at this school have strategies for supporting students who face home life difficulties.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

34. Teachers in this school help each other incorporate critical thinking opportunities for their students when planning lessons.

1. Not at all
2. Very Little
3. Some Degree
4. Quite A Bit
5. A Great Deal

APPENDIX C: LEADERSHIP PRACTICES INVENTORY (LPI) FOR OBSERVERS AND PLC LEADERSHIP QUESTIONS (N=36)

Rating Scale:

- 1 = Not at all
- 2 = Very Little
- 3 = Some Degree
- 4 = Quite A Bit
- 5 = A Great Deal

The questions were modified from “I” to “My Principal”

Questions:

Leadership Practices Inventory Questions	Rating
1. My principal sets a personal example of what he/she expects of others	
2. My principal talks about future trends that will influence how our work gets done	
3. My principal seeks out challenging opportunities that test his/her own skills and abilities	
4. My principal develops cooperative relationships among the people he/she works with	
5. My principal praises people for a job well done	
6. My principal spends time and energy making sure that the people he/she works with adhere to the agreed upon principles and standards	
7. My principal describes a compelling image of what our future could be like	
8. My principal challenges people to try out new and innovative ways to do our work	
9. My principal actively listens to diverse points of view	

10. My principal makes it a point to let people know about his/her confidence in their abilities	
11. My principal follows through on promises and commitments he/she makes	
12. My principal appeals to others to share an exciting dream of the future	
13. My principal searches outside the formal boundaries of the organization for innovative ways to improve what we do	
14. My principal treats others with dignity and respect	
15. My principal makes sure that people are creatively rewarded for their contributions to the success of our projects	
16. My principal asks for feedback on how his/her actions affect other people's performance	
17. My principal shows others how their long-term interests can be realized by enlisting a common vision	
18. My principal asks "What can we learn?" when things don't go as expected	
19. My principal supports the decisions that people make on their own	
20. My principal publicly recognizes people who exemplify commitment to shared values	
21. My principal builds consensus around a common set of values for running an organization	
22. My principal paints the "big picture" of what we aspire to accomplish	
23. My principal makes certain that we set achievable goals, make concrete plans, and establish measurable milestones for the projects and programs that we work on	

24. My principal gives people a great deal of freedom and choice in deciding how to do their work	
25. My principal finds ways to celebrate accomplishments	
26. My principal is clear about his/her philosophy of leadership	
27. My principal speaks with a genuine concern about the higher meaning and purpose of our work	
28. My principal experiments and takes risks, even when there is a chance of failure	
29. My principal ensures that people grow in their jobs by learning new skills and developing themselves	
30. My principal gives the members of the team lots of appreciation and support for their contributions	
31. My principal shares leadership and power with teachers and staff regarding the PLC process.	
32. My principal facilitates the work of the staff regarding the PLC process by asking grade-level teams to identify and pursue specific student achievement goals and then create products focusing on student achievement outcomes as a result of their collaboration.	
33. My principal has the ability to collaboratively participate in the PLC process without dominating.	
34. My principal provides teachers with PLC resources such as critical questions to guide grade-level collaboration efforts, documentation templates, relevant data, and information etc.	
35. My principal effectively gathers and reports student achievement data in ways that are meaningful to teachers.	
36. My principal creates an appropriate context for teacher learning in order to improve the collective knowledge and skills necessary to effectively operate as a PLC by clearly articulating the programs, procedures, beliefs, expectations, and habits for long-term PLC sustainability.	

APPENDIX D: EMAIL INVITATION AND CONSENT TO VOLUNTARILY
PARTICIPATE IN THE STUDY



Hello!

As part of a joint- doctoral program with UCSD and CSUSM, William A. Porter III is conducting a study to explore the role leadership plays in the possible relationship between professional learning communities, collective efficacy, and student achievement. You have been asked to participate in this study because you are a K-6 classroom teacher working in a professional learning community or you are a site principal leading a professional learning community K-6 school.

Completion of this survey is voluntary and is anonymous. A high rate of return will greatly increase the validity of the study, so I hope you will take 15-20 minutes to complete this online survey. All data collected will remain confidential and under the control of the researcher. No school or individual will be identified in the study.

If you agree to take the survey, please click on the link provided. To maximize study results, I am asking you to answer all of the questions in the survey. Your perspective and voice are important to me.

If you choose not to complete the survey, your participation in the study is over and there is no other alternative to participating in the study.

Benefits from Participation

While there are no direct benefits to you from participating in this study, your responses will make a contribution to the larger educational community. I will be providing your school with a summary of the survey results, which may help to support your school's efforts at continuous improvement. In addition insights gained from this study will add to the limited empirical literature on the relationship between leadership, professional learning communities, teacher efficacy and overall student outcomes. The results of the survey will be published in a dissertation and an electronic copy of the final dissertation may be requested at bporter@dmusd.org.

In this time of tight budgets and as a thank you for completing the survey, I will make a \$2.00 contribution to the DMUSD Education Foundation for every survey returned to me.

Risks from Participation

As with all research, there is some slight risk. While it is unlikely, you may feel some discomfort in answering a specific question. If so you may skip the question. Responses

from study participants will be identified by a number and the data base, which related the study number to a specific subject will be maintained and stored on a password protected computer with results stored on a password protected link on the Survey Monkey website. No names will be used in the study. Only the researcher and his advisor/professor will have access to the data. Access to the website does not allow a person the ability to track participants, thus minimizing any risk of loss of confidentiality. Furthermore, throughout this study the district, its schools and participants will not be identified by name.

The University of California, San Diego (IRB), has approved this study. If you have questions about the study, you may direct those to the researcher, William A. Porter III at 619.818.5456. You may also contact the researcher's advisor/professor, Dr. Janet Chrispeels at (858) 822-4253 or by email at jchrispeels@ucsd.org. Questions about your rights as a research participant should be directed to the IRB at 858-455-5050.

If you agree to give your consent and participate in the survey, please click the "Next" button to give your consent and access the survey. Please click on the "Next" to begin the survey. If you choose not to participate in the survey, please simply exit out of the website.

NEXT

APPENDIX E: INTERVIEW PARTICIPANT CONSENT FORM JOINT DOCTORAL
PROGRAM IN EDUCATIONAL LEADERSHIP UCSD/CSUSM

Project Title: The Role of Leadership in Building and Sustaining Collective Efficacy in a Professional Learning Community.

Purpose: This study seeks to explore the possible leadership relationship between collective efficacy and professional learning communities.

Procedures: You are being invited to participate in a one-on-one interview that will last approximately one hour. I will be asking your permission to tape record the interview. There will be questions around four major areas about professional learning communities. There are no right or wrong answers and your candid responses are appreciated. You may decline to answer any of the questions and you may stop the tape recording at any time.

Benefits: Although there are no direct benefits to you for participating in this study, your school will be presented with composite data that could provide helpful insights to move your PLC process forward. The information will be informative for the larger educational community, contributing to empirical research on PLCs. A donation of \$2 per completed survey will be given to the Del Mar Education Foundation.

Confidentiality: All information collected in this study is confidential. Responses will be anonymous and kept confidential through the use of pseudonyms for participants and anyone mentioned by a participant. All audiotape recordings and transcripts will be entered into a computer file and both hard and digital (on CD only) copies will be stored in a locked safe. This data will be maintained on a single password protected computer and an additional password will be required to open files. The researcher is the only individual with access to this safe, computer, and files.

Questions: By signing below you indicate that the researcher has explained this research study, answered your questions, and that you voluntarily grant your consent, which can be withdrawal at any time, for participation in this study. If you have any questions about this research, I will be happy to answer them now. If you have any questions in the future, please contact me at 619-818-5456 or billp38@yahoo.com. Questions about the study can also be addressed to my advisor, Dr. Janet Chrispeels, at 858-822-4253 or jchrispeels@ucsd.edu. If you have any questions about your rights as a research participant, you may also contact the Institutional Review Board at the University of California, San Diego Human Research Protections Program at (858) 455-5050.

Participant's Name

Date

APPENDIX F: PRINCIPAL AND GRADE-LEVEL TEAM INTERVIEW PROTOCOL

Researcher will introduce self and make sure all consent forms are signed.

Professional Learning Communities

School Name _____ Date _____

Thank you for agreeing to participate in this research project to explore professional learning communities as defined by DuFour and Eaker (1998) in your school. The purpose of this interview is to allow you to provide feedback on your thoughts about the professional learning community model used at your site. There are no right or wrong answers to any of these questions. The interview is to gain your perceptions and feedback, not to evaluate anything that you say. In fact, your identity will be kept confidential as the results are analyzed.

I find it helpful to audiotape our conversation. Taping ensures that I have an accurate record of your responses. Are you okay with me taping our conversation? The tape recording will not reveal your name and will only be reviewed by the researcher and the University committee members. These people are not related to any of your employers, nor will they recognize your voice. All tapes will be kept in a locked safe with no recognizable identification. Again, I want to stress that there is no right or wrong response, and in fact, the depth of your answers will be most informative as I analyze the data.

Are there any questions so far?

We have about 4 areas for discussion. I may need to seek clarification from you prior to proceeding to the next question. I may also need to go back later in the discussion to clarify something you might have said earlier.

Are you ready to begin?

Question 1: I am really interested in learning about how your PLC works and the types of work you do together during your meetings.

- What is the team you consider to be your primary PLC and how long have you been a member of that team?
- If I was to drop in on a typical meeting, can you describe in some detail what I would see?
 - Probe if necessary for roles and leadership on the team
 - Probe for meeting structure

- Probe for topics discussed (examining test data, student work and how they guide instruction)
 - Probe for joint work (lesson planning, developing common assessments)
- What does the team do in rethinking lessons when a student is performing below expectations? Performing above expectations? (or is this an individual teacher's responsibility).
- In what ways has the PLC contributed to your professional growth?
- Can you describe a time since the beginning of this year, when you felt the PLC worked together exceptionally well? What did you do? How did it benefit you as a teacher and your students? Why was it such a positive experience?

Question 2: Your district has been engaged with PLCs for several years now.

- Can you tell me how the PLC has evolved or changed during that time?
- In what ways do you feel the PLC's work is improving student outcomes?
- What factors seem to be sustaining the PLC work in your school?
- What might be getting in the way of sustaining PLCs in your school and district?

Question 3: Working with diverse students is a challenge (efficacy)

- a. Can you share a time in which your PLC worked together to ensure that all students were learning at high levels?
- b. What are some of the challenges you face in helping all students meet standards? How has your PLC supported you in meeting these challenges?
- c. What work does the PLC need to do if all students are to meet NCLB proficiency standards?
- d. What opportunities have you had to learn how to be an effective PLC?

Question 4: The next topic I would like to explore is leadership.

- How is leadership shared in your PLC? Does each leader of the PLC team meet together? Please explain.
- Share a time when teachers within your team felt empowered in having the ability to implement their own decisions. How is administration involved when you make such a decision?

- Share an example of teachers overall feeling empowered and accepting shared responsibility for ensuring all students will meet grade level standards. How has the principal supported you in these efforts?
- What is your principal's vision for PLCs at this school? Is this vision shared by the staff?
- What role does your principal play in the collaborative process?
- Tell me about a time when you felt well supported by your principal. (What did he or she do? How did it help you? Your team?)
- In what ways does the principal help PLCs to be at their best? Are their practices that diminish the work of the PLC?
- How does the principal support teacher and PLC team learning?
- If your principal wanted to ensure that you had more positive experiences during collaboration time, what support structure would benefit making this happen?

Question 5: Closure

- If you had three wishes for making your PLCs more effective, what would they be?
- Do you have any final comments or anything else you want to add?

APPENDIX G: APPROVAL LETTER FROM THE OCEAN VIEW UNION SCHOOL
DISTRICT SUPERINTENDENT

August 3, 2009

To Whom It May Concern:

I am granting permission to Mr. William A. Porter III to conduct a case study on the role of leadership in building and sustaining collective efficacy in a professional learning community. Mr. William A. Porter III can collect voluntary survey data, conduct voluntary interviews, and collect any documents already accessible to the general public relating to his study. Mr. William A. Porter III may utilize any data collected for the purposes of completing requirements for a record of study towards an Ed.D. from the University of California, San Diego and California State University, San Marcos.

Sincerely,

APPENDIX H: AUDIOTAPE CONSENT FORM

UNIVERSITY OF CALIFORNIA, SAN DIEGO
AUDIOTAPE RECORDING RELEASE CONSENT FORM

As part of this project, a digital audiotape recording will be made of you during your participation in this one-on-one interview. This is completely voluntary and up to you. In any use of the audiotapes, your name will not be identified and your identity will be kept completely anonymous. You may request to stop the taping at any time or to erase any portion of your taped recording. Please read and understand each statement below. Please indicate below the uses of these audiotape recordings to which you are willing to consent by initialing the statements.

_____ 1. The audiotapes can be studied by the research team for use in the research
Initial project.

_____ 2. The audiotapes can be used for scientific publications.
Initial

_____ 3. The audiotapes can be reviewed at meetings of scientists interested in the
Initial study of education and educational practice.

As a reminder, you have the right to request that the tape be stopped or erased during the recording.

Signature

Date

Witness

Date

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