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Examining the relationship between teacher leadership perception and professional learning community engagement

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EXAMINING THE RELATIONSHIP BETWEEN TEACHER LEADERSHIP PERCEPTION AND PROFESSIONAL LEARNING COMMUNITY ENGAGEMENT

by
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Dedications

First and foremost, I dedicate this work to my parents, Janet and Adrian Godlesky. I recognized long after their life the sacrifices they made to provide the privileges I enjoyed. They instilled and fostered my value in education, and continually reinforced that a job worth doing, was a job worth doing well. Their belief in my ability as a student never wavered, and that belief helped me through this journey. My Mom modeled what strength and tenacity truly means, and my Dad's mantra of "Can't means won't," still deeply impacts my efforts. I like to believe that they both know their influence on this accomplishment. Without their unconditional love and support, I would not be the person I am today – so this is for you – Mom and Dad.

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Abstract

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This sequential-explanatory mixed methods study examines teachers' perceptions of their leadership practice through the lens of professional learning community (PLC) engagement. Through the two phases, the relationship is explored quantitatively and qualitatively using a survey and interviews, respectively. Teacher leadership perceptions were analyzed through comments teachers made about their practice through PLC engagement. Additionally, teachers' perspectives of their leadership and influencing factors were also explored through this research study. Findings from this research shed light on the differing ways teachers describe their current leadership practice, and provide insight into further development for teacher leaders.

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Chapter 1

Introduction

In 2001, Congress in the United States passed the *No Child Left Behind Act (NCLB)* as an update to the *Elementary and Secondary Education Act (ESEA)* of 1965. The goals of this authorization for federal education funding aimed at lessening the achievement gap included that students: (a) reach a level of proficiency or better in both English Language Arts and Math by the 2013-2014 school year; (b) be taught by highly qualified teachers in safe, drug-free, and learning-conducive schools; (c) attain a high school diploma; and (d) become proficient in English if they are limited English proficiency (LEP) designees (Mathis & Trujillo, 2016). Despite these stated ideals and millions of federal dollars pushed into qualifying school districts, students failed to thrive as intended and suggested. Subsequently, in December, 2015 President Obama signed the *Every Student Succeeds Act (ESSA),* which reauthorized ESEA yet again (Brown, Boser, Sargrad, & Marchitello, 2016). However, despite revisions in this latest version, the implications have strayed further away from the original intent of the ESEA. Initially, ESEA was a civil rights initiative to increase services and protection to the most underserved students in the country through federal funding, new regulations, and spending options for allotted federal funds (Mathis & Trujillo, 2016). While the federal guidelines have changed, and accountability and monitoring responsibilities have moved to the states, the structures and reforms of ESSA are like those imposed by NCLB (Mathis & Trujillo, 2016). Some changes have been made, but ESSA is still a test-based system that relies most heavily on state testing results to assess student achievement as a

measure to determine which schools are in need of improvement (Mathis & Trujillo, 2016).

Because the basis of ESSA mirrors NCLB, getting dramatically different results through ultimately the same framework is unlikely. For ESSA to achieve the results that the original act imagined, then the practices and norms that currently exist must change (Mathis & Trujillo, 2016). The federal government should invest in schools without the strict monitoring of singular outputs. Instead, lawmakers should consider a method of accountability that includes multiple measures and provides districts the opportunity for self-assessment (Mathis & Trujillo, 2016). While not every school receives large amounts of federal funding, all schools with high poverty rates as defined by the federal government receive significant funding. Yet, the control of how it is spent and how success is measured does not typically provide teachers, the experts of teaching, autonomy over the practices or the resources. While the policy was initially placed to support and protect students in the United States who need education and resources the most, their education tends to be more closely controlled by policy than their more affluent peers. Though improving schools has been at the forefront of educational policy for the last 50 years, raising standards, dictating specific outcomes of achievement, and including state test scores in the performance rating of school personnel do little to accomplish this goal (Katzenmeyer & Moller, 2009; Vescio, Ross, & Adams, 2008). Districts and teachers are not always placed within a framework where they can feel a sense of autonomy to make decisions about materials, content, delivery, or instruction as it relates to the students they teach. For improved equity in public schools, lawmakers must change this framework to improve instruction and increase organizational capacity.

Rather than creating policy that includes more high-stakes testing, the federal government needs to invest in teachers and their learning and development; this is a better approach to improving student outcomes (Darling-Hammond, 2006; Frost, 2012; Katzenmeyer & Moller, 2009; Vescio et al., 2008). While some previous policies contained noble goals, they were not attainable within the hierarchal organizations still present in many of today's schools. It is not realistic for teachers to dramatically improve practice to meet the needs of all learners without having the structures in place to do so. For teacher quality and student outcomes to improve, teachers need learning opportunities that are embedded within their practice, as opposed to infrequent experiences and obligations (DuFour & DuFour, 2013). A leadership structure that promotes and uses the talents within the organization could provide a structure for positive change (Frost, 2012; Muijs & Harris, 2006).

In 2015, the Council of Chief State School Officers noted the extreme shifts in educational leadership in our present climate (Kelley & Dikkers, 2016). In an unprecedented way, policymakers, parents, and other stakeholders in public education raised their expectations of school leaders to include responsibility for the overall well-being of each student as well as the preparation of all students to be college- and career-ready (Kelley & Dikkers, 2016). In the 2015 Model Standards for Educational Leaders, the Council of Chief State School Officers noted the extreme pressure put upon educational leaders because of these increased expectations and suggested a distributed leadership approach implemented across the organization (Kelley & Dikkers, 2016). As the demands by stakeholders grow, school administrators must develop effective ways to build their schools' organizational capacity by building the capacity of their teachers. To

accomplish all that is expected of schools today, this shift is more of a necessity than an option.

In order to garner the most benefit for students everywhere, more than just a change in leadership structure is needed. Rather, a shift in the culture of the teaching profession is necessary in which teachers are called upon as leaders and given the opportunity to function as such. This shift must accompany opportunities for teachers to engage in collaborative learning to make instructional improvements that positively affect student achievement. Because of the continuous changes of our global society that impact the teaching profession, teachers now more than ever must be lifelong learners (Grosemans, Verclairen, Dochy, & Kyndt, 2015). Technology changes and calls for skills and preparations for employment for positions that did not previously exist; teachers and schools must adapt to these changes if the intent is to prepare students for success.

Problem Statement

The organizational systems currently in place in many public schools in New Jersey, like in other states, were not designed to address the diverse needs of today's students (Katzenmeyer & Moller, 2009). Additionally, teaching and learning has become more complex, and the educational climate is one of increasing accountability for student success (Vescio et al., 2008). In governance, many different levels of leadership influence local decision-making, and often the individual closest to actual learning (the teacher) is left out of initiative planning. With many schools in New Jersey still functioning as traditional organizations versus learning organizations, it is logical to assume that schools are not structurally able to change in their present state, and thereby,

unable to make the drastic improvements necessary for student success. School leaders and teachers, feeling unprecedented pressure to produce results, are stuck in school systems that seemingly cannot grow to meet the demanding needs of 21st century learners.

The teachers' sense of pressure could add to a dilemma that continues to plague education. Teacher retention is a concern at both state and national levels. According to the National Center for Education Statistics (2014), 15.7% of public school teachers left the profession or moved to another position in education after the 2012-2013 school year. This staggering statistic is not new, as it has remained relatively constant for the past 15 years. In a survey of former teachers, when asked to rate their current position in comparison to their departed position, they cited that opportunities for learning from colleagues, social relationships with colleagues, recognition, influence over workplace practices, autonomy over one's own work, and a sense of personal accomplishment were higher in their current position (Goldring, Taie, & Riddles, 2014). The findings suggested potential gaps between the roles and responsibilities of teachers that leaders and policymakers could address to potentially realize a shift in teacher retention. For example, changes could be made so that teachers may feel more empowered, supported, celebrated, and engaged in continuous learning.

Current research findings imply that pre-service teachers have goals that extend beyond traditional teacher roles. Pre-service teachers want to teach, but also aspire to serve in leadership roles (Reeves & Lowenhaupt, 2016). It is possible that a lack of opportunity for school leadership roles might be a contributing factor to high teacher turnover rates, and thus leadership development to create a work structure that includes

both classroom and leadership opportunities is crucial for the retention of the newest generation of teachers (Reeves & Lowenhaupt, 2016). This type of opportunity would support teachers' self-perception of their leadership abilities.

Lastly, leadership is included within the components of some of the currently approved instruments used to evaluate public school teachers in New Jersey. For instance, the Framework for Teaching Evaluation Instrument (Danielson, 2014) includes a component under Professional Responsibilities that "proficient" teachers must assume leadership among their colleagues. As described in the Framework, teachers can earn a proficient score by leading a culture of professional inquiry, participating in community and district events, and assuming leadership in at least one aspect within the school or district. While including leadership in a teacher evaluation speaks to its value, it does not automatically support teachers in the skills needed to perform as leaders among colleagues (Wenner & Campbell, 2017). If leadership is evaluated by the instrument used to determine teacher effectiveness, then leadership development should be offered and supported. Strong empirical research is needed to increase the knowledge of teacher leadership necessary to build the best frameworks (Wenner & Campbell, 2017).

Without knowing how the perception and reality of leadership changes in organizations, teachers will not have the opportunity to thrive as teacher leaders and increase the capacity of the organizations in which they work. For teacher leadership to prosper and grow, teachers need to view their work as it relates to leadership. Teaching and leadership are perceived, too often, as mutually exclusive as opposed to interwoven within an organization. Organizations need designated leadership development programs

that provide leadership opportunities for teachers without having them leave the classroom to participate.

Traditionally structured organizations have not adapted to support the growing pressures on school employees today. Instead of one-shot programs or initiatives, a whole school culture shift is needed. Providing a structure, support, and space for teachers to serve as leaders in their practice and within the organization is paramount to school improvement. However, despite the vast research on the impact individual initiatives have on student achievement, a gap exists in which both the structures of professional learning and the perception of teacher leadership would be analyzed in tandem.

Purpose

The purpose of this study was to examine the relationship between participation in Professional Learning Communities (PLCs) and teacher perception of their leadership practice in New Jersey public school teachers. Understanding whether a relationship exists between PLC engagement and teacher leadership perception is important information for analyzing organizational growth, student achievement, and the effectiveness of recent policy regarding teacher leader endorsements. Since organizations have become more complex and stakeholder expectations have become demanding in recent years, employing only one leader in any institution is no longer a viable option for organizational success. Senge (1991) said, "Organizations that excel in years to come will be those that understand how to gain the commitment of people at all levels and continually expand their capacity to learn" (p. 7). Additionally, professional learning communities (PLCs) have been acknowledged as a viable tool for teacher

collaboration and reflective practice (DuFour & Eaker, 2013; Fullan, 2007; Vescio et al., 2008). If schools are to function as learning communities, a singular leadership strategy is not enough to support and sustain growth (Harris & Lambert, 2003; Frost, 2012). Change needs to be embraced at the classroom level for implementation to be effective, so changes need to be viewed as valuable and meaningful (Angelle, 2007). Therefore, the role of the teacher is vital in attaining ongoing change efforts for organizational and educational improvement; and, research needs to find ways leaders can build a culture of change within their existing organizations. Teacher leaders have the capacity to lead through increasing teacher collaboration, sharing effective practices, participating in teacher professional development, and differentiating instruction for all students (Curtis, 2013; Muijs & Harris, 2003, 2006; Wenner & Campbell, 2017).

This study focused on determining the relationship between authentic PLC engagement and self-perception of teacher leadership. Additionally, this study determined how teachers describe their leadership practice through the lens of PLC participation.

Significance of the Research

A better understanding of the teacher's perception of leadership within a PLC model could be important for district and school leaders to understand how to better support meaningful and sustainable change. In several districts in California, it was determined that PLCs needed teacher leaders to be implemented effectively (Kingsley, 2012). Since the principal or other central administration member could not facilitate every PLC, some members of the teaching staff needed to be trained on, not simply the concepts of PLCs, but also in leadership (Kingsley, 2012). While the findings imply that

leadership training can support the implementation of PLCs, they do not support the idea that engaging in PLCs alone affects teacher self-perception of leadership. The literature is limited regarding perceptions of teachers about their leadership within a PLC (Fellows, 2005).

This study explored the benefits that teacher leadership may provide to an organization, and analyzed the experiences and perceptions of teachers currently in the field to determine a structure by which teacher leadership may thrive. The development of teacher leadership could provide differentiation for what has historically been a flat profession (Curtis, 2013). For many years, teachers and their roles have been defined by grade level or content area along with number of years in the profession. However, more rigorous teacher evaluation systems used today provide a measure of how well teachers do within a consistent instrument (Curtis, 2013). District administrators who recognize that teachers perform differently can consider ways that teacher leadership may serve students and schools towards organizational improvement (Curtis, 2013). Administrators must discern how to provide leadership opportunities for teachers that have the interest and aptitude for them while also supporting their colleagues' development so that all members of the organization feel responsibility towards its success (Curtis, 2013). As the practice of teacher leadership grows as a potential resource for school improvement, administrators must support leadership growth in today's teachers (Carver, 2016).

This study also provides a research base to affect district responses to policy pertaining to the upcoming teacher leader endorsement currently underway in New Jersey. The Teacher Leader Endorsement Advisory Board (2017) recommended that each local education agency (LEA) engage organizational stakeholders to determine

district roles for endorsed teacher leaders. This research provides districts with information on effective ways to provide and support these roles for organizational growth.

While the idea of teacher leadership has grown, little research has been done to determine how to support and grow this leadership within our schools. For teachers currently in the field, more opportunity and training to become a teacher leader is necessary. This research supports frameworks that grow teacher leadership in schools, and informs leaders and policymakers in a direction that promotes emerging best practice and student achievement.

Lastly, improvement is necessary. District leaders need more information on how to leverage all the potential resources within their organizations. This research supports decision-making on local and potentially state levels, ultimately improving organizational function and student achievement.

Research Questions

While schools that support collaborative learning empower teachers, the question remains as to whether this type of collaboration, in the form of authentic PLCs, is related to or contributes to teachers' perception of their leadership practice. This study attempts to fill the gap in the research to determine if such a relationship exists. The research examined the perceptions and experiences of teachers within a PLC to understand how PLC engagement has impacted perceptions of individual teacher leadership. Additionally, the study probes teacher leadership practice. The following questions guide the research:

Research Question 1 (RQ1): What is the relationship between authentic PLC participation and teacher self-perception of leadership practice in New Jersey public school teachers?

Research Question 2 (RQ2): How has PLC participation influenced New Jersey public school teachers' perception of their leadership capacity?

Research Question 3 (RQ3): How do New Jersey public school teachers describe their leadership capacity through authentic PLC practice?

Conceptual Framework

DuFour (2004) found that "improving schools by developing professional learning communities is currently in vogue. People use this term to describe every imaginable combination of individuals with an interest in education…the term has been used ubiquitously…it is in danger of losing all meaning" (p. 6). The challenge of accurately identifying an authentic PLC is further illuminated by Olivier (2009) when she stated, "The complexity that exists in identifying schools as PLCs offers a challenge for researchers, principals, staff, parents, and other stakeholders. While many principals and faculties conceptualize their schools as organizations operating as learning communities, they rarely meet the operational criteria" (p. 3). For a school to be a functional PLC, it must possess a culture that supports learning by all members of the organization (Olivier, 2009). The PLC concept has been widely adopted and embraced in schools, but a common implementation and understanding of each word in the title of PLC is still lacking (Vescio et al., 2008; Watson, 2014). Since a level of ambiguity and inconsistency in the implementation and understanding of a PLC exists, a conceptual framework clearly identifying authentic PLC practice is necessary to frame this study.

For this study, PLC authenticity is guided by the work of Hord (1997) and DuFour and colleagues (2008).

Hord (1997) conducted extensive research on PLCs and initially identified five specific attributes. Further work by Tobia and Hord (2012) expanded and clarified the initial five characteristics. Schools that nurture PLCs have supportive and shared leadership and, for PLCs to thrive, principals and other school leaders must vacate the idea of power and authority, instead transitioning to active participation in learning and professional development (Hord, 1997; Tobia & Hord, 2012). Collective creativity is an attribute of PLCs in that members from within the organization work together to collaboratively learn (Hord, 1997; Tobia & Hord, 2012). Members of a professional learning community also have a shared vision and values (Tobia & Hord, 2012). Not only should stakeholders be involved in creating the vision, but they should continuously use the vision as a guide to decision-making for the organization and specifically on issues affecting teaching and learning (Tobia & Hord, 2012).

According to Tobia and Hord (2012), supportive relational conditions form a vital characteristic to PLC success and implementation. These conditions determine how staff members meet collaboratively to do the work that is characterized by an authentic PLC. The level of respect that teachers exhibit towards one another within the PLC contributes to interactions and build trust (Tobia & Hord, 2012). Lastly, shared personal practice is an essential attribute to a functioning professional learning community (Tobia & Hord, 2012). This practice represents peers supporting peers through classroom observation and feedback (Tobia & Hord, 2012). With mutual respect and trust in place, colleagues visit other colleagues to see practices in action and provide feedback to the lessons

observed with the goal of both individual and collective improvement (Tobia & Hord, 2012).

While Hord's (1997) original framework included structural conditions within the attribute of supportive conditions, later work divided supportive conditions into two separate attributes: supportive relational conditions and structural conditions. The division of the characteristic indicates the importance of both relational support as well as the resources necessary for PLCs. While Hord's initial framework is still recognized today as a framework of essential attributes of a PLC, her recent work has further defined and clarified components of the original framework. DuFour and colleagues (2008) defined attributes of a PLC which mirrored and extended Hord's original work.

While Hord (1997) initially identified five characteristics of PLCs, DuFour and colleagues (2008) identified six characteristics of PLCs. First, a school functioning as a PLC has a shared mission, vision, and values that articulate the beliefs of all members of the organization and serve as guiding principles for the work the staff hopes to accomplish. Second, PLCs engage in collective inquiry that questions the current state, seeks out new and improved pedagogical approaches, implements them, and then assesses the implementation (DuFour et al., 2008). Third, PLCs work in collaborative teams with a focus on learning (DuFour et al., 2008). Through this process, staff members engage in collective inquiry which supports the notion of a continuous cycle of improvement (DuFour et al., 2008). Fourth, a characteristic essential to a PLC is an action and experimentation orientation (DuFour et al., 2008). As a team, members are working on actions and assessing those actions, which includes risk-taking to find avenues of improvement. Fifth, members of a PLC view innovation and experimentation

of new instructional strategies as a daily endeavor versus a singular event. Sixth, an emphasis on results as a necessary characteristic of professional learning communities (DuFour et al., 2008). While innovative initiatives can be highly effective, ongoing assessment garners tangible results. Without results, an initiative cannot be deemed effective, and the work of the PLC cannot be measured. Pulling on these works, authentic PLCs for the purposes of this study were described as having the following components:

- shared and supportive leadership
- shared values and mission
- collective learning and application of learning
- shared practice
- supportive conditions, and
- assessment through results.

Distributive Leadership

It is important to note that successful PLC practice and teacher leadership integrate with the theory of distributed leadership. In effect, the role of the principal or chief school leader is not to be overlooked when considering both teacher leadership capacity and PLCs. The antiquated traditional hierarchy in schools in which the principal is regarded as the sole authority and power figure does not support an organization that empowers staff or the idea that all members of the school community are learners and leaders. The model where one person fulfills the role of instructional leader for an entire school is no longer feasible without the help and participation of other educators

(Lambert, 2002). Researchers and practitioners have shifted their view of leadership as a collective effort (Angelle, 2010).

Over the past two decades, the traditional school leadership model of one or two people having sole power has shifted towards a distributed leadership model (Angelle, 2010; Nguni, Sleegers, & Denessen, 2006). Distributed leadership theory differs from theories on leadership from an individual perspective and reflects a shift to analyzing the construct as interactions and relationships among multiple people (Angelle, 2010). A clear understanding of distributed leadership is necessary for the context of this study, as its practice is integral in teacher leadership.

Although the idea of distributed leadership has become a component of school leadership dialogue, a clear and concise universal understanding of its usage varies (Diamond & Spillane, 2016). One commonly used definition of shared leadership is "the sharing, the spreading, and the distributing of leadership work across individuals and roles across the school organization" (Smylie, Mayrowetz, Murphy, & Seashore-Louis, 2007, p. 470). Harris (2008) posited that leadership is not the act of an individual but fluid and emergent within an organization. A significant amount of recent research on the distributed perspective has concentrated on the creation of a framework for school leadership and management research (Spillane & Diamond, 2001; 2007). This framework is focused upon researching leadership practice as it relates to teaching and learning in schools (Diamond & Spillane, 2016). Through this framework, the welfare and success of all students is addressed as learning opportunities are offered and there is a commitment to engage historically disenfranchised groups by our school systems (Diamond & Spillane, 2016).

A distributed perspective of leadership practice frames its meaning around the interactions among leaders, followers, and the situation with the understanding that leadership can be engaged by any members regardless of their roles (Spillane et al., 2001). The focus on the interactions, as opposed to the responsibilities, of an individual role shapes the idea of distributed leadership (Diamond & Spillane, 2016). One aspect of this framework is the idea that leadership is spread among multiple people and roles. In a large study of 120 school districts in the United States, it was found that generally between three and seven positional leaders carried out leadership activities (Camburn, Rowan, & Taylor, 2003). However, in more recent work, 42 principals in a study in the United States reported that they "co-performed" 47% of their leadership and instructional activities with another member of the organization and, 37% of the time, the individual was a teacher not identified with any formal leadership role (Spillane & Diamond, 2007). This research supports the interdependence that organizational members have upon one another in engaging in leadership activities (Diamond, 2016).

Spillane, Diamond, and Jita (2003) identified three types of distribution within the framework: collaborated, collective, and coordinated. Collaborated distribution occurs when two or more people work simultaneously and together on a specific activity. Collective distribution indicates when two or more people work interdependently, but separately, on a common goal. Lastly, coordinated distribution indicates situations in which interdependent tasks are co-performed in a predetermined order. These three types show how leadership can be spread among multiple stakeholders within one organization in different ways (Diamond & Spillane, 2016).

Through this framework, a distinct link between leadership and instructional practice exists. Instructional systems are needed to support leadership by providing school leadership opportunities for teachers learning new instructional practices (Neumerski, 2014). When using a distributed framework within an organization, teaching and learning is everyone's focus. In a study of 14 elementary schools in the United States, teachers and leaders requested the assistance of an average of three to four other staff members for instructional advice (Hopkins & Spillane, 2014). Throughout the distributive framework, social interaction was paramount, but more knowledge is needed about the characteristics of the people who are interacting and how these characteristics affect interaction (Diamond & Spillane, 2016).

Harris and Spillane (2008) indicated that a distributed perspective of leadership recognizes that many members of an organization contribute to its leadership, and that leadership is not always defined by roles. Through this understanding, vertical organizational charts are being replaced with horizontal ones (Ikeda, Ito, & Sakamoto, 2010). Therefore, the model of leadership is built upon the expertise of individuals and varies based upon the task at hand (Angelle, 2010). The shift in leadership to focus on group goals versus individual ones also requires a change in traditional thinking in which the leadership and tasks are given to people who have the most expertise in the matter at hand (Browne-Ferrigno, 2016; Copland, 2003). The relationship between leadership and school improvement suggests that developing the leadership capacity of people who have roles that require true responsibility results in organizational improvement (Berg, Carver, & Mangin, 2014; Browne-Ferrigno, 2016; Harris & Muijs, 2005). However, Prestine

(1993) identified that principals must be able to share authority, facilitate staff initiatives, and participate without overtaking in order for effective changes to occur.

Some conditions must be present within the organization for distributed leadership to succeed (Cheng & Szeto, 2016; Copland, 2003). A collaborative culture that is based on trust, professional learning, and accountability must exist (Cheng & Szeto, 2016; Copland, 2003). Furthermore, the organization must have aligned goals and agreement on the problems that the organization is facing (Copland, 2003; Harris & Spillane, 2008). Lastly, expertise is necessary to improve teaching and learning for all members of the organization (Angelle, 2010; Copland, 2003).

In this model of leadership theory, the power and authority within the organization are redistributed so that all members of the organization are stakeholders who work together on a shared purpose or goal (Copland, 2003; Harris & Muijs, 2005). Therefore, all members of the school community are working together towards the mission of school improvement and student achievement (Hoerr, 1996; Heck & Hallinger, 2009). The model does not support a delegation of tasks, but a collective effort towards a common goal (Copland, 2003; Watson & Scribner, 2007).

More than two decades ago, Louis and Kruse (1995) contended that school leaders who position themselves among the staff, as opposed to separate or above them, take the roles of facilitator and act as a resource. Leading from the center means forgoing some longstanding leadership behaviors in favor of sharing leadership with other members of the staff (Louis & Kruse, 1995). This historical research is still relevant today because as teacher leadership is developed, school leadership must shift to foster it. Sharing leadership does not devalue the importance of the school leader, but rather

supports the concept that the teachers' work is key to organizational reform. Leading that work in a meaningful and productive manner is very important task (Louis, Kruse, & Raywid, 1996). This historical research is still relevant today because as teacher leadership develops, school leadership must shift to foster it.

Philosophically, although PLCs present a constructivist view of teachers creating their own knowledge, this study reflects a pragmatic worldview in examining a relationship between complex ideas. Pragmatism as a worldview derives from actions and situations (Creswell, 2014). This lens is appropriate because pragmatism uses pluralistic measures to derive answers to research questions. Since pragmatism is not committed to any one system, it provides the needed flexibility to draw equally upon both quantitative and qualitative data. Since using either approach singularly did not provide a deep enough investigation for this study, multiple approaches were used.

Methodology

The research design for this study was a mixed methods sequential-explanatory design. With this design, two strands of research were conducted chronologically (Teddlie & Tashakkori, 2009). Conclusions were deduced from both phases of the research, while qualitative findings deepened the findings of the quantitative phase of the study (Teddlie & Tashakkori, 2009). This design suited a single researcher in that it provided a clear framework to keep the strands of research exclusive to one another that tend to unfold predictably (Teddlie & Tashakkori, 2009).

Collecting both quantitative and qualitative data provided the best opportunity to address the research questions in which the qualitative strand might deepen the understanding of the quantitative results. The dual approach allowed for gathering

perspectives about individual teacher leadership. The methods used were prioritized. Since the study sought to determine whether a relationship existed between authentic PLC engagement and perception of teacher leadership, priority was given to the quantitative strand of the research. Since the methods were prioritized, the analyses were initially conducted independently of one another (Creswell & Plano Clark, 2011).

Because this research was based on the premise of authentic PLC engagement, participant selection used purposeful sampling for the quantitative strand of inquiry. Participants were selected because of their likelihood to provide meaningful input about the research topic (Maxwell & Loomis, 2003); participants who engaged in PLCs would be likely to provide the data necessary to answer the posed research questions. Furthermore, homogeneous case sampling was used for the second qualitative research strand to select interview teams of members who indicated a perception of authentic PLC engagement. This type of sampling was appropriate when the goal was to gather opinions or perceptions from similar people in areas that were measured (Teddlie & Tashakkori, 2009).

Data was gathered through a survey and semi-structured team interviews with participants who volunteered from the survey. The initial online survey, entitled PLC Engagement and Teacher Leadership, was distributed via email and contained 24 closed-ended Likert scale questions. The survey contained questions that asked the participant to respond to self-perceptions of their PLC engagement and teacher leadership experiences. The survey items allowed the researcher to determine participants' engagement in PLCs based on PLC characteristics as depicted by Hord (1997) and DuFour and colleagues (2008). Survey items designed to determine perception of teacher

leadership were created from the functions of the seven domains of teacher leadership within the Teacher Leader Model Standards (2011). Results were analyzed and the researcher looked for a correlational relationship between PLC practice and perceptions of leadership.

The second phase of research included semi-structured team interviews. The teams were comprised of two to seven participants and questions were designed from the quantitative findings and research questions. The questions were designed to be open-ended to provide space for the participants to share insights and examples from their practice in the interview protocol. All interviews were audio-recorded, transcribed, and then coded for themes. Integration of the data occurred when the researcher analyzed all data sets and found themes present within both strands of inquiry. This technique provided the researcher the opportunity to identify key themes in each strand of inquiry, and select specific ones to describe across each component (O'Cathain, Murphy, & Nicholl, 2010).

Limitations

One limitation that a researcher can experience within a mixed methods design is the need for expertise in both qualitative and quantitative analysis. Since the study required both skillsets, the researcher must be able to analyze data from both quantitative and qualitative sets.

Another limitation could be accessing a population to study. While several public school districts in New Jersey claim to have high functioning PLCs, research collection or teacher perception may not reflect authentic practice. While PLCs are required

practice and the use of the term PLC is commonplace in New Jersey public schools, authentic engagement is far less practiced. Therefore, this could limit the data collected.

Additionally, researcher bias through assumptions is a limitation to this study. The assumption exists that teachers who are willing to dedicate time to a study may already possess a drive to further the field, which could be characteristic of inherent leadership. The assumption that teachers do not consider themselves as leaders, despite individual characteristics that may contradict their claims, is an assumption of the researcher. The assumption that teacher leadership is solely based on formal positions is another assumption that could limit this research study.

Delimitations

To limit bias and researcher assumptions, team interviews as opposed to individual interviews provides a framework in which multiple voices can be heard. While it is possible that one person may initiate the group to participate, on an assembled team, all members have a chance to share their perceptions. Additionally, the research design attempted to minimize bias through data triangulation. Using methodological triangulation, more than one method is used to gather data about the same phenomenon (Mitchell, 1986). The use of a survey and interviews not only validated the data that was collected, but also provided a framework for deepening the understanding of the phenomenon.

Since the assumption that teachers do not consider themselves as leaders was present, the methodology of group interviews helps to alleviate bias as the group may see leadership in their colleagues even when they may not necessarily view it in themselves.

This provides the setting in which participants may describe leadership in others, even if they do not describe it about themselves.

Definition of Terms

To clarify language and a common understanding throughout this research work, the following definitions are provided:

- Authentic Professional Learning Community (PLC): educators committed to working collaboratively in ongoing processes of collective inquiry and action research to improve student achievement (DuFour, DuFour, & Eaker, 2008);
- Teacher Leadership: leadership structure that provides teachers the opportunity to extend their leadership within and beyond the classroom in a way that influences others toward improved pedagogical practices (Katzenmeyer & Moller, 2009);
- Teacher Empowerment: Encouraging and providing teachers with opportunities to participate in school decision-making as well as providing autonomy over practice (Short, 1994);
- Collaboration: practices that "open" teacher practice by encouraging sharing, reflecting, and risk-taking to work towards a common goal;
- Distributed Leadership: a leadership perspective in which work and decision-making is shared among leaders, followers, and the organizational situation;
- Teacher Authority: teachers' ability to make decisions that impact their classrooms, learning communities, and school governance;
- Teacher Inquiry: a method used to critically examine and question student work and classroom practice (Rinke & Stebick, 2013);

- Reflective Dialogue: collaborative conversations that staff members have about students, teaching, and learning that revolve around problems and solutions relating to classroom practice (Louis & Kruse, 1995);
- Learning Organization: an organization that facilitates learning for all members to enable a cycle of continuous improvement and transformation (Senge, 2006).

Chapter 2

Literature Review

Improving student achievement has been a national goal for the past several decades, and public education has been widely criticized for its inability to show consistent, positive results. Despite the goal of closing the achievement gap, progress is minimal at best. The state of New Jersey has adopted more rigorous standards and assessments to put all students on the path to be career- and college-ready. Despite these changes, the factory model of the early 20th century remains the prevailing structure in many American schools (DuFour & Eaker, 1998). The hierarchy of decision-making begins with federal and state government and flows down to local boards of education, principals and other administrators, and finally to teachers (DuFour & Eaker, 1998).

Teachers are at the lowest rung of the decision-making ladder in most traditional districts and schools, but research suggests that of any school-based factors, teachers have the largest influence on student achievement (Rivkin, Hanushek, & Kain, 2005). In the past two decades, researchers called for a change in the professional development of teachers that better addressed the individual needs of teachers and their students instead of accepting a one size fits all delivery method of pedagogical improvement and instructional strategies (Hord, 1997). As a result, researchers have supported the PLC framework to differentiated professional development (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005; Hord, 2015). This type of teacher learning encourages professionals to work collaboratively and engage in dialogue about data, teaching, and learning (Vernon-Dotson & Floyd, 2012). Schools that implement and support collaborative learning empower teachers to use data to assess their practice for improvement to best meet the

needs of their students (Vernon-Dotson & Floyd, 2012). However, it is not clear if empowerment through collaborative professional learning affects teachers' perception of their leadership practice.

To best understand whether a relationship exists between an authentic PLC and teachers' perception of their leadership, a deep understanding of authentic PLC practice and teacher leadership is essential. Furthermore, understanding the need for PLC implementation to support teacher inquiry is necessary for an understanding of this research and its intent. Understanding teacher leadership and leadership implications to support teacher leadership are needed to understand if a connection between them is to be explored. This literature review delves into the different areas that intersect within the study.

Historical Context of Learning Organizations

While PLCs have emerged within our schools, understanding the historical development of learning organizations provides context. In 1987, Senge, along with a team of researchers from the Massachusetts Institute of Technology (MIT), proposed an organizational culture to support the complex, unstable, and quickly changing world; this organizational culture was one of continuous change and learning, and was dubbed a learning organization (Senge, 2006). Learning organizations are theoretically able to adapt to rapid shifts and changes in the environment because of their capability to create and share knowledge (Senge, 2006). Organizations that thrive are those that understand the importance of and ability to garner commitment from staff at all levels, and have a structure that continually promotes capacity through learning (Senge, 1991). Senge's vision of a learning organization is built around five fundamental disciplines: systems

thinking, personal mastery, mental models, shared vision, and team learning (Senge, 2006).

Systems thinking is a conceptual framework within this model that uses patterns and interrelationships from a broader worldview perspective to better reinforce prior decisions or make new decisions about change (Senge, 2006). The complexity of organizations can be overwhelming, and as the world becomes more complex, systems thinking can ease the feeling of helplessness by finding the patterns within the whole (Senge, 1991). Personal mastery is a cornerstone to the learning organization as the discipline of continually clarifying and deepening personal vision, focusing energy, developing patience, and seeing reality objectively (Senge, 2006, p. 7). This dimension involves personal vision, creative tension, and commitment to truth (Senge, 1991). While purpose and goals are important components to vision, having a clear, defined picture of the future are also needed (Senge, 1991). However, once vision is realized, distance between the current situation and the desired one may cause conflict (Senge, 1991). A learning organization uses this tension to generate momentum and energy for positive change, as opposed to giving in to the status quo to ease the existing tension (Senge, 1991).

Mental models are deeply embedded assumptions about the organization or world that influence a person's actions (Senge, 2006). Deep-rooted beliefs can influence positive change if the change does not align to the person's mental model of the organization. Since mental models can impede progress, they must be unearthed, tested, and improved within a learning organization (Senge, 1991).

Another important dimension of a learning organization is shared vision (Senge, 2006). Leaders must garner and engage others in the picture of the future, and build staff commitment towards it, so that individuals will excel to accomplish goals because of intrinsic motivation as opposed to hierarchal mandates (Senge, 2006). A shared vision is vital to a learning organization because it fosters new ways of thinking, risk-taking, and a commitment to long-term success (Senge, 1991).

Lastly, learning organizations need to engage in team learning to utilize the skills and strengths of each member so that positive outcomes can be realized (Senge, 1991). Effective team learning relies on dialogue and discussion skills so that participants do not look to solely have others agree with their point of view, but rather explore complex issues from multiple viewpoints (Senge, 1991). While Senge does not specifically mention PLCs within the five dimensions of learning organizations, his findings parallel the components of effective PLCs.

Development of Professional Learning Communities (PLCs)

The professional community of learners is part of an organization of teachers and administrators that seek to collaborate about learning in a continuous quest for improvement (Hord, 1997). Rosenholtz (1989) first connected factors relating to the workforce to teacher quality when she posited that teachers who felt supported in their practice and continuous learning were more effective. Fullan (1993) furthered this idea in stating that the teacher work environment should consist of an embedded design of daily learning and improvement activities. McLaughlin and Talbert (1993) and Darling-Hammond (1996) confirmed these ideas by suggesting that teachers engaging in collaborative inquiry and shared decision-making realize an improvement in practice.

This type of collaborative work was coined reflective dialogue by Louis and Kruse (1995). Reflective dialogue happens when staff members engage in conversations about students, teaching, and learning, and begin to talk about problems and causes as well as solutions that relate to classroom practice (Louis & Kruse, 1995). Regular reflective dialogue occurring in a systematic way is a crucial aspect to the emerging work of PLCs.

Overall, the primary focus of the PLC is student learning and achievement (Louis & Kruse, 1995). In this type of professional community, trust is essential, and working towards a common good is as important as personal goals (Hord, 1997). For professional communities to thrive, supportive conditions must exist (Hord, 1997). Supportive conditions include the time allotted and scheduled for meetings, a location to meet, resources, and a framework or understanding of how the cycle of improvement works (Hord, 1997; Louis & Kruse, 1995).

Organizational Need for PLC Implementation

Traditional professional development models are typically presented in a transmission model, as opposed to a transformative one, in which teachers are provided the opportunity to examine methods within their own practice (Guskey & Yoon, 2009). Current literature on professional development supports the idea that a long-term, inquiry-based model for professional learning provides a structure for teachers to engage as learners (Jao & McDougall, 2015). PLCs provide a model in which teachers can direct school improvement derived from a professional development framework, thus engaging individual teachers and groups of teachers by improving instructional practice (Burke, Marx, & Berry, 2011). This model can be enacted through the implementation of PLCs.

Organizations can benefit by implementing PLCs. Studies have shown that PLCs enhance organizations by improving school culture, improving teacher self-efficacy, reducing teacher isolation, and increasing the organization's overall capacity (Capraro et al., 2016; DuFour, DuFour, & Eaker, 2008; Talbert, 2010). Additionally, PLCs can be a powerful tool for improving understanding about teaching and learning (Darling-Hammond, 2006). Through inquiry, PLCs create and maintain the teaching and learning culture of the organization (Cochrane-Smith & Lytle, 2009). Therefore, PLCs are considered an important component for teacher professional development (Vescio et al., 2008). Moreover, PLCs can foster social justice by supporting equity through the understanding and practice that all students can and should achieve (Zeichner, 2009). While the need for PLC implementation is strong and the benefits of such a model exist, a culture of inquiry is essential to authentic implementation.

Culture of Teacher Inquiry

Teacher inquiry is a method used to critically examine and question student work and classroom practice (Rinke & Stebick, 2013). This practice has gained respect and momentum in the field of education (Christenson et al., 2002; Cochrane-Smith & Lytle, 2009). The idea that current teachers should develop a practice of inquiry towards their teaching that includes reflective practice to promote equitable student achievement has been adopted by many teacher education programs (Cochrane-Smith & Lytle, 2009). This practice has important implications to the entire organization because when individual teacher inquiry is embedded within a larger culture of teacher inquiry, a culture of inquiry exists (Rinke & Stebick, 2013).

In this type of inquiry, teachers are in the central role of developing knowledge through their own practice (Rinke & Stebick, 2013). When teachers engage in an organized and intentional study of their individual and collective practices to improve teaching practice and positively impact student achievement, they are engaging in teacher inquiry. Teachers engage in collaboration to analyze and question their practice, and they investigate to further both their individual and the organization's collective learning. Teacher inquiry and PLCs go hand in hand. Organizations that embody teacher inquiry support the implementation of authentic PLCs.

Authentic PLCs

Throughout the literature, the definition and description of what constitutes a PLC are abundant and varied (Cranston, 2009). The term PLC has become more of a universal term as opposed to a specific practice because individuals working in a school have taken to using the term PLC to describe many facets of their work, even though the work may not reflect the common norms of a learning community (Vescio et al., 2008). Because of this, a clear understanding of an authentic PLC is necessary.

Newmann (1996) presented characteristics of PLCs that are still considered valid today. First, PLCs must develop shared values and norms regarding the collective belief about student ability, school priorities, and the roles of parents, teachers, and administrators. Secondly, PLCs must consistently focus on student learning; this shift in thinking about teaching to thinking about learning is crucial to the foundation of a PLC. Additionally, the presence of reflective dialogue about curriculum, teaching, and student development that contributes to learning is a vital characteristic. Through this practice,

PLCs can change the formerly isolated work of teachers into a focus on collaboration (Newmann, 1996).

Because of her extensive research of literature surrounding PLCs, Hord (1997) created a five-dimensional framework of PLCs and defined a PLC as a staff of collaborative learners that have a shared goal of improved student achievement. Hord and Tobia's (2012) later research defined and clarified components of this framework, which include: shared and supportive leadership, shared values and vision, collective creativity and application of learning, shared personal practice, and supportive conditions. Hord (1997) emphasized that if schools focused on growing these dimensions, a school staff could evolve into a PLC. Through thoughtful initiatives and implementation, collaborative learning could bring about systematic change and transform a school into a learning organization. Moreover, Hord (2015) ascertained that an authentic PLC needs certain structural conditions to sustain it. These include: encouraging relational conditions, shared values and vision, intentional collaborative learning, and distributed and supportive leadership (Hord, 2015).

DuFour and Eaker (1998) included another characteristic not present in Hord's framework in adding a sixth dimension of assessment through results. They characterized an authentic PLC by: a shared mission, vision, values, and goals; a collaborative culture; collaborative inquiry; an orientation to action; a commitment to continuous improvement; and a focus on data-driven results (DuFour & Eaker, 1998). Talbert (2010) supported these dimensions by identifying four conditions that must exist within an organization to support PLC sustenance and growth. They are: collaboration norms, a focus on student performance, access to varied and robust resources, and mutual

responsibility towards growth (Talbert, 2010). These essential characteristics were found to be important to PLCs in a large-scale study in England (Bolam et al., 2005).

Table 1

Professional Learning Community Components

Characteristic	Dufour, Dufour, and Eaker (1998)	Hord (1997)
Shared and Supportive Leadership	X	X
Shared Values and Mission	X	X
Collective Learning and Application of Learning	X	X
Shared Practice	X	X
Supportive Conditions	X	X
Assessment through Results	X	

Understanding the critical components of a PLC, and being able to clearly define it to educators, is critical to determining the relationship between authentic PLC engagement and teacher leadership practice. Table 1 indicates the main characteristics used to determine authentic PLCs and the researchers' contributions to the model. The theoretical frameworks of Hord (1997) and DuFour, DuFour, and Eaker (2008) were the cornerstone of determining authentic PLC practice for this study.

Impacts of PLC Implementation

According to Vescio and colleagues (2008), PLCs use and respect the knowledge and experiences of teachers, combined with the research that supports best practices. The research investigated the effects of PLCs on teacher practice, school culture, and student achievement (Vescio et al., 2008). The findings support a change in educator practice as teachers self-reported becoming more student-centered, but little evidence spoke to specific pedagogical shifts (Vescio et al., 2008). However, when it came to school

culture, the researchers found that collaboration increased among teachers and a focus on student learning and on continuous learning strengthened (Vescio et al., 2008). While student achievement growth was noted, its measure was limited since growth was measured only through standardized test results (Lieberman & Miller, 2016).

Through the collaborative learning experiences of PLC engagement, teachers have the opportunity and support to reflect on practice, explore new ideas, and realize evidence of student achievement (Vescio et al., 2008). Research has demonstrated the impact of PLCs on teacher learning through collaboration, instructional improvement, and student achievement (Borko, 2004; Woodland, Barry, & Crotts, 2014; Woodland & Mazur, 2015).

In an early but vast study, Lee, Smith, and Croninger (1995) shared findings on 11,000 students from 820 secondary schools across the United States. The students who attended schools characterized as learning organizations with practicing PLCs achieved greater academic growth and gains than the traditionally organized schools. Learning was more equitably distributed in the smaller schools in the study, and the achievement gap was smaller (Lee et al., 1995). Bryk, Camburn and Louis (1999) completed an important study in the Chicago City Public School District in which data was collected from 248 schools and 5,690 teachers to determine if schools organized as communities promoted greater student engagement and teacher commitment. The study connected the theory that behavior is shaped by shared goals, values, and regular personal interaction to the idea that enhanced teacher professionalism yields improvements in student achievement. From this connection, a new framework emerged. These two historical research pieces provided a springboard to additional studies.

More recently, a mixed methods study was conducted in a large urban school district in Texas in which more than 200 schools were organized into PLCs so that reading teachers could collaboratively share practices, problem solve, and discuss instruction (Williams, 2013). Quantitative findings revealed statistically significant growth rates after PLCs were implemented; specifically, teachers viewed PLC practice as positively impactful for their instructional practice and student achievement (Williams, 2013).

Teacher professional development that occurs in a collaborative environment with peers has been directly linked to improved student achievement (Moolenaar, Sleegers, & Daly, 2012). In an evaluation study of two networks of teachers, both student achievement and school improvement were linked to teacher engagement in PLCs (Hofman & Dijkstra, 2010). A significant study of over 9,000 teachers in 336 Miami-Dade County public schools was conducted over a two-year period. The findings indicated that collaboration had a direct link to student achievement, and the higher the quality of the collaboration, the larger the gains in student achievement in reading and math (Ronfeldt, Farmer, McQueen, & Grissom, 2015). When student achievement growth over a four-year period collected from 467 mathematics teachers in 91 schools was merged with 11,192 middle school students' standardized mathematics scores in Missouri, the data indicated that teacher collaboration was more effective in instructional improvement than more traditional professional development and university courses (Akiba & Liang, 2016).

The quality of implementation of PLCs is also an important factor to consider when citing studies of PLC effectiveness. In research conducted in a large urban school

district characterized by low socio-economic status, three high schools were examined to determine if longitudinal data would support the assumption that high-quality professional development consisting of traditional content-specific professional development, the implementation of learning communities, and professional development for implementing PLCs positively impacts student achievement (Capraro et al., 2016). The findings supported the claim that sustained, high quality professional development within PLCs could lead to significant student learning gains (Capraro et al., 2016). This study thus supported earlier work that engagement in high quality professional development and PLCs can change teachers' instructional practices and improve student learning (Capraro et al., 2016; Saunders, Goldenberg, & Gallimore, 2009). Five of six focus groups reported that PLCs provided them the opportunity to learn from each other and receive strong support in pedagogical development to realize student improvement (Capraro et al., 2016).

Educational experiences may be reduced when teachers are not given the opportunity, support, and encouragement to develop professionally, and the autonomy to use this knowledge in the classroom (Scribner, Sawyer, Watson, & Meyers, 2007). Vernon-Dotson and Floyd (2012) remarked that professional development that was self-selected based on educational needs, expressed through data, and discussed through professional conversation was more meaningful because of the role that teachers had in its selection, and therefore became more meaningful to their students. This supports the concept that authentic PLC practice includes job-embedded professional development.

Improvement Science

The impact of PLCs has been shown repeatedly in the research, based on the principles of improvement science (Woodland, 2016). Improvement science, an emerging research field, is grounded in the idea that knowledge is gained to enact positive change and create an improvement in quality (Kjellstrom & Andersson, 2017). Improvement science can be linked back to operations research in the 1930's, then prominent in healthcare literature in the 1990's, and has subsequently spread to business, management, social work, and more recently, education (LeMahieu, Edwards, & Gomez, 2015; Lemire, Christie, & Inkelas, 2017; Lewis, 2015).

While the idea of improvement science has spread quickly through multiple fields of study, a clearly defined consensus on its definition does not exist (Marshall, Provost, & Dixon-Woods, 2013). The meaning of improvement science stems from William E. Deming's (2000) structure, based upon four types of knowledge. Deming identified four improvement knowledge domains that help support understanding improvement science: knowledge of systems, knowledge of psychology, knowledge of variation, and knowledge of how knowledge grows (Deming, 2000; Lemire et al., 2017). Knowledge of systems refers to a deep understanding of resources and processes that work together to achieve a common goal (Langley et al., 2009). Someone versed in this type of knowledge understands the interdependence among resources that is integral to change within an organization (Langley et al., 2009). Understanding the human side of change, or knowledge of psychology, relates to the way interpersonal and social structures impact organizational processes and performance when trying to implement change (Langley et al., 2009). There are four elements. First, when seeking sustainable and positive change,

the human element and reactions to it must be considered and supported (Langley et al., 2009). Second, to test change effectively, knowledge of variation is essential (Langley et al., 2009). This includes understanding and distinguishing between outcomes that are a result of designed change and outcomes that might occur from naturally occurring change (Langley et al., 2009). Third, determining if one has influenced the other is also necessary (Langley et al., 2009). Fourth, understanding how knowledge grows is vital to successful organizational improvement (Langley et al., 2009). While these four core components have provided the structure of improvement science, they are too broad to be considered a definition (Lemire et al., 2017).

Improvement science is based upon two core features: 1) improvement results from developing, testing, implementing, and spreading change; and 2) subject matter experts play an integral role in defining and supporting those four steps (Langley et al., 2009). Improvement science is "a type of practical problem solving, an evidence-based management style, or the application of a theory-driven science of how to bring about system change" (Margolis, Provost, Schoettker, & Britto, 2009, p. 832). From these structures and core ideas of improvement science, a working definition of improvement science is therefore a "data-driven change process that aims to systematically design, test, implement, and scale change toward systemic improvement, as informed and defined by the experience and knowledge of subject matter experts" (Lemire et al., 2017, p. 25).

A clear understanding of improvement science can support its place in education. When examining improvement science with a lens on education, seven approaches have been investigated:

- networked improvement communities,

- design-based implementation research,
- deliverability,
- implementation science,
- Lean for education,
- Six Sigma, and
- positive deviance (LeMahieu, Bryk, Grunow, & Gomez, 2017).

These approaches share a common goal of inquiry and are rooted in improvement research (LeMahieu et al., 2017). Improvement research is about making organizations, specifically social systems, function better by evaluating what is currently in place, identifying an area of improvement, and producing new knowledge to remediate the weakness (LeMahieu et al., 2017). It deviates from the temptation to implement something completely new as another "add on" to an educational program, but rather investigates ways to use the many facets and resources within an educational organization together to produce better outcomes (LeMahieu et al., 2017).

Historically, attribution, or researching why something has occurred, has been recognized as a standard research theory in the field of education, but recently the interest in improvement science has grown (LeMahieu et al., 2015). Through improvement science, the focus has shifted from replication to growing the ability to achieve consistent results across contexts (LeMahieu et al., 2015). School reform efforts have collectively fallen short of highly effective and sustainable responses to the most pressing issues of student achievement, which has fueled the notion of districts repeating the cycle of "adopt, attack, and abandon" (Rohanna, 2017, p. 65). School districts and student needs vary greatly, which indicates that the same strategies or interventions may not produce

the same effects but understanding the context and adapting to the situation could alleviate negative issues and support implementation (Rohanna, 2017).

Improvement science relies on the idea of knowledge division. This means that subject or professional knowledge is different than the knowledge needed to determine what the organization must have to produce change that results in improvement (Kjellstrom & Andersson, 2017). Differentiating between the professional knowledge in the organization and the factors that influence positive improvement is integral in improvement science.

Because the use of improvement science models is relatively new in the K-12 educational arena, little research exists about its effectiveness. A gap in research exists. Since improvement science relies on evidence-based problem solving, a connection to the PLC cycle of continuous improvement could be made. However, it is still unknown as to whether the processes themselves can be changed to accommodate the contextual factors within an organization (Rohanna, 2017).

Improvement Science in the Context of Higher Education

In January 2007, the Carnegie Project on the Education Doctorate (CPED) was launched to clearly define each degree and ensure the goal of advancing the knowledge and practice of practitioners (Perry, 2013). The work of this project is to produce definitions and frameworks for changing the meaning and design of the education doctorate to both differentiate it from the PhD and improve EdD preparation programs (Perry, 2013). This work is action-oriented and extends well beyond discussion, with the development of principles to state expectations of the Professional Practice Doctorate.

To create programs that prepare practitioners with the skills and knowledge necessary as outlined in the principles, design concepts were needed (Perry, 2013).

The Teacher Leadership Exploratory Consortium defined five design concepts: 1) scholarly practitioner, 2) a signature pedagogy, 3) laboratory of practice, 4) inquiry as practice, and 5) dissertation in practice (Perry, 2013). Thee design concepts provide expectations but within a framework that provides flexibility for institutions in implementation (Perry, 2013). The inclusion of inquiry as practice is important in the context of this study as it further supports the importance that reflective practice and a culture of inquiry have upon improvement.

Furthermore, to improve the efforts of CPED, Carnegie Project on the Education Doctorate Improvement Groups (CIGs) are encouraged. The CIGs collaborate for a minimum of one year and aim to accomplish focused learning on specific topics that relate to the EdD program development, best practices, research, and dissemination of information (www.cpedinitiative.org). In June 2016, Improvement Science held its first meeting as a CPED CIG. The purpose of this CIG is to include improvement science in EdD curricula as a signature pedagogy, support members' understanding of improvement science methodologies, and research and share knowledge about the improvement efforts in PreK-12 and post-secondary education.

The inclusion of improvement science within the framework of CPED is significant because it further supports the idea of user-center continuous improvement towards excellence and equity. While improvement science is relatively new to the field of education, its inclusion in this consortium's impact on educational leadership programs could potentially have a larger impact on practice and pedagogy.

Background and History of Teacher Leadership

The idea of teachers as leaders is not a new concept, as teachers have always been leaders within their classrooms and, for a long time, fulfilled school leadership roles such as department heads, union roles, curriculum writers, and grade level team leaders (Muijs & Harris, 2005). However, these roles were driven by a need for efficiency as opposed to instruction and leadership (Kurtz, 2009). Moreover, these roles merely suggested leadership and tended to be a representative of change instead of an enactor of change (Muijs & Harris, 2005). Traditionally, principals and other school leaders have not had others share their responsibilities, and teachers have not been included in significant decision-making. However, since teachers are embedded within each classroom in schools and their actions directly impact students, the need for expanded leadership within that context provides a springboard opportunity for teachers to lead change by implementing changes that positively impact learning and student achievement. Teacher leadership can be described in three stages: 1) task-driven, 2) role-based, and 3) process-based, integrating teaching with leadership.

The first stage of teacher leadership used teachers in roles that were task-driven and focused on completion of things deemed necessary and important by higher members of the leadership hierarchy. These leadership positions merely promoted efficiency and may have contributed to the "neutering" of teachers by limiting their influence within the organization (Yendol-Silva, Gimbert, & Nolan, 2000, p. 780).

In the second stage of teacher leadership, more opportunities emerged through the adoption of shared decision-making between teachers and administrators, and by the formation of teacher-led committees and councils (Smylie & Denny, 1990). These

changes recognized the instructional expertise of teachers and created positions that would capitalize on these strengths (Pounder, 2006; Yendol-Silva et al., 2000). The shifts included teachers serving in roles such as mentors, team leaders, department chairs, curriculum developers, professional development providers, data team members, and assessment developers (Kurtz, 2009). Some teachers rose to leadership roles through intrinsic motivation and experience which prompted a desire to be included in the decision-making process of the schools in which they worked. Therefore, these types of teacher leaders volunteered or were selected by an administrator to fulfill such a role (Darling-Hammond, Bullmaster, & Cobb, 1995). However, an unexpected outcome of this shift was the remote controlling of teachers where teachers who were in these roles of instructional leadership created instructional materials that implied the product would help support equal delivery from any teacher (Darling-Hammond, 1998). Darling-Hammond (1998) further suggested that instead of attempting to control teachers and the delivery of instruction through formula-based curricula and routines, teachers should be empowered through a deeper understanding of complex pedagogical situations. This unexpected outcome suggested the importance of teacher empowerment from within the classroom (Yendol-Silva et al., 2000).

Teacher leadership is a complex task that involves more than a shift in roles and responsibilities, and developing teachers for this task (Smylie & Denny, 1990). Smylie and Denny (1990) suggested that teacher leadership development is more of an organizational change than a reallocation of tasks and duties, and therefore patterns of practice and belief mold teacher leadership roles. Because of this, the third stage of teacher leadership emerged, which focused on second-order change to improve the

capacity of schools and their culture (Yendol-Silva et al., 2000). In this view, teacher leaders would have the opportunity to participate authentically in their own organizations (Yendol-Silva et al., 2000). This view of teacher leadership recognized that teaching and leadership needed to be integrated in a process as opposed to a position (Pounder, 2006; Wenner & Campbell, 2017). In effect, teachers would engage daily in leadership activities that were embedded within their daily work (Yendol-Silva et al., 2000; Wenner & Campbell, 2017). Instead of working in isolation, teacher leaders could collaborate with colleagues, discuss common problems, share instructional practices, and construct solutions to common constraints (Curtis, 2013; Muijis & Harris, 2003, 2006; Yendol-Silva et al., 2000). By defining teacher leadership as a process as opposed to a position, it is defined more by characteristics and behaviors as opposed to required duties (Pounder, 2006).

Although the concept of teacher leadership is abundant in the literature, more research is needed using this latter view of teacher leadership embedded within a teacher's daily practice (Yendol-Silva et al., 2000; Wenner & Campbell, 2017). Little research existed until recently on how teachers experience teacher leadership or the role the structure of the organization has upon teacher leadership (Smylie & Denny, 1990).

While teacher leadership can enact meaningful change, it can often be compromised due to the added responsibilities that it incurs as well as the conflicts that arise between the differing roles of a teacher and a leader (Zinn, 1997). Sufficient supports must be in place for leadership capacity to grow and thrive when constraints exist suppressing teacher leadership. As the practice of teacher leadership becomes more prominent in our schools, more clarity is needed that better prepares teachers to embrace

leadership as a resource for school improvement and student achievement (Carver, 2016). Because of the unclear nature of teacher leadership development, more guidance is needed to create formal learning experiences that simultaneously grow teacher leadership and impact school improvement (Berg et al., 2014). Teacher leadership is recognized as an avenue towards instructional improvement and student achievement, but limited knowledge is available regarding ways to prepare and support teacher leaders.

Research about teacher leadership suggests a departure from traditional school leadership because it focuses on relationships that might cross hierarchal boundaries and recognizes leadership as a dynamic between individuals within an organization as opposed to a role within the organization (Harris & Muijs, 2005, p. 16). If the principal of an organization served as a facilitator as opposed to the sole leader, the instructional leaders of the school could be the teachers (Kurtz, 2009, p. 15). In accomplishing this, the professional status of teachers would increase, local expertise would be utilized, and autonomy would be recognized and supported (Smylie & Denny, 1990). Vennebo and Ottesen (2012) asserted that leadership is not just available through formal assigned roles, but is the outcome of relational work of colleagues within organizations. Lambert (2003) coined the term constructivist leadership in which teachers consider themselves leaders within their organization.

Defining Teacher Leadership

To effectively determine whether perception of leadership practice emerges through PLC engagement, a clear understanding of a definition of teacher leadership is necessary. As teacher leadership has emerged somewhat recently in educational research, conceptualizations are widely varied (Wenner & Campbell, 2017).

Characteristics of teacher leaders vary, while teacher leadership was defined in October 1999 as teachers that function in learning communities to impact student achievement, contribute to school improvement, model and incite professionalism, and support the empowerment of colleagues and stakeholders to participate in organizational improvements (Moller, Childs-Bowen, & Scrivner, 2001). Also, teacher leaders exhibit skills such as an ability to focus on student learning, present information to others, develop and maintain relationships, lead change initiatives, and seek lifelong learning opportunities (Moller et al., 2001). The typical duties of a teacher leader are related directly to teaching and learning as opposed to decisions of management (Katzenmeyer & Moller, 2009). However, some teacher leaders fulfill formal leadership roles within their schools or districts. Nuemerski (2012) refers to teacher leadership as "an umbrella term referring to a myriad of work" (p. 320).

While some teachers view teacher leadership as formal administrative roles, others recognize it as being a part of the decision-making process (Donaldson & Johnson, 2007). Since teacher leaders hold different titles and embody different responsibilities within different schools and districts, defining it becomes challenging (Wenner & Campbell, 2017). Inconsistencies in concept variations make understanding teacher leadership difficult, but necessary if the role of teacher leaders is explored within the practice and used as a basis of evaluation.

Beachum & Dentith (2004) posited that teacher leadership is an expanded view of leadership beyond the typical boundaries presented by the classroom. Moreover, teacher leadership occurs when teachers have the autonomy to direct their own personal growth and contribute to the growth of colleagues by establishing relationships, working through

barriers, and using resources within the school to improve student achievement (York-Barr & Duke, 2004; Wenner & Campbell, 2017). More recently, Wenner and Campbell (2017) defined teacher leadership as "teachers who maintain K-12 classroom-based teaching responsibilities, while also taking on leadership responsibilities outside of the classroom" (p. 140). This definition aligns with prior definitions and expands it through clear differentiation from other leadership roles within a school (Wenner & Campbell, 2017).

Theorists of distributed leadership posit that leadership ensues when there is interaction between people and artifacts in a social setting; therefore, teachers serve as leaders when interaction among colleagues about instructional concerns emerge within their school (Berg et al., 2014). This supports the work of Carpenter and Sherretz (2012) in which functioning in a PLC impacts student learning, contributes to student learning, and fosters stakeholder involvement in decision-making. Collaborative learning and instructional growth through teacher inquiry might contribute to teacher leadership in this sense.

In 2001, the Institute for Educational Leadership provided a definition that suggested that leadership is not about power, but about teachers extending themselves beyond the classroom by seeking situations that challenge them and provide opportunities for growth. Essentially, teacher leadership is a model of leadership in which all teachers within the organization are provided the opportunity to lead (Harris & Lambert, 2003). Wenner and Campbell (2017) expounded upon this idea that teacher leadership empowers all teachers, but implied that the work of a teacher leader goes beyond the typical duties expected of a classroom teacher. In Wenner and Campbell's (2017) review

of the literature, several themes emerged to describe teacher leadership; first, teacher leadership extends beyond classroom walls, and teacher leaders are involved in decision-making. Also, teacher leaders are supportive of professional learning within their schools, understand the main goal of improving student achievement, and work to improve the entire organization (Wenner & Campell, 2017).

In 2011, the Teacher Leadership Exploratory Consortium developed and published model standards that consist of seven domains of leadership activity to best describe teacher leadership (Teacher Leader Model Standards, 2011). The teacher leader model standards are:

Domain I: Fostering a Collaborative Culture to Support Educator Development and Student Learning

Domain II: Accessing and Using Research to Improve Practice and Student Learning

Domain III: Promoting Professional Learning for Continuous Improvement

Domain IV: Facilitating Improvements in Instruction and Student Learning

Domain V: Promoting the Use of Assessments and Data for School and District Improvement

Domain VI: Improving Outreach and Collaboration with Families and Community

Domain VII: Advocating for Student Learning and the Profession

These standards reflect the research and characteristics of multiple theories of teacher leadership. Each of the domains also includes multiples functions to clarify and explain. The Teacher Leader Model Standards (2011) were the cornerstone of the recently passed Bill 165 in New Jersey that authorized a teacher leader endorsement to the instructional certificate of teachers in New Jersey.

While Bill 165 is a newer piece of legislation that is still in the developmental stage, the leadership standards are the basis of determining teacher leadership. Within this bill enacted in 2015, a teacher leader endorsement became available to add to an instructional teaching certificate in New Jersey. Eligible teachers for this endorsement complete an approved program of study and possess at least five years of teaching experience. Furthermore, the bill called for an advisory board to guide further recommendations. The Teacher Leader Endorsement Advisory Board met regularly and published recommendations to the Department of Education about the program of study for the teacher leadership endorsement, which must be aligned to the standards within the bill. While the bill was modeled after the seven domains of the Teacher Leader Model Standards, Bill 165 has eight standards. These standards (S165, 2015, p. 3) include:

1. Foster a collaborative culture that supports both educator development and student learning
2. Support collaborative team structures, including professional learning communities
3. Access and use research to improve pedagogical approaches to impact student learning
4. Promote professional learning for continuous improvement
5. Facilitate improvements in instruction and student learning
6. Promote the use of assessments and data for school and district improvement
7. Improve outreach and collaboration with families and the community
8. Advocate for student learning and the profession of education

While these standards are parallel in nature to the Model Teacher Leader Standards (2011), they include an additional standard for collaborative team structures, specifically

identifying PLCs. This is significant because through this bill, the state of New Jersey requires PLCs and is specifically stating the importance of PLC engagement.

Notably, both sets of standards depart from the traditional top-down organization of schools and support the idea that teachers play an integral role in the success of schools and student achievement (Cosenza, 2015). These identified standards emphasize either explicitly or implicitly the value of collaboration and reflective practice (Teacher Leader Model Standards, 2011). Therefore, linking these standards to PLC engagement provides an opportunity to determine whether a relationship between PLC engagement and teacher perception of their leadership capacity exists.

However, if teacher leadership practice is determined through these standards, it must align with teacher perception for the research to be valid. A recent study by Cosenza (2015) set out to determine if the teacher leader model standards are in alignment with the viewpoints of currently practicing teachers. The findings revealed that the teachers defined teacher leadership in a way that supported six of the seven domains of teacher leader standards (Cosenza, 2015). This evidence supports the connection between teachers' perceptions of leadership to these established standards.

Since the Model Standards align with other theories and definitions of teacher leadership, and are currently being used by the state of New Jersey, they are the appropriate measure of teacher leadership for this research.

Self-Perceptions of Teacher Leaders

Most teachers who take on leadership roles within their organization do not see themselves as leaders (Katzenmeyer & Moller, 2009), and tend to define the leaders as those who fulfill the formal leadership roles within their school or district (Moller et al.,

2001). Additionally, teacher leaders often have a different perception of themselves than their colleagues possess (Moller et al., 2001). As opposed to formal leaders, teacher leaders might consider themselves action researchers, reflective practitioners, mentors, or instructional experts as curriculum writers (Mimbs, 2002).

Peers of teacher leaders may see their colleagues as teacher advocates and view them in a positive light (Beachum & Dentith, 2004). Alternately, some colleagues may view teacher leaders negatively and harmful to teacher morale (Smylie & Denny, 1990). Angelle and Beaumont (2007) asserted that most teachers who fulfill leadership roles do not view themselves as leaders, but perceive that they successfully accomplish work and tasks through collaboration and the sharing of expertise.

Lambert (2003) coined the term constructivist leadership, which provides a structure for teachers to consider themselves as leaders within their organization. Thomas and colleagues (2013) used the term shared leadership to denote how members of an organization can co-produce leadership in groups. In this definition, teachers can emerge as leaders as their leadership develops (Vennebo & Ottesen, 2012). In a recent study, it was shown that participating collaboratively in a peer coaching community can impact how teachers perceive their practice and can develop leadership capacity (Charteris & Smardon, 2014). Therefore, this type of development could change how teachers perceive themselves as leaders.

The voice of teacher leaders is missing from much of the literature, which strongly suggests that teacher leadership has not yet been deeply discussed or defined by those individuals who are practicing it. This information suggests that teachers' self-

perception of their leadership may differ from the characteristics identified as teacher leadership skills.

Effects of Teacher Leadership

Teacher leadership is a strategy for successful implementation of school improvement initiatives by using the previously underused potential of teachers as leaders for positive change (Frost, 2012). Additionally, teacher leadership can be considered an essential component for necessary and sustained change to increase student achievement (Birky, Shelton, & Headley, 2006). As educational practitioners, teachers possess the craft knowledge and the proximity to the classroom setting necessary to support colleagues on pedagogical techniques (Firestone & Martinez, 2007). Because of their proximity to instruction and colleagues, teacher leaders can influence the norms and shifts that support the ongoing job-embedded professional development that contributes to continuous improvement (Ippolito, 2010; Vanderberg & Stephens, 2010). Teachers are the ideal candidates to facilitate change and reform efforts to improve student achievement since they are likely opposed to hierarchical authority (Fullan, 2001).

Empirical support for teacher leadership is growing. York-Barr and Duke's (2004) seminal review of the literature indicated teacher leadership as an area in need of more research. This review noted that most studies had been done on a small scale and most related to the qualifications of teacher leaders, roles, and support structures (York-Barr & Duke, 2004). More currently, Wenner and Campbell (2017) examined teacher leadership research completed since York-Barr and Duke's 2004 report. This more current work explored some of the same areas of the original review, and also delved into the roles associated with teacher leadership, structures that support teacher leadership,

and teacher leadership through the lens of social justice and equity (Wenner & Campbell, 2017).

Research has determined a correlation between teacher leadership and learning outcomes (Elish-Piper & L'Allier, 2011; Neuman & Cunningham, 2009). Teacher leaders as instructional leaders can become agents of change because they have a vested interest in student and school success as well as a sense of history within a school and community, and they can enact real change quickly just by returning to their classrooms and doing it (Kurtz, 2009).

In one quantitative study, teachers' perceptions of the relationship between teacher leadership and collective efficacy were examined (Angelle & Teague, 2014). Collective efficacy is a teacher's belief in the effectiveness of an entire organization (Angelle & Teague, 2014), and teacher leadership and collective efficacy are two main components of school reform. This study indicated a strong relationship between teacher leadership and collective efficacy, which has positive implications toward the importance of developing teacher leaders (Angelle & Teague, 2014).

Research on teacher leadership identified teachers as vital in improving the culture of schools through enacting meaningful change through collegiality and professionalism (Angelle, 2007; Berg et al., 2014; Harris & Muijs, 2005). Teacher leadership has also been studied for its effects beyond the school level and findings indicate that teacher leaders can alter district policy by influencing a larger audience through presentations and publications (Hatch, White, & Faigenbaum, 2005). Teacher leadership has impacted the feelings and perceptions of the teachers that engage, as many teachers report feeling empowered (Wenner & Campbell, 2017). The literature suggests

that teacher leadership extends beyond the individual and can positively impact the entire organization through a global feeling of empowerment and increased professionalism (Beachum & Dentith, 2004; Vernon-Dotson & Floyd, 2012; Wenner & Campbell, 2017).

An embedded case study was used to examine how members of a leadership team functioned to change the teaching practices of their colleagues as well as how the school system shaped teacher leadership (Cooper et al., 2016). In this study, participants were first trained in leadership and then subsequently used these new skills of leadership during PLC engagement.

Findings indicated that instructional changes required teacher leaders to be purposeful about their change efforts.

While the research base that correlates teacher leadership and learning outcomes has grown, very little literature exists in the area of teacher leadership preparation, policy, and practice (Berg et al., 2014). Also, while one study indicated that the development of leadership skills makes a teacher more adept at engaging in authentic PLC work, research is not available as to whether engaging in authentic PLC practice impacts participants' leadership capacity.

Facilitating Teacher Leadership

Strategies to develop potential teacher leaders exist, and school districts can make decisions to support such growth. Aside from training in content and pedagogy, leadership training is essential so that teachers have the opportunity to develop their leadership skills (Wenner & Campbell, 2017). It is unrealistic for teachers to transition from the isolation of the classroom to collaborative decision-making without training and support (Moller et al., 2001). It is common practice for teachers to receive training on

instructional strategies for pedagogical improvement or program implementation, but leadership training is essential for teachers to be able to shift successfully into roles of leadership. One study found that teacher leaders who were enrolled in leadership programs gained both perspectives and training in leadership as well as partnerships and networks for future benefit and growth (Wenner & Campbell, 2017). Yonenzawa and colleagues (2011) found that teacher leaders working within a network in a program supported the acquisition of new knowledge and fostered the development of leadership skills.

Aside from training, administrative support of teacher leadership is essential for it to be successful within an organization (Campbell & Wenner, 2017). Developing productive and respectful relationships aids in this support. Specifically, teachers should be provided autonomy to exhibit leadership (Campbell & Wenner, 2017). Providing autonomy does not indicate a lack of administrative involvement, but rather a sense of support and encouragement for teacher leaders to make decisions and a value of the opinions of teacher leaders. (Beachum & Dentith, 2004; Wenner & Campbell, 2017). To genuinely develop a teacher leader, more than surface-level change must be provided.

Components in the school environment must support the growth and space for teacher leaders to conduct their work (Wenner & Campbell, 2017). These components include logistical items as well as cultural norms of the organization (Wenner & Campbell, 2017). Providing a schedule that allows for the time and space to conduct meaningful collaborative work is one way this support can be given. School leaders who encourage trust and caring within their buildings support teacher leadership (Beachum & Dentith, 2004). Lastly, school leaders that fully understand the role and responsibilities

of teacher leaders and recognize this in some way are supportive to teacher leadership (Wenner & Campbell, 2017). For instance, a specific and detailed job description allows for all staff members to understand the role and its expectations. If no specific description is provided, recognition in the form of financial compensation (Borchers, 2009) or recognition by colleagues and administration (Vernon-Dotson, 2008) give evidence for the inclination to engage in teacher leadership.

At the district level, formal administrators should be provided professional development on how to promote and support teacher leadership within their schools (Moller et al., 2001). Districts should also provide leadership opportunities and time within the structure of the schedule for teachers to take advantage of these opportunities (Moller et al., 2001).

Another way to develop leadership capacity within teachers is by peer coaching to support practice inquiry (Charteris & Smardon, 2014). The type of peer coaching can be described as a system of reciprocal learning and support in a process in which teachers are empowered to construct knowledge within their organization (Zepeda, Parylo, & Ilgan, 2013). This concept of coaching develops the skills of teachers as opposed to improving a deficiency. This type of coaching provides opportunity for teachers to construct new knowledge and have autonomy over change (Charteris & Smardon, 2014).

In recent research, a two-year longitudinal study was conducted to determine the impact that participating in action research had on PreK-12 teachers' attitudes and perceptions (Harris & Spillane, 2008). This mixed methods study in California determined that engagement with action research impacted teacher perception and

empowerment, but also revealed a gap in research on how this impacted their leadership in ways other than improved pedagogical shifts (Harris & Spillane, 2008).

Barriers to Teacher Leadership

Despite the best intentions to promote teacher leadership, some organizations fail to provide the support necessary for such an endeavor. Even the most motivated teacher leader can face obstacles that inhibit the ability to lead. For instance, the time structure of school buildings can greatly limit leadership opportunities (Moller et al., 2001; Wenner & Campbell, 2017).

It is also challenging for teacher leaders to be recognized as leaders through formal leadership roles within the organization (Moller et al., 2001). To ensure the success of teacher leadership, principals must promote autonomy while still being ultimately responsible for the functioning of the school, which some are hesitant to do (Anfara & Angelle, 2007). Even if accepted as a theory, some principals are challenged to include teacher leadership as part of their leadership practice (Anfara & Angelle, 2007). An inhibiting factor of teacher leadership has been the poor relationships noted with peers and/or administration (Wenner & Campbell, 2017).

Teachers must be willing to pursue this role. Barth (2001) reported from the coalition of Essential Schools that only 25% of the teaching faculty was comprised of leaders. There might be several reasons for this, including lacking the confidence or training to deal with challenging decisions in the leadership role (Angelle, 2007). Barth (2001) remarked that school culture itself is a barrier to teacher leadership, because teachers who step into that role breach a commonly understood 'us versus them' mentality and can face social consequences as a result. Yendol-Silva and Dana (2004)

completed an ethnographic study designed to explore teacher leadership and found that the reason teachers struggle in sharing ideas with others may be directly correlated to the micro-politics of their existing environment and culture. In Wenner and Campbell's (2017) study of the literature, the effects of teacher leadership on individual teachers included stresses and difficulties as well as changing relationships with colleagues.

It does not make sense for administrators to assume teachers can effectively lead without any preparation or coaching (Katzenmeyer & Moller, 2009). The assumption is that credible, competent, and approachable teachers also possess the ability to work with other adults through organizational change and are able to overcome challenges that arise in the transition (Katzenmeyer & Moller, 2009). When formal leadership positions in school administration require extensive leadership training and coursework, it is not logical to assume that teacher leaders can undertake leadership roles without preparation. Because of the lack of training, when teacher leaders face challenging issues, they blame themselves. They feel as though they should have known how to handle the situation, and this results in the teacher leaders removing themselves from positions of leadership, and returning to the classrooms where they do not have to face these challenges or a feeling of inadequacy (Katzenmeyer & Moller, 2009). For teacher leadership to thrive, teachers must be willing to accept leadership when it is offered to them, and transition in roles from followers to leaders.

The balance of power is a component of effective teacher leadership. Anderson (2004) expanded the idea of power boundaries between principals and teachers by identifying three models of influence. In the first one, the teacher leaders' roles are to carry out the decisions of the principal and to buffer him or her from others (Anderson,

2004). The second model encompasses the interactive principal who works with all stakeholders and practices shared decision-making (Anderson, 2004). Lastly, the contested principal is one of conflict in which the principal works against teacher leaders and, in turn, teacher leaders work to undermine the principal (Anderson, 2004).

Measuring Teacher Leadership

While research confirms the link between teacher leadership and school improvement, prior to 2009, few instruments existed to determine specifically the presence of teacher leadership and to what extent it existed within schools. An instrument to measure teachers' perception of their leadership and practices could provide valuable data for administrators regarding the teacher leadership practice within their schools (Angelle & DeHart, 2010).

In 2008, Angelle, Taylor, and Olivier developed the Teacher Leadership Inventory (TLI) specifically to measure teacher leadership. This 25-item questionnaire was developed from an original qualitative study on ways in which teacher leaders identify themselves as leaders (Angelle & Beaumont, 2007). After an analysis of the initial administration, eight items were eliminated and from the resulting data, a four-factor model of teacher leadership was developed (Angelle & DeHart, 2010). The four factors of the model were: Sharing Expertise, Sharing Leadership, Supra-Practitioner, and Principal Selection (Angelle & Beaumont, 2007; Angelle & DeHart, 2010).

The TLI was used by Angelle and DeHart (2011) in a quantitative study that examined the relationship between teacher perceptions of the extent of teacher leadership in a school, grade level, degree level, and leadership position. The results of this study indicated that the role of the teacher leader and the bigger vision of school and district

leadership may have an influence on the commitment of teacher leaders within the classroom and within the broader sense of the workplace (Angelle & DeHart, 2011). Then, in 2014, Angelle and Teague used the TLI within their study to examine the relationship between teacher perceptions of teacher leadership in their schools and the extent of collective efficacy. This study showed a strong relationship between collective efficacy and the extent of teacher leadership (Angelle & Teague, 2014). The mean scores of the TLI revealed the importance of teacher leadership as shown through the willingness of teachers to support colleagues through shared practice and other collaborative efforts (Angelle & Teague, 2014).

In other relevant research, a teacher's inclination to be a teacher leader could also prove to be useful information to school administration to determine staff readiness and provide coaching to the appropriate individuals. The Professional Development Center (2014) created a Teacher Leadership Readiness Instrument by which teachers could self-assess their readiness for a teacher leadership role by taking and self-scoring a 25-item questionnaire (Katzenmeyer & Moller, 2009). This survey is helpful for teachers themselves to self-identify their potential leadership and for school administrators to identify the informal teacher leaders and potential teacher leaders within their schools (Katzenmeyer & Moller, 2009). Once teachers and administrators have identified potential teacher leaders among the staff, more attention can be paid to their development.

Additionally, to indicate strengths and weaknesses of teacher leaders, Marilyn and Bill Katzenmeyer (2004) developed the Teacher Leadership Self-Assessment (TLSA). This instrument was designed for teachers to use as a self-assessment of their leadership

development. It is built with six scales: self-awareness, leading change, communication, diversity, instructional proficiency, continuous improvement, and self-organization (Katzenmeyer & Moller, 2009). This instrument offers a way for teachers to determine in which areas they currently meet leadership standards and in which areas more development and training is necessary (Katzenmeyer & Moller, 2009).

While more instruments to measure teacher leadership have emerged since 2008, further research and development is needed in this area. Specifically, an instrument that measures teacher leadership capacity through PLC engagement would help school districts support initiatives that both promote teacher leadership and collective efficacy through PLC work that is centered on teaching and learning.

Summary

Recent educational mandates have demanded that school leaders show continual growth in student achievement and better prepare students for the global market they must be ready to face when leaving school. Leading with a focus on student improvement is supported by the implementation of both PLCs and the fostering of a shared leadership culture in which stakeholders work together toward a common goal.

The review of the literature suggests that teacher leadership is an essential component of school improvement efforts. Teachers can serve as leaders within their organizations when they interact with colleagues about instructional matters (Berg et al., 2014). Developing teachers as leaders is about capitalizing and mobilizing the talents and attributes of teachers through collaboration to improve student achievement (Kurtz, 2009). When this happens, teachers will contribute to different avenues of leadership, and the results are compounded (Spillane, 2006).

Furthermore, the PLC model supports the notion of teacher leadership by providing a structure in which both individual and organizational growth can be realized when teachers learn from one another (Berg et al., 2014). Through this practice, the organization can benefit from the multiple lenses of experience and instructional knowledge (Berg et al., 2014). When expertise is shared within the leadership model, all members are collectively responsible for an increase in student achievement (Kennedy, Deuel, Nelson, & Slavit, 2011). By using the leadership capacity of teachers, the organization's resources are far greater than that of a single or few members of an administrative team (Berg et al., 2014).

This study will attempt to address the gaps in literature that exist by exploring whether or not a relationship exists between engagement in an authentic PLC and teachers' perception of their leadership capacity.

Chapter 3

Methodology

A review of the literature on teacher leadership and PLCs heartily reveals the benefits of both to an organization. Departing from a hierarchal system of management for a model of distributed leadership uses the talents and strengths of all members as opposed to relying on one or a few people to fulfill all roles of leadership (Leithwood & Mascall, 2008). Distributing leadership among stakeholders fosters interdependence and collaborative efforts, such as the work conducted within PLCs (Leithwood & Mascall, 2008).

The implementation of learning communities within an organization also benefits the organization through collaborative engagement as teachers are provided the opportunity to engage in reflective practice, and the support for pedagogical risk-taking to positively affect student achievement (Vescio et al., 2008). Much research points to the positive impact of PLCs on teacher learning, instructional improvement, and student achievement. However, little empirical research delves into the perception of teachers about their teacher leadership capacity as pertains to their engagement within PLCs. To deepen the understanding of growing teacher leadership capacity within the context of PLCs, more empirical data is necessary, and this is the purpose of the study.

This study proposed to contribute to the available research to gain more information about teachers' perception of their leadership as well as the relationship between that and their engagement in authentic PLCs. This chapter presents the research design and methodology used to answer the research questions in determining whether a relationship exists between engagement in PLC practice and teacher perception of their

leadership practice. The study purports to determine how PLC participation influences teacher perception of their leadership through personal accounts and descriptions. This chapter also details the participants, sampling protocol, survey instrument, data collection, and analysis methods that were used.

Purpose Statement

The purpose of this study was to determine the relationship between participation in authentic PLCs and teachers' perception of their leadership practice in New Jersey public school teachers. Understanding whether a relationship exists between teacher leadership perception and PLC engagement could be an important component for school leaders to support organizational growth and further promote student achievement. Supporting teacher leadership can support staff capacity building, especially considering the district role in upcoming policy changes regarding teacher leader endorsements to teacher certifications.

The complexity of educational organizations has increased, as well as the accountability and demand on public school teachers in recent years. While a traditional hierarchy remains as the organizational model in many public schools in New Jersey, one school leader cannot fulfill all roles of leadership to be the most effective. However, fostering the commitment and supporting the continuous learning of all members of the organization can provide the framework for organizations to excel (Senge, 1991). If schools are to function as learning communities, a singular leadership strategy is not sufficient to promote and continue learning and growth (Harris & Lambert, 2003). However, school improvement can result when teachers accept and develop as leaders within their organizations (Katzenmeyer & Moller, 2009). Since teachers ultimately have

the responsibility to implement policy and state instructional mandates, these changes need to be embraced at the classroom level for implementation efforts to be meaningful and effective (Angelle, 2007). Teacher leaders have the opportunity for collegial interaction about instructional practice that can benefit both the individual and the organization (Berg et al., 2014). Hence, the teacher, and specifically the teacher leader, can be a vital role in successful organizational improvement. However, more research is needed to determine ways to support the development of teacher leadership within existing organizations.

This study focused on the determination of a relationship between authentic PLC engagement and self-perception of teacher leadership. Additionally, this study explored teachers' descriptions of their leadership practice through the lens of PLC participation.

Research Questions

The focus of this research study was to determine whether engagement in the form of authentic PLCs is related to or contributes to teachers' perception of their leadership practice. This study attempted to determine if such a relationship exists and examined the perceptions and experiences of teachers within a PLC to understand how this engagement influences perception of individual teacher leadership. Additionally, the study probed into how teachers describe their leadership practice. The following questions guided the research:

Research Question 1 (RQ1): What is the relationship between authentic PLC participation and teachers' perception of their leadership practice in New Jersey public schools?

Research Question 2 (RQ2): How has PLC participation influenced New Jersey public

school teachers' perception of their leadership capacity?

Research Question 3 (RQ3): How do New Jersey public school teachers describe their leadership practice through authentic PLC practice?

Research Design and Rationale

For this study, a mixed methods approach was used. A mixed methods approach to research involves collecting both quantitative and qualitative data to integrate the results in the assumption that the combination of these two approaches provides a richer understanding than either approach would accomplish alone (Creswell, 2014; Creswell & Plano Clark, 2011). While a newer research design, mixed methods has been recognized as a major research paradigm along with singular qualitative and quantitative research (Johnson, Onwuegbuzie, & Turner, 2007). Mixed methods research combines qualitative and quantitative data for various reasons. Rossman and Wilson (1985) identified three reasons to integrate quantitative and qualitative research: (a) to have the ability to confirm findings through triangulation, (b) to enable analysis through a richer data collection process, and (c) to potentially create new avenues of thought by analyzing two sets of data. Furthermore, Greene, Caracelli, and Graham (1989) identified five rationales of mixed methods designs: triangulation, complementarity, development, initiation, and expansion, which solidified and expanded the research of Rossman and Wilson. More recently, Collins, Onwuegbuzie, and Sutton (2006) identified four rationales to support conducting mixed methods research: participant enhancement, instrument reliability, treatment reliability, and significance enhancement. While all of

these researchers support the value of mixed methods research, this research design benefits most from the deeper data collection process it requires that may reveal themes and other avenues of development that quantitative or qualitative methods could not offer in isolation.

Creswell and Plano Clark (2011) defined mixed methods research as possessing the following core characteristics: rigorously collecting qualitative and quantitative data; mixing the two forms of data in a way in which one builds upon the other; using research procedures in a single study, or phases of a study; framing procedures with philosophical worldviews and a theoretical lens; and combining procedures into a specific research design that supports the research plan. For this study, a mixed methods approach provided the opportunity for rich narrative data collection and complementarity of results to enhance quantitative results. While the quantitative findings revealed whether a relationship exists between PLC engagement and teacher leadership perception, the data derived from the qualitative strand was collected to uncover the inner thoughts and feelings of teachers regarding their perception of personal teacher leadership.

Moreover, a sequential-explanatory mixed methods design was used. Sequential mixed designs are research designs in which at least two strands of research are conducted chronologically (Teddlie & Tashakkori, 2009). For this study, the quantitative strand of inquiry occurred first in the form of a survey. Then, the qualitative strand occurred, using interview participants from the initial quantitative portion. The final conclusions were drawn from both phases of the study, in which the qualitative data further contributed to the findings of the quantitative phase of the study (Teddlie & Tashakkori, 2009). This design was conducive to a single researcher as it was easy to

keep the strands of investigation exclusive to one another and the research tended to unfold at a manageable and predictable pace (Teddlie & Tashakkori, 2009). Also, this design was appropriate because it has clearly defined steps and stages, providing clarity in reporting and describing data (Teddlie & Tashakkori, 2009).

The purpose of collecting both quantitative and qualitative data for this study addressed the research questions as meaningfully as possible. Specifically, the qualitative strand deepened the understanding of the quantitative results. Since qualitative research focuses on deep understanding of a phenomenon – as opposed to a numeric average representation of results – to better understand a specific situation or details worth illuminating, it enhanced the results found during the quantitative stage (Rubin & Rubin, 2012). Through this design, the methods were prioritized and analyses were initially independent of one another (Creswell & Plano Clark, 2011).

Priority was primarily given to the quantitative strand as this data revealed whether a relationship existed between PLC engagement and individual perception of teacher leadership, but the results were mixed during the overall interpretation of the study (Creswell & Plano Clark, 2011). Morse (2003) developed a basic notational system to display the distinction between the strands of research. Priority for this study was primarily given to the quantitative results as shown in Figure 1. The capitals indicate the strand of research dominance, and the arrow indicates that the study was conducted in a sequential fashion.

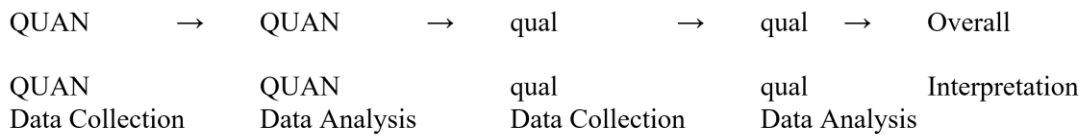

Figure 1. Prioritization of research strands.

All data for the quantitative strand of research were collected from one instrument, an online researcher created survey with 24 closed-ended Likert-scale questions entitled PLC Engagement and Teacher Leadership. The quantitative results were used for potential participants in the second phase of the study. The data from the second phase of the research, the qualitative strand, were collected through team interviews that consisted of multiple members of individual PLCs that participated in the first phase. Narrative data were collected by conducting semi-structured interviews.

This research design provided the best approach to gain understanding of teacher leadership practice through the lens of PLC engagement because it used both quantitative evidence and qualitative data to best represent perceptions.

Participant Selection

This study targeted PreK-12 public school teachers from multiple school districts in New Jersey. Since the study targeted teachers that have engaged in authentic PLC practice, to fully answer the research questions, teachers were sought from districts that acknowledge engagement in this practice. Additionally, an attempt to gather respondents with varying degrees of teaching experience was made by sending the survey out to as many potential districts and teachers as possible.

Recruitment of participants was primarily sought through professional networking and through district inquiry to determine whether PLC engagement existed within the

district. As a member of different professional organizations and an attendee at multiple opportunities for development of and implementation about professional learning communities and other educational initiatives, the researcher engaged in dialogue with teachers and school leaders about the PLC practice in multiple districts. Also, through other professional connections, participants were asked for their voluntary contribution to this study.

Sampling Procedures

The goal of this study was to gain knowledge about teacher leadership perception through PLC participation. Since the study included participants who likely engaged in authentic PLC practice, research was needed to determine which school districts in New Jersey seemingly implemented authentic PLCs. Because responses need to be solicited from teachers who engaged in PLC practice, purposeful sampling was used during the quantitative portion of this research. In purposeful sampling, participant selection is based on their likelihood to provide valuable information about the topic (Maxwell & Loomis, 2003).

Research in the social sciences can be complex, and it is common to use a combination of sampling techniques to adequately answer the research questions (Teddlie & Tashakkori, 2009). Therefore, homogeneous cases sampling was also used for the second phase of research to select interview groups that indicated self-perception of PLC engagement. The researcher also ensured that all interview participants in the qualitative research phase also participated in the quantitative data collection phase. This type of sampling was used as it is typically chosen when the goal is to collect opinions from people that are similar in one or more of the areas that are being measured (Teddlie &

Tashakkori, 2009). Interviews occurred at the convenience of participants in person at locations of their choosing.

A survey was sent to at least 10 school districts to acquire >100 participants for the quantitative portion of the study so that analysis reflects statistical significance. For the qualitative portion of the research design, a clear guideline could not be set because researchers do not agree upon clear-cut points on sample size, but rather that the sample size is adequate when the researcher reaches a point of data saturation (Creswell, 2014). However, the inclusion of a minimum of six interview teams was determined.

Instrumentation

The collection of data was sought through two different instruments and protocols. The quantitative data collection was obtained through the use of a survey, and the qualitative data collection was obtained through a semi-structured group interview.

Survey. Data were gathered through a researcher created survey, PLC Engagement and Teacher Leadership. In situations in which individual perceptions and viewpoints are sought, surveys have been shown to be an effective and valid data collection instrument. The first survey included 24 closed-ended questions. The survey began with five demographic questions to provide insight into the participant group which included educational attainment, grade level currently teaching, years of experience, and district demographics. It then transitioned into four point Likert scale questions (with options strongly agree, agree, disagree, and strongly disagree) that asked the participant to rate aspects of their individual perception of PLC practice and teacher leadership experiences based on characteristics of authentic learning communities as described by Hord (1994) and Dufour, Dufour, and Eaker (1996). Additionally, the

survey contained questions created from the functions of the seven domains of teacher leadership displayed and explained within the Teacher Leader Model Standards (2011).

The questions were monitored for content validity using Lawshe's (1975) approach to content validity. Using this methodology, experts in the field were asked to rate each of the instrument items on a 3-point scale: (a) essential; (b) useful, but not essential; and (c) not necessary. Seven experts in the field were asked to use this rating scale on the original survey. The researcher then entered this information using Lawshe's (1975) equation, which used Lawshe's statistic, or content validity ratio, to conduct a linear transformation of the ratio of experts that deemed the item to be essential to the total number of experts asked. This was done to determine the extent the question measured the given construct. When all experts rated the item as "essential," the value computed to 1. When more than half of the experts rated the item as "essential," but less than all, the CVR computed between 0 and 1. When less than half deemed the item "essential," the CVR value was negative. This reduced the number of questions on the survey and enhanced the construct validity of the instrument. Lawshe's (1975) table of critical values helped to reduce the number of survey questions by keeping those that indicated a value of .75 or higher (Appendix A). The original survey contained 42 questions, and the instrument used for this study included 24.

Targeted participants were accessed through electronic mail which eased the burden of recruitment and consent. All of the voluntary participants accessed the survey through a secure link to the web-based survey using Qualtrics. The initial page of the survey contained a detailed protocol and confidentiality agreement with the option of consent by continuing to the survey or exiting at any time.

Interviews. For the second phase of data collection, an interview protocol was designed in a way to promote the most comfortable environment for the participant to garner the most descriptive and rich data possible. All interviews were planned to take place in the home school district of the participant. The groups were made up of between two to seven people to provide a springboard for dialogue, but also an opportunity for all voices to be heard. The semi-structured interview questions were designed so that participants could share their own personal experiences with PLCs (Teddlie & Tashakkori, 2009). The Model Teacher Leader Standards (2011), research questions, and quantitative results were used to create interview questions to provide the best collection of qualitative data to deepen the understanding of the findings. Themes and correlations were developed from the quantitative data that supported the creation of questions that were asked to derive a deeper understanding of these relationships.

To ensure that questions posed were prime for collecting meaningful data from participants, all questions were peer-reviewed by at least three professionals in the educational field. Additionally, the researcher "test drove" the interview questions while role playing with a sample interview group of teachers that participated in PLCs, but who were not participating in this research other than interview protocol and question creation. Based on the feedback from the mock interviews, questions were tweaked and refined to assure the best collection of narrative data possible.

Data Collection

All data was collected in Qualtrics, an electronic survey tool offered through Rowan University. An invitation letter to participate in the study was electronically sent to teachers who worked in districts that knowingly engaged in the practice of PLCs. A link within the letter navigated participants directly to the quantitative survey in which a consent was embedded. In most cases, the letter and link were sent from district personnel on the researcher's behalf as per district policy. However, in some cases, the letter and link were emailed directly to the teacher from the researcher. This survey was completely anonymous, and did not contain any identifiers to link districts, or individual teachers to their survey responses. If an individual chose to volunteer for the second phase of research, he or she would click an embedded link within the original survey that navigated to another survey to enter contact information, thus protecting confidentiality. Teachers were provided a two-week time frame in January, 2018 to complete the survey. A follow-up email was sent to potential respondents one week prior to the deadline to solicit as many responses as possible.

At the conclusion of the survey, participants were asked to click on the embedded link if interested in participating in a group interview to gather qualitative data. From this, the researcher developed interview teams and scheduled dates to interview at agreed upon locations. No names or identifying information were solicited or collected, other than an email to set up an initial interview so that all participants remained anonymous. For the qualitative strand of inquiry, all interviews were audio recorded. Once the interviews were complete, the researcher sent all audio files to an outside vendor for

transcribing. Transcripts were read and summarized by the researcher, and summaries of the interviews were sent to key participants for member checking.

Data Analysis

All data collected through the survey were downloaded into a spreadsheet that offered statistical tools. The data was cleaned and screened initially by recoding the variables for both attributes of teacher leadership and of PLC engagement. Once recoding was complete, a frequency table was created to see the totals for each of the newly coded responses. After the data provided by the frequency charts was analyzed, descriptive statistical tests were run. The mean, standard deviation, and standard error were calculated for each survey question. Then, the array of means that measured authentic PLC engagement was compared to the array of means that measured perception of teacher leadership and a Pearson Correlation was calculated. This calculation determined whether a relationship existed between perception leadership practice and PLC engagement. The Pearson Correlation determined whether a positive or negative correlation existed, and the strength of the correlation.

For the second phase of the research design, two cycles of coding were used to analyze the qualitative data. As a first cycle coding method, process coding was used. Process coding was appropriate and useful for narrative data as it was likely that many anecdotal records and short narratives were shared that indicated action and often interaction with other people during PLC engagement (Saldaña, 2016). Process coding provided the opportunity to break longer examples down into smaller actions within the data and derive deeper meaning from responses.

Pattern coding was used during the second cycle of coding to reduce the number of codes created during the first cycle. Through this process, the similarities, differences, and frequencies that occurred within the coding processes allowed for chunking ideas together as emerging themes or concepts. These ideas underwent a deeper analysis when determining inclusive and exclusive factors of examples. Determining inclusive and exclusive factors defines limitations for the potential data within each code as a measure. At this point in coding, a codebook was created to clarify and define final codes and provide explicit inclusion and exclusion criteria. These two steps of coding enabled the researcher to extract the major concepts from the interview data from which themes emerged.

An integration of the data from both strands of this explanatory sequential mixed methods research was essential for meaningful findings. The qualitative phase was built upon the responses in the quantitative phase, and the data collected from each phase were initially analyzed separately (Creswell, 2014). However, the idea of explaining the relationship between PLC engagement and leadership capacity in-depth from the narrative data derived from the qualitative portion made this design strong for this inquiry (Creswell, 2014). Therefore, an effective tactic for integration was following threads or ideas found throughout the researcher's findings (O'Cathain et al., 2010). By using this technique, key themes were identified in each strand of inquiry, and then the researcher selected themes from one component and followed them across the other component (O'Cathain et al., 2010). Describing the development of the theme across both strands of inquiry integrated the findings. Since this was a sequential study, some relationships that were determined from the initial set of quantitative data drove the questions of the second

phase, and the researcher was able to follow themes from the quantitative phase to the qualitative phase to deepen the understanding of the phenomena.

Validity

The researcher increased validity by using methodological triangulation in which more than one method of study was used to gather data about the same phenomenon (Mitchell, 1986). The use of a survey and interviews not only helped to validate the data that was collected, but also served as a framework to deepen the understanding of the phenomenon of study.

For the quantitative survey instrument, content validity was conducted using Lawshe's (1975) Construct Validity Ratio to determine which questions within the survey assessed what was supposed to be measured. Validity testing enhanced the construct validity of the survey to ensure that the instrument is a high-quality measurement tool.

For the qualitative strand of the research design, all interviews were transcribed by an outside vendor and then summarized by the researcher within 72 hours of each interview. Then, the summaries were sent to key participants to engage in member checking. Member checking ensured that the summary represented the intended message of the participants and provided participants the opportunity to correct a misconception, misinterpretation, or misinformation.

Ethical Considerations

All ethical responsibilities that were relevant during this study were upheld by the researcher. All necessary permissions from both the research institution and the individual participants were obtained. The purpose of the study was disclosed to all

potential participants. Participation in the survey was completely voluntary as indicated in writing at the beginning of the survey and stated at the commencement of all interviews. Participants were provided with an option to stop at any time. Survey consent from participants was indicated through participation. Interview participants also indicated consent through participation. Participant responses were confidential and their identities shall remain anonymous. The researcher selected interview sites that did not have a vested interest in the outcome of the research and did not have an imbalance of power between the researcher and the participant (Creswell, 2014).

Summary

This research was designed to determine the relationship between PLC engagement and teachers' perception of their leadership capacity. The available literature has shown a clear link between PLC implementation and teacher leadership to student achievement. However, a gap in the research literature exists as to whether a relationship can be drawn from PLC engagement and teacher leadership. The methods presented here attempted to gather sufficient and rich data, and employ effective analysis techniques, to draw conclusions, suggest common themes, and find implications to practice.

Chapter 4

Findings

This research study revealed the relationship between authentic PLC engagement and individual perception of teacher leadership practice in New Jersey public school teachers. As previously stated, the focus of this study was on authentic PLC practice versus PLCs in practice. In authentic PLC practice, educators are committed to working collaboratively in ongoing processes of collective inquiry and engage in action research to improve student achievement (DuFour, DuFour, & Eaker, 2006). This mixed methods study used a sequential-explanatory design to determine and describe the relationship between authentic PLC participation and teachers' perception of their leadership. This chapter reports an analysis of data collected through a survey entitled PLC Engagement and Teacher Leadership (Appendix B), and semi-structured group interviews (Appendix B), to gain perceptions about teacher leadership through the lens of PLC engagement.

The study addressed the following three questions:

1. What is the relationship between authentic PLC participation and teachers' perception of their leadership practice in New Jersey public school teachers?
2. How has PLC participation influenced New Jersey public school teachers' perception of their leadership capacity?
3. How do New Jersey public school teachers describe their leadership practice through authentic PLC practice?

This chapter provides quantitative and qualitative findings from the study that include (a) demographic information about the survey respondents, (b) statistical analysis

of the 24 Likert-style survey questions, and (c) discussion of themes that emerged from the semi-structured group interviews.

Survey Respondents

Targeted respondents for the quantitative strand of research were solicited through professional networking to focus on school districts that engage in PLC practice. Then, respondents were accessed through electronic mail. All potential participants were provided with a secure URL link to a web-based survey housed in Qualtrics. The first page of the survey contained a description of the study, informed consent, and confidentiality information. This provided the opportunity for the participant to give consent by checking a box and continuing onto the survey, or exiting at any time. Since the link was sent out individually and also through district mass mailing by district administration, it was not possible to determine the number of New Jersey public school teachers that had access to the link. However, there were 151 respondents to the survey in the two-week time frame in January, 2018. Of those responses, 132 participants completed the entire survey. Incomplete surveys were removed from the data collection.

All data for the quantitative strand of research were collected from one instrument, an online researcher created survey containing 24 closed-ended questions entitled PLC Engagement and Teacher Leadership. The survey consisted of statements using a four-point Likert scale (i.e., strongly agree, agree, disagree, strongly disagree) to measure perceptions about PLC engagement and teacher leadership. Nine questions were created to determine authentic PLC engagement and 10 questions were created to determine individual perception of teacher leadership using descriptors of teacher leadership as determined by the Teacher Leader Model Standards (2011). Categorical

scales (i.e., grade level taught, educational attainment, district descriptor, district socio-economic status, and years of teaching experience) served as a means for collecting demographic data. The survey was housed in Qualtrics and results were uploaded into a spreadsheet that offered statistical tools. Data were analyzed to determine a relationship between authentic PLC engagement and perception of teacher leadership.

Consent and participation came from 132 respondents. Table 2 represents the summary of demographic information collected from the online survey respondents including grade level taught, level of education attained, and years of teaching experience. The survey asked participants to disclose whether their district was urban, suburban, or rural, and the percentage of students with a low socio-economic status. Respondents represented teachers of grade levels from PreK-grade 12. The data collected represented diverse experience with regards to years teaching and levels of education. Most of the respondents were teachers from grades 3-5 (34.09%) and most of respondents had indicated that their highest level of attained education was a bachelor's degree (43.94%). The majority of respondents indicated that they possessed more than 15 years of teaching experience (45.45%). Additionally, the majority of respondents reported that they worked in a suburban district (81.06%), and 32.58% identified that less than 10% of district students were associated with a low-socio economic status.

Table 2

Demographic Description of Survey Respondents

Area	**Frequency (N=132)**	**Total (100%)**
Grade Level Taught		
PreK-2	34	25.76%
3-5	45	34.09%
6-8	33	25%
9-12	20	15.15%
Level of Education		
Bachelor Degree	58	43.94%
Master's Degree	39	29.55%
Master's +	34	25.76%
Doctorate	1	0.76%
Teaching Experience (years)		
0-5	23	17.42%
6-10	18	13.64%
11-15	31	23.48%
15+	60	45.45%
District Description		
Suburban	107	81.06%
Urban	19	14.39%
Rural	6	4.55%
Percentage of Low Socio-Economic Students		
<10%	43	32.58%
10-24%	14	10.61%
25-49%	38	28.79%
50+	37	28.03%

Quantitative Survey Results

For the quantitative strand of inquiry, data collection took place through the online administration of the PLC Engagement and Teacher Leadership survey. The survey consisted of 24 statements of which five were demographic questions, and 19 contained four-point Likert-scale (i.e., strongly agree, agree, disagree, and strongly

disagree). Of these 19 Likert-scale questions, nine were designed to measure perception of authentic PLC engagement, and 10 were designed to measure perception of teacher leadership capacity.

Item analysis. Appendix D displays the participants' responses to the Likert-scale questions from the PLC Engagement and Teacher Leadership Survey. Overall, the participants responded "agree" or "strongly agree" to items pertaining to collaborative practice and instructional improvement, and participants were more likely to disagree with survey items related to distributive leadership. Data are represented as frequencies and percentages that reveal the participant's responses to the Likert-scale questions relating to engagement in authentic PLC practice. From the responses designed to measure authentic PLC practice, 96.97% of respondents either agreed or strongly agreed to the self-perception that they engage in informally sharing ideas with colleagues to improve student learning, and that they feel genuine and caring relationships exist among staff and students that reflect trust and respect. Additionally, 96.21% indicated they either agreed or strongly agreed that they feel accountable to work towards their school vision and for student learning. Furthermore, 90.15% either agreed or strongly agreed that they work together with colleagues to learn about new skills and teaching strategies, and then apply them to their practice. In contrast, the majority of respondents, 52.27% of teachers, indicated that they either disagreed or strongly disagreed that they are regularly involved in decision-making about many school issues. Lastly, 29.55% of respondents either disagreed or strongly disagreed that school-based administration uses input from staff members to make decisions.

For the survey items to assess self-perception of teacher leadership characteristics within practice, participants generally either agreed or strongly agreed to statements that indicated confidence in their own knowledge or ability to model more than questions asking if they facilitated knowledge building in others. Participants responded "disagree" or "strongly disagree" most often about collaborating with families and the community to address the diverse needs of the organization. Of the participants, 98.49% indicated that they either agreed or strongly agreed that they model an attitude of continuous learning and reflective practice for their colleagues. Additionally, 93.18% of respondents felt they either agreed or strongly agreed that they were knowledgeable about formative and summative assessments, and work with colleagues. Also, 90.91% of respondents indicated that they either agreed or strongly agreed that they use their knowledge and understanding of different cultures and backgrounds in the school community to promote effective interactions among colleagues, families, and the community. Conversely, 32.06% of respondents either disagreed or strongly disagreed that they collaborate with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community. Also, 29.54% of respondents either disagreed or strongly disagreed that they advocate for access to professional resources that allow colleagues to spend significant time learning about effective practices and developing a PLC focused on school improvement goals.

Descriptive statistics. Further analysis of the PLC Engagement and Teacher Leadership Survey data were conducted through the use of descriptive statistics. The mean, standard deviation, and standard error are presented in Table 3 (below) for each of the nine Likert-scale questions relating to authentic PLC engagement. Table 4 presents

the descriptive statistics for the survey components relating to teacher leadership. For the purpose of the tables, questions were paraphrased from the original survey document found in Appendix B. The researcher assigned a four-point scale that converted Likert scales to numeric representations in which "strongly agree" was designated as a 4, "agree" was designated as a 3, "disagree" was designated as a 2, and "strongly disagree" was designated as a 1. The mean represents the average response for each question. The standard deviation represents the measure of variation in the data through the average difference of the scores from the mean for each item. Lastly, the standard error represents the approximation of the standard deviation used to measure the accuracy with which a sample represents a population. The lower the standard error, the more likely the data are representative of a larger population.

Table 3

Analysis of Authentic PLC Practice Components of Survey

Survey Items	**M**	**SD**	$\sigma_{\bar{x}}$
Participant feels:			
1. Involved in school decision-making	2.42	.76	.07
2. Staff input is valued	2.77	.72	.06
3. Accountable to school vision and student learning	3.42	.62	.05
4. Collaborative with colleagues to learn and apply new skills	3.41	.65	.06
5. Engaged with colleagues to find effective instructional techniques	3.36	.70	.06
6. Engaged in idea sharing for student improvement	3.55	.56	.05
7. Genuine and caring relationships exist within the organization	3.44	.56	.05
8. Taking risks to improve instruction is encouraged	3.14	.71	.06
9. Data are used in instructional decisions	3.17	.69	.06

Table 4

Analysis of Teacher Leader Components of Survey

Survey Items	**M**	**SD**	$\sigma_{\bar{x}}$
Participant feels:			
1. He/she is collaborative in planning professional learning	2.89	.85	.07
2. He/she facilitates professional learning	2.88	.78	.07
3. He/she models an attitude of continuous learning and reflective practice	3.40	.52	.05
4. He/she facilitates the use of data	2.86	.71	.06
5. He/she is knowledgeable and works well with colleagues about assessment	3.20	.54	.05
6. He/she is collaborative with colleagues in the use of student data	2.94	.71	.06
7. He/she is knowledgeable about different cultures in the community to promote effective organizational relationships	3.17	.61	.05
8. He/she assists colleagues' understanding of community culture to support cultural responsiveness	2.95	.62	.05
9. He/she is collaborative with stakeholders to address the diverse educational needs of families and the community	2.80	.69	.06
10. He/she advocates for access to professional resources and supports a professional learning environment	2.83	.73	.06

This data indicated that seven of the nine survey items pertaining to participation in authentic PLC practice had a mean of 3 or above, revealing that most participants agreed or strongly agreed with those items. The item that received the highest mean score, 3.55, indicated that respondents engaged in informally sharing ideas with colleagues to improve student learning. Additionally, a mean of 3.44 was calculated for the item that asked if the respondent felt that genuine and caring relationships existed among staff and students that reflect trust and respect. The lowest mean was calculated for the component in which respondents were asked if they felt regularly involved in

decision-making about many school issues, indicating that they generally disagreed with this descriptor. The item that indicated whether respondents felt school-based administration used input from staff member to make decisions was calculated as 2.77, indicating that most respondents responded "disagreed" to this descriptor.

For the components that pertained to self-perception of teacher leadership, three of the 10 indicators had a mean of 3 or above, indicating participants agreed or strongly agreed with those descriptors. The item that calculated to the highest mean, 3.40, indicated that most respondents felt they modeled an attitude of continuous learning and reflective practice for colleagues. Additionally, the second highest calculated mean, 3.20, indicated that most respondents agreed that they were knowledgeable about formative and summative assessment, and worked with colleagues to identify and use multiple assessment tools aligned to state and local standards. The third highest calculated mean, 3.17, indicated that most participants agreed they used their knowledge and understanding of different cultures and backgrounds in the school community to promote effective interactions among colleagues, families, and the community. Conversely, a mean of 2.80 was calculated for the response that indicated that participants collaborated with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community.

Pearson Correlation. A Pearson Correlation is an appropriate statistical analysis to determine a bivariate correlation. To determine if a correlation exists between authentic PLC engagement and perception of teacher leadership, the responses to questions created to determine PLC engagement were binned as well as the questions to determine self-perception of teacher leadership. The mean of each respondent's answers

was binned by type – PLC engagement or teacher leadership. Then, the Pearson Correlation test was run between the two arrays of calculated means to determine a bivariate correlation between teacher perception of authentic PLC engagement and perception of teacher leadership as defined by the Teacher Leader Model Standards (2011). The Pearson Correlation illustrated in Figure 2 (below) calculated to .72. A .72 indicates there is a moderate positive correlation between teacher responses to perception of authentic PLC engagement and self-perception of teacher leadership.

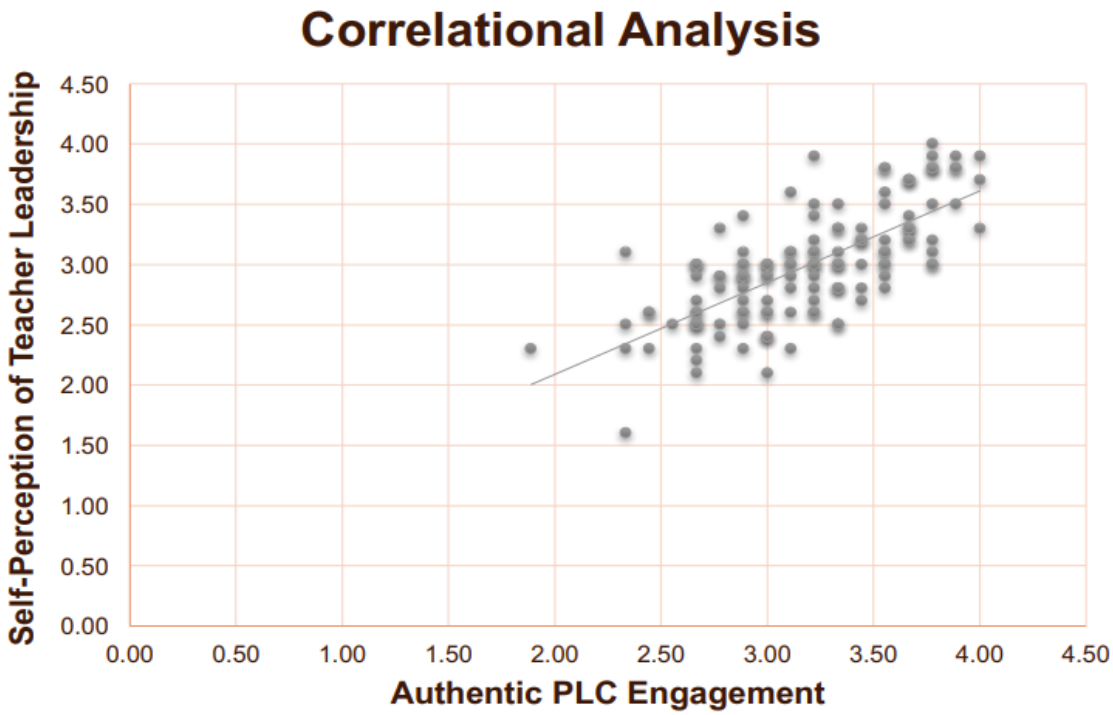

Figure 2. Pearson correlation between teacher leadership and PLCs

Interview Participants

Survey participants were given the option to volunteer their participation in the qualitative strand of this study by clicking on an embedded link in the PLC Engagement

and Teacher Leadership Survey. Of the 132 respondents who completed the survey, nine teachers indicated that they would participate in a group interview. Each of these volunteers received an email from the researcher confirming their position as a teacher in a public school in New Jersey who engages in PLC practice, and requesting an interview with at least one additional member of his or her PLC. The researcher also requested and ensured that all interview participants had participated in the survey portion of the study. Group interviews contained between two and seven teachers whose self-perception indicated engagement in authentic PLC practice. The study in total contained 36 teachers in seven groups in seven different schools within six different public school districts in New Jersey. Since this research was anonymous, no personally identifying information was linked or collected from interview participants. School names were given identifiers (School 1, School 2, etc.) and no names were used within the coding. However, it can be noted that six of the 36 interview participants were male, and 30 of the participants were female.

Research sites. All interviews were held at times that were convenient to the PLC participants and in a location of their choosing. All interview groups selected their home schools and districts, and selected times within the school day. Five interviews were held during scheduled PLC time, but two were conducted voluntarily during teacher preparatory time. Interviews were held primarily in classrooms where the groups would typically meet for their PLC meetings, and in one case, a conference room in the main office.

Qualitative Data Findings

The second strand of this research project included face-to-face, semi-structured interviews based on a subset of volunteers that participated in the survey from the initial strand of inquiry. To capture the interview data, the researcher audio-recorded each interview. To remain anonymous, all participants were asked to not disclose school names or actual names during the interview. However, if a participant inadvertently mentioned an actual name, the researcher removed it from the transcriptions. The interview questions (Appendix C) followed a semi-structured approach and consisted of five questions so that participants had the opportunity to explain their experiences. Follow-up questions were asked at each interview that arose from the different topics that emerged. Interviews ranged between 19 minutes and 37 minutes in length. All digitally recorded interviews were transcribed by Rev.com. Summaries of all interviews were sent to the volunteer participants who initially agreed to the interviews to share with their PLCs, which served as a form of member checking for accuracy of the presented ideas and responses.

For the second strand of this research design, the researcher used two stages of coding to analyze the qualitative data. The researcher initially conducted process coding, which was appropriate and effective because of the short narratives and anecdotal information shared during the interviews often indicating action and interaction among colleagues during PLC engagement (Saldaña, 2016). Process coding provided the researcher the opportunity to break down larger narratives into smaller actions within the data to derive essential meanings from the responses.

During this process, the researcher highlighted and annotated each transcript, looking for ideas and content that could be extracted. Lengthy interactions were scoured to find the portions of text that best represented content to analyze. In some cases, lengthy interactions contained content that would fit into two different concepts. Figure 3 shows how the researcher engaged in this process.

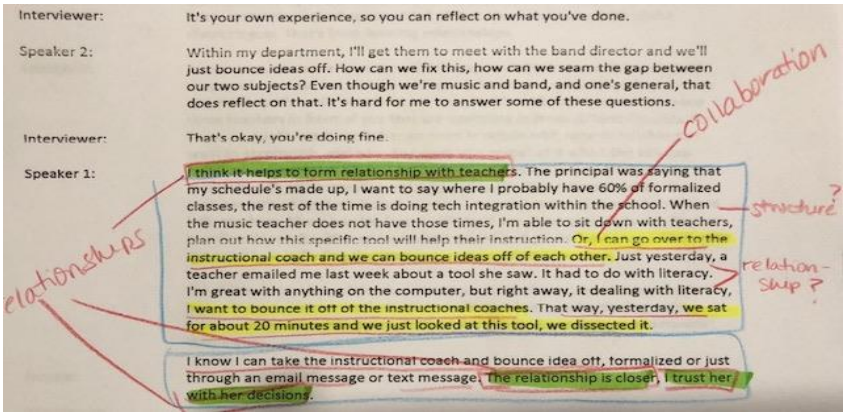

Figure 3. Researcher interview data analysis process

The researcher put brackets around the portion of the interview that contained content to analyze, as seen in blue above. Then, the researcher underlined text from the interview that conveyed an idea determined to be important for the study. The ideas were labeled, as seen in red pencil. Then, the researcher highlighted the portion of the underlined text that best conveyed the message of the section to share. In total, 18 ideas were developed during the initial coding phase, with each offering at least three pieces of supporting data.

After all transcripts were initially coded, the researcher moved onto the next stage of the coding process. Pattern coding was used during the second cycle of coding to reduce the number of codes created during the first cycle. Through this process,

similarities, differences, and frequencies occurred to chunk ideas into emerging themes. For example, the code "collaboration" in Figure 3 eventually became "Collaborating with Colleagues," and "relationships" eventually became "Fostering a Supportive Environment." The ideas were analyzed further by the creation of inclusive and exclusive factors that were defined and then determined for examples. These factors help to ensure that the pieces of data selected for each code followed a specific definition. Examples that included instructional dialogue with colleagues would be an inclusive factor for "Collaborating with Colleagues" and presenting an idea to the Board of Education would be an exclusive factor, for instance. A codebook (Appendix E) was created at this stage to explicitly define and describe codes. During this second cycle of coding, the 18 codes created during the first phase were reduced to 11.

Through the two cycles of coding, the researcher was able to extract the major concepts from the interview data from which themes emerged. The researcher condensed codes with similar criteria and examples, and renamed them by discerning their essential message. For instance, the codes "communicating with coworkers," "communicating with the community," and "collaborating with colleagues" comprised one major theme: collaborative culture. The analysis of the interview transcriptions revealed five major themes:

1. Supporting a collaborative culture
2. Using data and assessments
3. Improving instructional practice
4. Reflecting on practice
5. Developing teacher leadership

The number of comments extracted to support each of these themes and the number of interview sites are noted in Table 5. Collaborative culture was the most cited comment from participants and was found at each interview site. While many other comments were made by participants, these themes represented the majority of the content of the conversations.

Table 5

Qualitative Findings – Quantity of Comments for Each Theme

Theme	**Number of Participant Comments**	**Number of Interview Sites**
1. Supporting a Collaborative Culture	28	7
2. Using Data and Assessments	14	5
3. Improving Instructional Practice	13	5
4. Reflecting on Practice	7	5
5. Developing Teacher Leadership	11	5

Theme 1: Supporting a collaborative culture. According to the comments made by interview respondents, collaboration, with regard to culture and team structures, was noted as a common experience realized through PLC unity engagement. Figure 4 represents the two smaller components of this theme, fostering relationships and communicating with colleagues.

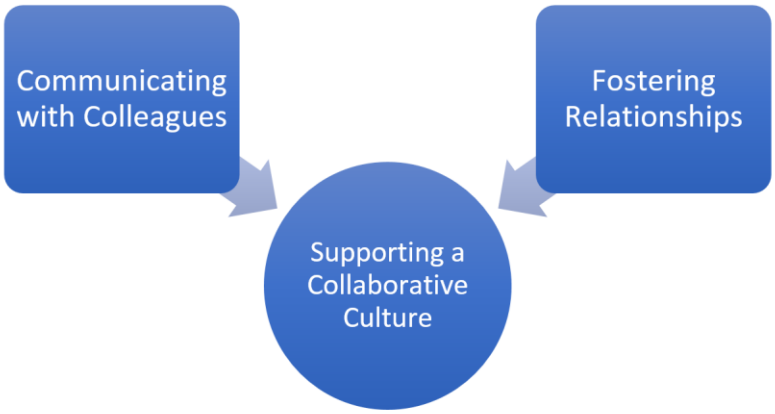

Figure 4. Components of supporting collaboration.

Of the subcategories that indicated supporting a collaborative culture, comments that indicated communication with colleagues were included in all of the interviews. According to interview transcripts, participants noted how PLC engagement supported individuals in fostering a collaborative culture by providing opportunities and supporting a culture to communicate with colleagues. One participant from School 1 commented, "We have this sort of culture created here where we can talk to each other about things, and how are you doing this, and it's just like a norm for people to bring things up." Another indicated that PLC engagement has supported the ability to foster collaboration among colleagues through dialogue:

> PLCs help us make sure we're all on the same page, make sure we're aligned with what we're teaching each other ideas of what works for one, time to share some ideas that are working that you can use. (School 8)

Other comments supported the idea of open communication and its role in supporting a collaborative culture. An interview participant from School 2 explained, "You feel comfortable talking to other teachers about certain things because of this group (PLC)." In fact, teachers indicated that this was a time to check in to help keep everyone on the

same page. This type of discussion was indicated by a participant who was relaying dialogue about a new district initiative:

> This year we implemented the standards-based report card, so some of our meetings, we were just discussing how are you just trying to uniformly assess? Like how are you going to determine if they're approaching the standard or meeting the standard? (School 2)

As can be seen, this participant from School 5 honed in on open communication and dialogue when she said, "It's talking about where you're at in the program, where you're going with the next few lessons…kind of dissecting them. How are we going to make them fit? How are we interpreting the program?" Thus, while open lines of communication alone do not build collaboration, the presence of strong communication can be helpful to fostering a collaborative culture. Indeed, this sentiment was echoed by other participants during the interviews.

Other respondents indicated that PLC engagement supported their ability to foster relationships with colleagues. In the words of one respondent from School 4, "I think that PLC time has to do with building relationships with your colleagues. The fact is that over the past four years, we have built that relationship where we are able to have those open conversations." Building relationships with colleagues to broaden views was also indicated through the following comment:

> I think that being in a PLC rather than just being in my room doing work, I think that's given me a broader range of topics and I'm able to hear from other people, from other disciplines, in other ways in which they conduct their classes. I think it give me a more broad view of education in general on being able to reflect on my own practice through the lens of others. (School 2)

Other participants indicated PLC engagement supported relational trust and reduced isolation. This was illuminated by contrasting PLC engagement to prior teaching experiences:

> I remember starting out, it was nice to have that sense of community and support because I have worked in schools where I was afraid to ask for help because I felt that it made me look like I didn't know how to do my job, whereas here, I never felt that. I was never afraid to go to my team. (School 2)

> I worked for a year in a district that didn't do the PLC model…and it's nice here that I feel like everyone's here to help me. That if I have a question or concern or something that when I was a first year, second year teacher, I didn't know a lot of things. A lot of it is just experiential and so going to people and saying what's your experience with this, how would you handle the situation, it's nice to know that there are people that are here to help. That you don't feel as alone in it." (School 2)

Additionally, another respondent from School 4 said explicitly, "I think PLCs help to form relationships with teachers," when describing his ability to "bounce ideas" off the instructional coach. He then explained a scenario in which this occurred by saying, "Just yesterday we sat for 20 minutes and discussed this new tool…we have *that type of relationship*" (emphasis added). Lastly, a respondent from School 6 summed up the idea when asked if PLC engagement changed the way she viewed herself as a colleague by simply saying, "PLC…definitely brings us closer."

While communicating with colleagues and fostering trusting relationships are supporting components to a collaborative culture, some participants referred to their PLC engagement explicitly as collaboration. One respondent from School 2 stated, "I think the PLC is a big district initiative that they do to support collaboration." In School 3, a respondent noted, "I think the PLC gives us an opportunity to collaborate, which I think benefits the students and the teachers overall." Through statements about relational trust

and communication with colleagues, many participants noted the collaborative culture experienced through authentic PLC engagement.

Theme 2: Using data and assessments. According to the comments made by interview respondents from each interview group, participating in authentic PLC practice supported the use and analysis of data and assessments. The level of data use varied by teacher and school on a continuum as shown in Figure 5 (below) from accessing and looking at data to a deeper sense of analysis that could drive instructional practices.

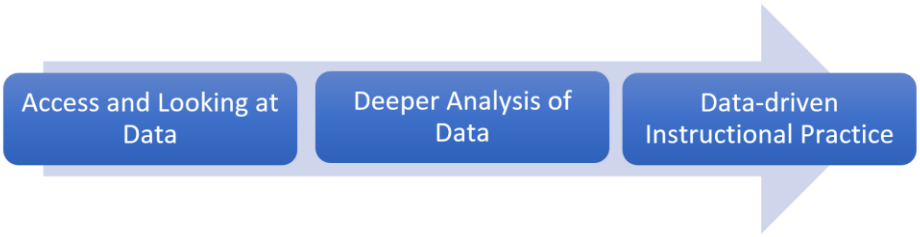

Figure 5. Continuum of data use.

Some respondents suggested a casual use: "We'll give a check in at the end of class as they leave, and we'll see…some sort of formative assessment…and I'll report back how my students learned or what their results were and she'll report back hers" (School 5). While this does not indicate planning or collaborative implementation, it does suggest that results will be shared and discussed at a PLC meeting. Another participant from School 1 said, "We use benchmarks. We use our PARCC scores. We use classroom assessments, and we really use a little bit of everything, I think," indicating the collection and viewing of multiple pieces of data without providing the specific

purpose. In fact, one school indicated explicitly that one PLC goal was the collection of data:

> Our SMART goal last year was looking at streamlining data collection, because we were finding that we all have various ways of collecting data. It was to make it more streamlined as a school for a whole, and also for parents to view the data for the kids.

This use indicated that the school valued data by creating a goal to improve its collection, and also suggested that a better approach was necessary for staff and community to increase their interaction with data.

Also leaning towards the far left of the continuum, one participant from School 4 said, "I think one of our goals is to access the reports with STAR, which is our progress monitoring tool, to access those reports ourselves…to see which reports are useful in driving instruction." This comment clearly indicates that data could be used to drive instruction, but this particular teacher's current interaction is lower on the continuum with her explanation that the current goal was access. A participant from School 6 indicated that data are viewed periodically when she said, "At certain times of the year, we use data….I could definitely see us next week bringing our DIBELS (literacy assessment) and saying, what did you find, what did you do?...those kinds of things." This comment indicated that accessing data might not be a weekly norm for this PLC, but looking at results might be a future activity. Furthermore, while it does not explicitly state that the PLC analyzed data, it does suggest that this could be the next step on the continuum.

Moving to the center of the continuum, other participants supported the idea that data were analyzed at a deeper level while engaging in PLC practice. This next step on the continuum of data use goes beyond the initial step of access and viewing, and

embarks upon analysis. One participant from School 4 said, "We're able to come to a PLC to start to look at that data, to be able to analyze students' strengths and weaknesses, to see what goals need to be set." One PLC indicated how the group strengthened their data by norming – or standardizing – the work together. A teacher from School 6 said, "With our writing assessments…we've normed them at times where we've sometimes graded other peoples' in the past…because we use a rubric so we wanted to make sure that we were all kinda grading similarly." This demonstrates that the group not only valued the idea of assessment data, but the quality of it as well. The following comment also suggested data analysis and how this skill was shared and strengthened through PLC practice:

> We have some teachers that are really strong at using data…then they're able to support other teachers in that area. There will be times in PLC if teachers are uncertain of where a student is falling, we're able to then look at that piece together and make those determinations on where the student is falling on the progressions as well. Which leads to great conversations of, this is what this level looks like compared to this level, so all teachers get a solid grasp on analyzing the data. (School 4)

In other words, the analysis of data is looked upon as a valued skill, and that PLC time has been spent to facilitate learning about data analysis.

Finally, some teachers indicated through their comments that working with data through PLC engagement influenced specifically-set goals and impacted instructional practice. As stated by a language arts teacher from School 4, "We're able to come to a PLC to start to look at that data, to be able to analyze students' strengths and weaknesses, to see what goals need to be set." In the case of this language arts teacher, the use and analysis of data determined what instructional areas needed the most focus. The

following comments also suggested the use of formative assessments and data-driven instructional practices:

> So, for example, one of the things we noticed in our data dig was that our very low scores, in part, are on authors' perspective and purpose. And, we've been trying to build that into our units of study as more of a focus. (School 6)

> PLCs are more organized now…it became more data driven. When in the past if there was a district benchmark that we had to give or a state assessment we had to give, that was kind of an isolated event, where our previous curriculum director took a leadership role in teaching us how to take that data, break it down, analyze it across students, analyze it across standards, analyze it across just how you would actually put it to practical use in your classroom, like using it to group kids flexibly, or whatever you needed to do. So I think that was a big change in me as a teacher. (School 1)

These comments indicated the strongest use of data-driven instructional practices as represented on the continuum in Figure 5. Engaging with data in a way that improves instructional practice shows meaningful implementation. However, a district or PLC cannot perform at that level without working through the lower ends of the data continuum; thus, all interactions with data constitute some level of data use.

Theme 3: Improving instructional practice. Throughout the interviews, the theme of improving instructional practice arose frequently. Comments suggested improvement within instructional practice and also suggested the promotion of professional learning. As one respondent from School 4 explained, "If I'm facilitating a PLC, it's about implementing something in instruction or we might be analyzing all the data and trends so we can make those next step goals for student improvement." In other words, this respondent indicated that engagement in PLCs facilitates instructional improvement. Furthermore, a participant from School 6 said, "If somebody does a lesson, and it went well, then we might change our plan of how we're going to do it because of how well it worked in some else's classroom." This indicates how shared

practices can and do shift to improve instruction. This idea is further supported by a participant from School 6 who said, "We talk about what went well. We talk about where we're going next. I feel a lot of times, we collaborate on how we could have done it this way, or next time, we'll try this." In other words, the PLC here exists as a space where successes are not only shared, but also built upon for more purposeful instructional implementation.

While these comments noted instruction and goal-setting as an opportunity for improvement and growth, another action that was referred to by participants as an outcome of PLC engagement was peer observation for personal and professional development. More than half the schools' respondents identified this practice as a valid piece of instructional improvement and professional learning. The impact of this practice was explicitly stated by one participant from School 1 when she said, "I saw her doing things differently in her classroom when she started implementing more formative assessments and things like that. I was able to learn from her, and that's what encouraged me." The participant further elaborated that this experience provided her the needed encouragement to participate in a new district grant the following year. Additionally, the practice of peer observation was described in the following comments:

> If one person was really good at math workshop, they would put that out there, so teachers knew that they could go to that teacher to see that. If someone else was really good with strategy groups, or reading, or writing, they knew that they could go to that teacher as well. It really did become that comfort level between colleagues as well. (School 4)

> We do learning laboratories. I'll go in and watch one of my PLC members do, if we're talking about responsive classroom, I might go into her classroom one morning to see how she might handle a disruptive behavior. It's good to see in action if what you're doing is right, or that you have the best ideas, but it's also good to see it in action and see how other people handle it. The PLCs have promoted that a lot. (School 7)

In other words, these respondents indicated how peer observations can positively impact practice. Another respondent from School 7 said, "I feel like it makes people more comfortable, too, going and seeing how other people teach. I think that I've heard a lot of positives, and I feel like my instruction has gone up from it." This comment explicitly stated the benefits peer observation offered to improve her practice as well as the positive overall feeling she claimed her organization had about this process. A participant from School 2 said this about peer observations, "It's good to pop in just to see different teaching styles. It's something I wanted to do, not something I had to do." This indicated the component of choice to this practice, which in this teacher's opinion made it an option for professional learning as opposed to a mandate.

The findings suggested that engagement in PLCs enabled teachers to engage in goal-setting and instructional improvement. Additionally, while the name of the practice differed from school to school, the findings indicated that PLC engagement promoted a peer observation practice that served as professional learning for improvement in practice.

Theme 4: Reflecting on practice. Reflective practice was another theme that emerged from the qualitative data analysis. Reflective practice provides the space for teachers to self-assess either individually or collaboratively about practice. Self-assessment can be informally or formally implemented. Informally, a teacher may simply wonder or internally question the effectiveness of a lesson or practice. Informal reflection was expressed by a participant from School 6 when she commented:

> We might do a lesson or a couple of them and I think to myself, 'What am I doing wrong? Why aren't the kids getting this?' And then meeting all together and finding out the same struggles are happening in that classroom or this classroom.

While initially the reflection was informal, the discussion that could ensue afterward within the scope of PLC practice would provide a platform for deeper reflection. The practice of formal self-assessment was indicated about PLC meetings by one participant from School 7 who explained, "We self-assess (our PLC meetings). We have a rubric that we use every week to see whether we kept on track." Additionally, this assessment for reflection was noted regarding peer observations when another respondent from School 7 said, "I'll keep a sheet. We have a sheet that we keep. It's things that the students said during the lesson, things that you heard the teacher say. Then we will come back together and talk about that." This sheet provided this participant with an instrument to use when talking with the teacher about the peer observation. It is one thing to observe, but the conversation that ensues constitutes the reflective aspect of the practice.

Reflective practice relies on the teacher to open up to the idea that practice can be viewed from a number of lenses and requires some level of risk when reflecting with colleagues. This math teacher expressed the multiple lenses during reflective practice:

> I think we are always discussing, like, 'How did this person do it? Or, how did that child see it?' Just a few minutes ago, I had a conversation and normally we would have had it in PLC, but she was leaving. She saw teaching the lesson one way, and I'm like, "No, that's not the way I see it, and after talking we realized we are seeing it the same way, just from a different perspective. She's going to try it her way, and me my way and we're going to compare how it went. (School 5)

In order to collaboratively reflect and risk your practice and pedagogy with others, trust is essential. This is noted by a language arts teacher from School 1:

> I think embedded in the trust of the PLC allows people to be really reflective and allows people to say, 'My gosh, that was amazing and great. All the kids are engaged,' and on the flip side, saying, 'My gosh, that lesson was a bomb. Why? How can we make it better, and how can we improve?'"

These comments suggest the importance of trust in sharing practices as well as a sense of open-mindedness to engage in reflective practice. Furthermore, risking your successes and failures with colleagues can be a challenging but rewarding piece of reflective practice.

While often teachers reflect with similar subject or grade level cohorts, a special areas teacher from School 4 commented on the value of reflection with teachers from other disciplines. He commented, "As a special area teacher, it's neat to see how (a teacher) handles classroom management to know how the media teacher does, and then how that transfers over to the classroom teacher. It's a really reflective experience." This comment illustrates how teachers of different disciplines and grade levels exhibit different skills at times, so reflecting with a diverse group of educators can be beneficial. While reflective practice could be absorbed as a smaller component of improving instruction, the number and specific accounts determined its importance as a theme within the findings.

Theme 5: Developing teacher leadership. Throughout the interviews, teacher leadership was interspersed as an idea, and incorporated through the description of actions by certain respondents. However, in order to provide context, an understanding of the perception of a teacher leader in the general sense from participants was necessary at the outset. Understanding participants' general descriptions of their perception of teacher leadership provided a valuable framework for this study, as shown in Figure 6. The four main components of leadership brought up by teachers themselves include liaison, lifelong learner, and personality.

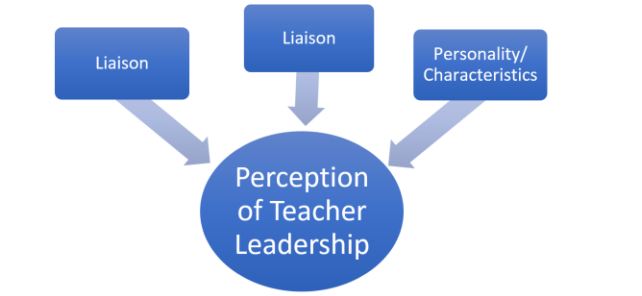

Figure 6. General perceptions of teacher leadership.

When asked to describe teacher leadership, respondents commented in hypothetical or general terms more frequently than applying that idea to themselves or colleagues. Their responses indicated in some places that a teacher leader was a liaison between a teacher and an administrator as shown by the following comment from School 1: "I would say someone who really takes initiative and is able to have some of those courageous conversations really between administration and colleagues." He explained further by indicating that a teacher leader might be one to inform an administrator about instructional struggles in general or team terms, so that a non-tenured teacher did not feel vulnerable in sharing areas of pedagogy that need strengthening. Also, respondents commented that teacher leaders could serve as representatives of the larger group or PLC. That perception was shown in the following comment:

> Someone who is willing to maybe take the role of, I don't want to use the word leader, but someone who is willing to, you know, do things for the grade level. Maybe go to a math meeting for them or just take a role in a specific content and kind of be the leader of that. (School 6)

In other words, participants conveyed that a teacher leader was someone who acted as a communicator with administration or as the representative of a grade level for a specific

purpose. Personality or other personal characteristics were also indicated as components of teacher leadership.

A second component of leadership perceptions that was brought up by participants was personality or other personal characteristics. Participants indicated in some cases that inherent traits of an individual would provide them the ability to serve as a teacher leader. For example, one participant from School 4 said a teacher leader is "someone who is outgoing and who is not afraid to share their thoughts and opinions." In this case, the participant was talking about her ability to express ideas easily to colleagues and administrators. Another comment suggested the importance of craft excellence:

> I think a trait that often gets overlooked is you have to know your craft, of course, but you have to be willing to put yourself out there. I think a big one is you have to be approachable. People want to work with people, and they feel that they're inclined to allow themselves to open up. It's really the balance of having the knowledge and the skill set, but also people being willing to seek out that help. (School 4)

This quote indicates that knowledge is important, but without the willingness combined with the openness to share the knowledge, it will not have the opportunity to grow.

Lastly, participants indicated that teacher leaders are lifelong learners. The comments suggested that a teacher leader is someone who is willing to improve their craft and is an instructional risk-taker. This was defined by a participant from School 7 as "somebody who's willing to learn new things and always grow as an educator, and not become complacent." The following comment also suggested that teacher leaders are willing to share their craft as they continue to learn:

> A teacher leader is somebody that feels comfortable enough in their teaching, is willing to try new things, to experience new things, even if it might be a flop the first time. Somebody who's willing to be collaborative and share ideas, take criticism, and turn that into positive, and not get defensive if an idea or critique is

> given…somebody that's a go-getter, is always learning, wanting to better themselves as a teacher. (School 7)

While these comments do not support specific individual perception of one's own teacher leadership, the comments provided necessary contextualization as a platform to discuss personal teacher leadership.

The final theme that emerged from the qualitative findings was teachers' perceptions of teacher leadership development through PLC engagement. When asked explicitly whether PLC engagement impacted personal perception of teacher leadership, several comments supported the idea that leadership was perceived, developed, or exercised through the lens of PLC engagement. One respondent from School 1 supported the idea that PLCs supported an increase in her perception of teacher leadership capacity, stating, "I think it (PLCs) could be an opportunity to increase my leadership." Another participant from School 7 indicated how PLCs provided her with a structure to grow as a leader. This was shown when she commented:

> PLCs have allowed me to come into my own more as a teacher leader. I have had the opportunity to share teaching ideas that worked for me with my colleagues – and vice versa – and even given PD outside of the district because of things we did here.

One participant from School 7 indicated how her leadership grew as a result of PLCs by saying, "I feel like the PLC has allowed me to mentor the new teachers and show them the way of the PLCs." This suggests that the responding teacher felt empowered by the structure of PLCs to support the learning of others. Some comments also suggested that a teacher leader was not always constant with regard to position or person. Instead, comments revealed that the act of exercising teacher leadership could vary based on the topic or situation. One participant from School 4 commented, "In all of our heads, just

because we may be a teacher leader in a specific skill, we'll reach out to other teachers for other skills," which suggests the idea that participants perceived teacher leadership as something they could engage in when they felt skilled within a certain domain. Other comments discussed roles that embodied teacher leadership dependent upon skillset:

> I think we all have established roles, but I also think that people that are not in those roles also assume some of those duties, like I know there are a lot of people that are not necessarily PLC facilitators or peer coaches, but they still have an open classroom for someone to do a peer observation. (School 1)

> I would say yes, leadership can be developed, but it depends on the topic...some people are more comfortable with certain topics than others. For instance, he's a Schoology guy…he would have no problems leading – whether it's a large group, small group, whatever. People would go to him for that. (School 4)

These responses indicate that teacher leadership was typically engaged when the topic or practice was one in which the teacher felt confidence.

Alternatively, comments were also made that contradict teacher leadership growth through PLC engagement. When asked if PLC practice impacted individual perception of teacher leadership, some participants indicated that PLCs alone did not develop leadership. One respondent from School 5 stated in response to this question, "Did PLCs grow my leadership? I would say no. I've always been this way." In one school, PLC facilitators represented a paid role within the district and received specific leadership training for that role. Those individuals indicated this specific and separate training for their leadership development impacted their skills as opposed to PLC engagement. This was noted when one participant from School 1 said, "X and I as the facilitators go to a monthly PLC training after school, where we work on SMART goal development. We work on strategies to use in facilitating our PLCs." Also, while identified as a potential place to exhibit leadership, it was suggested by a participant from School 3 that PLC

engagement would not automatically teach leadership: "They'll (teacher leaders) would be able to flourish (in PLCs). But, if they don't personally have the leadership skills from something else, the PLC process will not automatically give it to them." This was further supported by another participant from School 3 who said, "I don't think the PLC process teaches leadership. I think it allows you to facilitate in whatever, but if the person doesn't have leadership skills, he or she is not going to get it through the PLC process." This indicated the idea that PLC is a place to exercise leadership, but will not necessarily teach leadership skills. This was further exemplified by the following comment:

> Collaboration and leadership are two different things. So if I rewind the tape back to my corporate days, when someone wanted to be a leader, there was about five or six things you trained them how to do, not just be the knowledgeable person in charge of something. Communication, organization, team building, those are not what I'm talking about. Collaboration is great, but the leadership skills that people teach you won't get you through this process. (School 3)

While some respondents indicated that PLCs supported and nurtured their teacher leadership skills and capacity, others contrasted this view by indicating that PLCs did not grow teacher leadership capacity. However, both views suggested that PLCs offered a place where leadership could be exercised.

Discussion of Findings

To better understand the quantitative and qualitative data within a mixed methods study, connecting, combining, and integrating strategies were used (Maxwell, 2003; Teddlie & Tashakkori, 2009). Combining these results provided a better understanding of a specific situation and indicated details worth illuminating to enhance the results found during the quantitative strand of research (Rubin & Rubin, 2012). While a moderately positive correlation between PLC engagement and teacher leadership was noted in the quantitative findings, the qualitative findings offered insight and depth unavailable through just a number alone. The research questions that guided this study were used to structure the integrated findings.

Research Question 1

What is the relationship between authentic PLC participation and teacher perception of their leadership practice in New Jersey public school teachers?

As stated, this study used the Teacher Leader Model Standards (2011) for the defining characteristics of teacher leadership:

> Domain I: Fostering a Collaborative Culture to Support Educator Development and Student Learning
>
> Domain II: Accessing and Using Research to Improve Practice and Student Learning
>
> Domain III: Promoting Professional Learning for Continuous Improvement
>
> Domain IV: Facilitating Improvements in Instruction and Student Learning
>
> Domain V: Promoting the Use of Assessments and Data for School and District Improvement
>
> Domain VI: Improving Outreach and Collaboration with Families and the Community

Domain VII: Advocating for Student Learning and the Profession

From the quantitative strand of research, a moderately positive correlation, .72, was noted between participation in perceived authentic PLC practice, and perception of teacher leadership as defined by the Teacher Leader Model Standards (2011). When calculated, the characteristic with the highest mean from the quantitative findings of perception of teacher leadership indicated that most participants felt they modeled an attitude of continuous learning and reflective practice for colleagues. This response most aligns with Domain III of the Teacher Leader Model Standards. When the component was followed across to the qualitative strand of inquiry, a better explanation emerged regarding how participants modeled the attitude of continuous learning and reflective practice. One way this attitude was shown is through the participants' engagement with peer observations or learning walks. Teachers on learning walks had the opportunity to observe practice of peers, or accept colleagues into their own classrooms to observe. When colleagues engaged in learning walks by choice, the practice provided a structure for continuous learning. A participant from School 4 commented, "If one person was really good at math workshop, they would put that out there, so teachers knew that they could go to that teacher to see that." As one respondent from School 7 indicated, "It's good to see in action if what you're doing is right, or that you have the best ideas, but it's also good to see it in action and see how other people handle it." Another respondent from School 1 said, "I saw her doing things differently in her classroom when she started implementing more formative assessment…I was able to learn from her, and that's what encouraged me." Furthermore, this practice promoted continuous learning by raising the comfort level of peer observation by making it an accepted common practice. A

respondent from School 7 supported this idea, saying, "I feel like it makes people more comfortable, too, going and seeing how other people teach. I think that I've heard a lot of positives, and I feel like my instruction has gone up from it." This practice can represent continuous learning as each observation can serve as a learning opportunity for both the observer and the colleague observed.

Another way continuous learning was modeled was through reflective practice. Reflective practice was noted as an individual reflecting upon his or her own practice, and also reflecting as a group. A respondent from School 6 indicated how she reflected both individually and collaboratively when she said, "We might do a lesson…and I think to myself, 'What am I doing wrong? Why aren't these kids getting this?' And then meeting all together and finding out the same struggles are happening that classroom or this classroom." A respondent from School 1 indicated that trust was indicative to her ability to reflect collaboratively when she said, "I think embedded in the trust of the PLC allows people to be really reflective and allows people to say, 'My gosh, that was amazing and great. All the kids are engaged,' and on the flip side, saying, 'My gosh, that lesson was a bomb. Why? How can we make it better, and how can we improve?'" Through this strand of research, it was also noted that for many of the respondents, this type of collaborative reflection is part of their culture. This was reinforced by a respondent from School 5 when she said, "I think we are always discussing, like, 'How did this person do it? Or, how did that child see it?'" While reflective practice is not explicitly stated within the Teacher Leader Model Standards (2011), it can be considered a characteristic for multiple domains, including continuous improvement.

Thus, in response to the first research question of this study, these integrated results indicate a component of teacher leadership was perceived by participants as the strongest within the quantitative strand and then was explained more deeply by the qualitative strand.

Research Question 2

How has PLC participation influenced New Jersey public school teachers' perception of their leadership capacity?

The seven domains from the Teacher Leader Model Standards (2011) were used within the survey questions to measure individual perception of teacher leadership. The quantitative findings revealed that teachers agreed or strongly agreed that they identified with three of the seven domains, as three survey items were calculated to a mean above 3.0. Teachers felt they modeled an attitude of continuous learning and reflective practice for colleagues, were knowledgeable and worked with colleagues on data analysis and assessment, and felt they used knowledge about the diversity of the school community to promote effective interactions among colleagues, families, and the community. These indicators reveal that teachers perceived they possessed the teacher leader characteristics described in Domains III, V, and VI.

The narrative data revealed themes that supported five of the seven domains from the Teacher Leader Model Standards (2011) as indicated in Table 6. This table displays the intersections discovered between the qualitative findings and the domains from the Teacher Leader Model Standards (2011). The quantitative data and the qualitative data both exhibit evidence that PLC engagement supports Domains III and V. Most notably, teachers expressed comments that intersected with Domain III, promoting professional

learning for continuous improvement. However, the theme of Using Data and Assessments also emerged strongly within the qualitative analysis. However, despite having one of the highest means calculated from the quantitative findings, Domain VI, Improving Outreach and Collaboration with Families and the Community, did not emerge within the themes obtained during the qualitative analysis.

Table 6

Intersection Between Qualitative Themes and Teacher Leadership

Teacher Leader Model Standard	**Theme 1: Supporting Collaboration**	**Theme 2: Using Data & Assessments**	**Theme 3: Improving Practice**	**Theme 4: Reflecting on Practice**
Domain I	X			X
Domain II		X	X	
Domain III	X		X	X
Domain IV			X	X
Domain V		X		
Domain VI				
Domain VII				

The intersection of data between the qualitative and quantitative data supports multiple domains or characteristics of formally defined teacher leadership supported by PLC practice. Participants often included components of individual teacher leadership standards and linked those actions to PLC engagement, but did not link them to specifically to their practice or the general practice of teacher leadership. When asked explicitly about teacher leadership, teachers shared examples of practice, but unprompted, teacher leadership was not self-realized.

Thus, in response to the second research question, the researcher was able to connect comments and described actions to multiple domains of teacher leadership, but

the data only minimally supports that PLC engagement influenced participants' own personal perception as a teacher leader.

Research Question 3

How do New Jersey public school teachers describe their leadership practice through authentic PLC practice?

Participants provided comments that were contradictory to one another depending on the school and organization in which they engaged in practice. These conflicting views are displayed in Figure 7. In some instances, PLCs provided an opportunity for leadership, as explained by a participant from School 1 who explicitly stated, "I think it (PLCs) could be an opportunity to increase my leadership." However, this participant could not expand that response when asked how that could or did happen. A respondent from School 4 also indicated that PLCs were a place in which leadership could grow areas of expertise, saying, "Leadership can be developed, but it depends on the topic." Another respondent from School 1 indicated that PLCs provide an opportunity for teachers who are not assigned a role of leadership to assume some through the practice of peer observation. This is shown in the following comment:

> I think we all have established roles, but I also think that people that are not in those roles also assume some of those duties, like I know there are a lot of people that are not necessarily PLC facilitators or peer coaches, but they still have an open classroom for someone to do a peer observation. (School 1)

In School 2, a sense of distributed leadership was realized as a result of PLC practice when a participant responded, "I think everyone has their own say in certain things with a student or an issue that arises, so I think it's collaborative leadership." Two participants from School 7 described their leadership growth through PLC engagement, saying, "PLCs has allowed me to come into my own more as a teacher leader," and "I feel like

the PLC has allowed me to mentor the new teachers and show them the way of the PLCs." Both of these comments describe the self-perception of teacher leadership through the PLC process. However, they were not the norm when considering all responses.

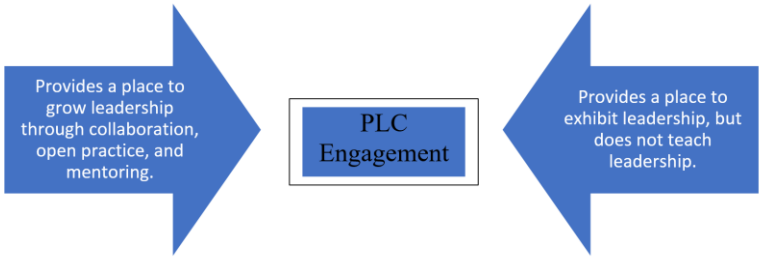

Figure 7. Conflicting views of teacher leadership practice through PLCs.

In some instances, teachers opposed the idea that PLCs grew leadership, but believed PLCs could provide a place to exhibit leadership skills. A respondent from School 3 indicated such when he said, "I don't think the PLC process teaches leadership. I think it allows you to facilitate in whatever, but if the person doesn't have leadership skills, he or she is not going to get it through the PLC process." This was further supported by another participant from School 3 when he said, "They'll (teacher leaders) would be able to flourish (in PLCs). But, if they don't personally have the leadership skills from something else, the PLC process will not automatically give it to them."

Therefore, in response to the third research question, leadership practice through PLC engagement was described differently depending on the individual and organization. In some cases, leadership was perceived and described, and in others it was not realized.

Summary

This study was designed with multiple research goals. First, it was designed to investigate the relationship between PLC participation and teachers' perception of their leadership practice. The quantitative results displayed a moderate positive correlation between teachers' perception of the Teacher Leader Model Standards and authentic PLC engagement. The qualitative strand of inquiry was designed to better illuminate how PLC participation influenced New Jersey public school teachers' perception of their leadership capacity. Additionally, this research delved into understanding how New Jersey public school teachers describe their leadership practice through authentic PLC practice. To garner the best results, a sequential-explanatory mixed methods research design was used to gather data and shed more insight into these findings. This chapter presented the findings and analysis of the data collected during all phases of the study. The next chapter presents discussion and conclusions that can be drawn from the findings, and examines implications for policy and practice. Furthermore, it identifies areas of future research in this field.

Chapter 5

Discussion and Implications

This chapter provides a summary of the study, discusses conclusions drawn from the findings, compares findings to the existing literature in the field, and examines the implications and recommendations for policy, leadership, and future research. The discussion section is organized by research question and draws conclusions from the themes that emerged within the findings and compares these findings to the literature.

Purpose Statement

The purpose of this sequential-explanatory mixed methods research study was to determine whether engagement in authentic PLCs is related to or contributes to teachers' perception of their leadership practice. The first inquiry used quantitative data analysis to determine whether or not a relationship exists between authentic PLC engagement and teacher's perception of their leadership. The second inquiry qualitatively determined how this engagement influences or impacts teacher leadership perception. Lastly, this study sought to gather and analyze how teachers describe their leadership through the lens of authentic PLC engagement.

Understanding whether a relationship exists between teacher leadership perception and authentic PLC engagement is important information to consider for organizational growth, student achievement, and recent policy regarding the emerging Department of Education certification, Teacher Leader Endorsement in New Jersey (S165, 2015). As the practice of teacher leadership emerges as a viable resource for school improvement, supporting its development is vital to positive outcomes (Carver, 2016). And, as the nature of teacher leadership development is unclear, more support is

needed to create formal learning experiences that simultaneously grow teacher leadership that in turn could positively support school improvement (Berg et al., 2014). Therefore, this research was designed to potentially support district leaders and decision-makers by providing contextual and contemporary information so the impending talent that exists within organizations can be best utilized to benefit all aspects of the organization.

Problem Statement

The need for organizational growth is evident by the prevalent number of traditional top-down leadership structures in place in many New Jersey public school districts. Additionally, isolated and intermittent professional growth opportunities have not been effective ways to promote professional learning as educating children has become more complex. Furthermore, there are growing pressures for accountability, and need for improvement in teacher retention rates. The current organization structures that many public schools nationwide employ are traditional ones that were not designed to meet the diverse needs of today's students (Katzenmeyer & Moller, 2009). This traditional model, combined with increased accountability for student success, has made teaching and learning much more complex (Vescio et al., 2008).

Now more than ever, teachers are being held accountable for student success and practice. Final evaluations for teachers are determined through the quantitative measures of academic student growth and practice. To determine teacher practice effectiveness, New Jersey has approved a number of teacher evaluation instruments that districts must use. Some of these instruments include teacher leadership within its framework. While the inclusion of teacher leadership within the evaluation instrument speaks to the value of leadership from within the classroom, its presence on the instrument alone does not

support teachers in the skills needed to perform as a teacher leader (Wenner & Campbell, 2017). Therefore, more training and support to grow leadership from within the classroom could foster growth within organizations. Understanding teachers' perceptions about their own leadership would be helpful to create meaningful and viable opportunities for such teacher leadership growth within organizations.

Additionally, teacher retention continues to be a problem within the teaching profession. Individuals who left the profession cited that opportunities to work with colleagues, social relationships with colleagues, recognition from administration, influence over workplace practices, and autonomy over one's own work were lacking within their roles as teachers (Goldring et al., 2014). Leadership shifts within organizations could potentially and positively impact teacher retention rates.

Methodology

This sequential-explanatory mixed methods design collected data in two phases of inquiry. Initially, the perceptions of the study participants were assessed using the researcher created survey, PLC Engagement and Teacher Leadership Survey (Appendix B), for the collection of quantitative data. Data analysis was conducted using description statistics and a Pearson Correlation was calculated. Subsequently, semi-structured group interviews (Appendix C) were conducted for the collection of the qualitative data to delve more deeply into individual experiences that support participant perception. During the qualitative strand, the researcher analyzed the collected data through two cycles of coding, which revealed eleven codes. These codes collapsed into five emergent themes. After each strand of inquiry was analyzed separately, an integration of the results was conducted by tracing major findings across both strands of inquiry for deeper analysis.

The results from this mixed methods inquiry provided an examination of the relationship between authentic PLC practice and teachers' perception of their leadership.

Research Questions

The researcher developed the following research questions to guide this study:

- Research Question (RQ1): What is the relationship between authentic PLC participation and teachers' perception of their leadership practice in New Jersey public schools?
- Research Question (RQ2): How has PLC participation influenced New Jersey public school teachers' perception of their leadership capacity?
- Research Question (RQ3): How do New Jersey public school teachers describe their leadership practice through authentic PLC practice?

Significance of the Study

Developing a better understanding of how teachers perceive their leadership within the PLC structure could be important to district leaders in understanding how to better support meaningful and sustainable change. While research suggests that leadership training can support the functioning of PLCs (Kingsley, 2012), a gap exists in the research regarding whether engaging in PLC practice contributes to or influences a teacher's perception of their leadership. As research into perceptions of leadership through the lens of PLC practice has been limited (Fellows, 2005), this study could help to better understand how PLC engagement influences teachers' perceptions of their leadership.

This study's significance exists in its potential to support the structures available in organizations to promote and foster teacher leadership. Teacher leadership

development could provide needed differentiation in what has historically been a flat profession (Curtis, 2013). Gaining perspective and garnering understanding of teachers' perception of their leadership capacity could potentially help organizations in developing leadership opportunities for teachers who have an interest and aptitude for the role in a way that supports the growth of all members of the organization (Curtis, 2013). As teacher leadership grows in practice, it could be recognized as a vital resource for school improvement; therefore, supporting growth in teachers is necessary (Carver, 2016).

This study also provides insight for districts in response to the upcoming Teacher Leader Endorsement legislatively mandated in New Jersey (S165, 2015). While this endorsement is becoming a reality for teachers and future teachers in New Jersey, the Teacher Leader Endorsement Advisory Board (2017) recommended that each LEA gather organizational stakeholders to determine appropriate district roles for endorsed teacher leaders. Districts will likely need research to inform decision-making with regard to these roles to best support their organizations.

Overall, a lofty but often stated district organizational goal centers around improvement. This study can provide information on how to leverage potential talent within an organization to increase capacity at all levels.

Key Findings

The conclusions were drawn by integrating the findings outlined in chapter four with the literature reviewed in chapter two. The discussion and analysis of results are organized by the research questions and supported by key themes that emerged within the findings.

Research Question 1

What is the relationship between authentic PLC participation and teacher perception of their leadership practice in New Jersey public schools?

The PLC Engagement and Teacher Leadership survey contained 24 Likert-scale items. Of these, nine were designed to measure perception of engagement in authentic PLC practice, and 10 were designed to measure perception of teacher leadership as determined by the Teacher Leader Model Standards (2011).

Authentic PLC practice. To determine authentic PLC engagement, nine survey items were created that reflected PLC characteristics as defined by Hord (1997) and DuFour, DuFour, and Eaker (2008). The characteristics used to determine authentic PLC practice were:

- shared and supportive leadership
- shared values and mission
- collective learning and application of learning
- shared practice
- supportive conditions, and
- assessment through results.

Since participants responded "agree" most often for eight of the nine items indicating authentic PLC practice, and seven of the nine items had a mean over 3.0, it is reasonable to conclude that participants perceived themselves as engaged in authentic PLC practice. Of the indicators that reflect perception of authentic PLC practice, the response with the highest mean of 3.55 indicated that participants felt they engaged in informally sharing ideas with colleagues to improve student learning. Additionally, the

other two components with the highest means indicated that participants worked together with colleagues to find different approaches to instruction, sought solutions that addressed the needs of students (M=3.36), and regularly worked collaboratively with colleagues to learn about new skills and teaching strategies, and applied them to practice (M=3.41). These results suggest that most participants engaged in collaborative practice, a major tenet of effective PLCs. Furthermore, they suggest that collaborative practice was and is used by participants to address the needs of students and to develop teacher practice. This was supported and elaborated within the qualitative findings. Twenty-eight comments made by participants referred to collaboration, and comments about collaboration were made at every interview site. This was explicitly stated when one participant from School 3 noted, "I think the PLC gives us an opportunity to collaborate, which I think benefits the students and the teachers overall." This supports current research that suggests that the implementation of authentic PLCs increases collaboration among teachers and a focus on continuous learning (Vescio et al., 2008). This also corroborates prior research that has posited the impact that collaboration through PLC engagement has upon teacher learning and instructional improvement (Borko, 2004; Woodland, Barry, & Crotts, 2014; Woodland & Mazur, 2015).

Contrastingly, most participants disagreed that they were regularly involved in decision-making about many school issues. This item indicates that a sense of shared practice or a practice of distributed leadership was not likely perceived by the survey participants. Overall, however, the responses indicated that participants perceived themselves as engaged in authentic PLC practice, which was essential to the study as it

was a prerequisite to understanding if PLC practice contributed to their perception of their teacher leadership.

Perception of teacher leadership. Of the ten survey items designed to measure perception of teacher leadership as defined through the Teacher Leader Model Standards (2011), only three items were calculated to have a mean over 3.0. These three items were: participants identified as modeling an attitude of continuous learning and reflective practice for colleagues (M=3.40); participants were knowledgeable about formative and summative assessment and worked with colleagues to identify and use multiple assessment tools aligned to state and local standards (M=3.20); and participants used their knowledge and understanding of different cultures and backgrounds in the school community to promote effective interactions among colleagues, families, and the community (M=3.17). These indicators suggested that teachers perceived possession of teacher leader descriptors as explained by the Model Teacher Leader Standards (2011). When asked within a semi-structured interview, teachers' comments also confirmed two of the three indicators of teacher leadership.

The use of data and assessments was indicated through fourteen comments made at five interview sites. However, within these comments, teachers made reference to the use of data more frequently than facilitating collegial understanding of data analysis and use. Some indicated a casual use of data, as shown when a participant from School 5 said, "We'll give a check in at the end of class as they leave, and we'll see…some sort of formative assessment…and I'll report back how my students learned or what their results were and she'll report back hers." While this comment suggests the use of data, it does not suggest that it is reflective of the facilitative work a teacher leader might do to engage

other colleagues with data. Within the qualitative findings, only one reference was noted that indicated a teacher teaching other teachers about data analysis through the lens of PLC engagement. This is important because it suggests that teachers recognize the value of data and self-identify with its use, but are at differing levels of implementation and teaching. Since data use was reported along a continuum, it suggests that schools on the lower end of the continuum might progress to be like teachers and schools on the stronger end of the continuum over time, and that PLCs are a potential framework for this growth. The qualitative data did not directly support how teachers perceived their data practice as indicated by the survey item response, but its hearty inclusion within the interview comments supports the importance it has within teachers' practices.

Moreover, evidence of reflective practice was noted through both the quantitative and qualitative findings. Specifically, seven comments at five interview sites referred to reflective practice within the lens of PLC engagement. This process and its link to improvement was explicitly described by a teacher from School 1 that said,

> I think embedded in the trust of the PLC allows people to be really reflective and allows people to say, 'My gosh, that as amazing and great. All the kids are engaged,' and on the flip side, saying, 'My gosh, that lesson was a bomb. Why? How can we make it better , and how can we improve?'"

This quote exemplifies the idea that reflective practice can be beneficial, but for it to be effective and reflective of teacher leadership, instructional analysis for improvement should occur. These findings corroborate the research done by Berg and colleagues (2014) who assert that leadership ensues when there is interaction between people and artifacts in a social setting, and therefore, teachers are serving as leaders when they interact with colleagues about instructional concerns that emerge within their

organization. Moreover, these findings contribute to existing research by providing clarity and specific examples of these instructional interactions.

On the contrary, despite the higher mean calculated, no comments were made to support the idea that participants used their knowledge and understanding of different cultures and backgrounds in the school community to promote effective interactions among colleagues, families, and the community. Despite self-reporting this within the quantitative results, no evidence was found within the qualitative findings to support it.

The lowest mean calculated (M=2.80) among the items related to participants' perception of teacher leader characteristics indicated that few participants used their knowledge about the diverse needs of the community to create community-based instructional strategies. Participants collectively perceived that their collaboration with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community was less than any of the other components. This was consistent with the qualitative findings, as no comments referred to this practice.

Teacher leadership through PLCs. When the overall means calculated from the binned questions pertaining to authentic PLC engagement were compared to the means calculated from the binned questions pertaining to perception of teacher leadership, a Pearson Correlation was calculated. The Pearson Correlation was .72. This calculation indicated a moderately positive correlation between perception of PLC engagement and perception of characteristics of teacher leadership. This suggests that engaging in authentic PLC practice is somewhat likely correlated to self-perception of some characteristics of teacher leadership. This contributes to current research in which

teacher leaders could support 2nd order organizational change by participating authentically within their own organizations (Yendol-Silva et al., 2000). It also contributes to existing research that indicates that teacher leadership can be integrated within a process, in this case PLCs, as opposed to a position (Pounder, 2006; Wenner & Campbell, 2017). Furthermore, these findings contribute to the idea of teacher leadership as a process defined by behaviors and characteristics (Pounder, 2006), by offering PLCs as a place to exhibit these characteristics.

Additionally, teacher leadership occurs when a teacher possesses autonomy over practice and directs their own learning, while also contributes to the learning of their colleagues (York-Barr & Duke, 2004; Wenner & Campbell, 2017). The findings within this study support and contribute to the current research. Teachers that reported that they worked together with colleagues to find instructional approaches to address the needs of students also indicated that they felt they were modeling an attitude of continuous learning and reflective practice for colleagues.

It is important to note, however, that self-perception of teacher leadership was quantitatively determined by agreeing or disagreeing to characteristics defined within the Model Teacher Leader Standards (2011), as opposed to identifying oneself specifically as a teacher leader. While some survey items indicated that some characteristics indicative of teacher leadership were perceived as strong in relation to PLC engagement, the perception of oneself explicitly as a "teacher leader" was not measured nor assessed through this survey. While the findings support the correlation between PLC practice and teacher leadership, as assessed through the Teacher Leader Model Standards (2011), the

qualitative findings do not necessarily denote teachers' perceptions of their own teacher leadership practice as few comments indicated such.

Research Question 2

Research Question (RQ2): How has PLC participation influenced New Jersey public school teachers' perception of their leadership capacity?

The qualitative data revealed five themes that helped to clarify how PLC participation influenced New Jersey public school teachers' perception of their leadership practice. The following themes represented participant perceptions of teacher leadership through the lens of PLC engagement: (1) a supporting a collaborative culture, (2) using data and assessments, (3) improving instructional practice, (4) reflecting on practice, and (5) developing teacher leadership. Of these themes from the qualitative findings, the quantitative findings also determined that teachers perceived themselves as continuous learners, engaged in reflective practice, and knowledgeable about data and assessments. These combined findings intersected with the Teacher Leader Model Standards (2011) in five of the seven domains (Table 6).

According to the plethora of comments made by interview participants, PLC engagement has influenced and supported collaboration by fostering a supportive environment, and providing a structure to communicate and collaborate with colleagues. These findings suggest that collaboration is an outcome of PLC practice as indicated explicitly through comments such as, "I think the PLC is a big district initiative that they do to support collaboration." This comment, among others outlined in chapter four, support characteristics of teacher leadership as explained by Domain I of the Teacher Leadership Model Standards (2011). Specifically, Domain I states that a teacher leader

fosters a collaborative culture that supports both educator development and student learning. This standard was reflected throughout participant comments and most notably by one participant with, "I think the PLC gives us an opportunity to collaborate, which I think benefits the students and the teachers overall." This finding is valuable because it describes a type of collaboration that contributes to existing research by providing a specific way that teachers can engage in leadership activities daily embedded within their daily work (Pounder, 2006).

Throughout the interviews, the word "team" was sometimes used interchangeably with "PLC." This suggests that teachers perceived their PLCs as their "team." Domain II of the Teacher Leader Model Standards (2011) states that a teacher leader supports collaborative team structures. This is also illustrated by the following interview comment:

> I think that being in a PLC rather than just being in my room doing work, I think that's given me a broader range of topics and I'm able to hear from other people, from other disciplines, in other ways in which they conduct their classes. I think it gives me a more broad view of education in general on being able to reflect on my own practice through the lens of others. (School 2)

This description corroborates with current research that suggests that instead of working in isolation, teacher leaders could collaborate with colleagues, discuss common issues, share practice and construct needed solutions (Curtis, 2013; Muijis & Harris, 2003, 2006; Yendol-Silva et al., 2000). While this example did not explicitly denote a self-perception of leadership, it provided an example of a potential opportunity for future leadership growth. Research has shown that participating collaboratively in a community can impact how teachers perceive their practice and can develop leadership capacity (Charteris & Smardon, 2014). This comment also supports the idea that not one sole person always needs to be responsible for the answer; rather the team structure of PLC

engagement can provide opportunities for leadership to whoever is suited for a specific task. This was substantiated by a participant in school 4 who said, "Leadership can shift and change. In all of our heads, just because we may be a teacher leader in a specific skill, we'll reach out to other teachers for other skills." This comment also intersects with ideas presented within the research on improvement science which relies upon the idea of knowledge division to solve problems (Kjellstrom & Andersson, 2017). Improvement science deviates from the temptation to implement something completely new, but rather uses existing resources to produce better outcomes (LeMahieu et al., 2017). Therefore, these findings contribute to this growing field of research by providing a structure in which organizational resources, or teacher leaders, can be best utilized.

Vennebo and Otteson (2012) assert that leadership is not solely obtained through formal roles, but rather an outcome of relational work with colleagues. While this study provided multiple examples indicating collegial collaboration, participants did not often indicate through their comments that they perceived collegial collaboration with colleagues as a form of leadership. While research points to fostering collaboration as leadership, and suggests that PLC engagement can contribute to this collaboration, participants did not readily identify it as such. Wenner and Campbell (2017) assert that the very definition of teacher leadership is challenging because of its differing role within various organizations, and this nebulous understanding of teacher leadership is illuminated by this research as teachers are engaging in teacher leadership as described through the Teacher Leader Model Standards (2011), but not actually describing these actions as leadership. This study's findings are important because they suggest that PLC engagement may help to support the development of teacher leadership by providing a

structure and framework in which collaboration can be fostered through collegial relational work. While the interview comments indicated that engaging in this work did not necessarily change their perception of their leadership, this study can help to provide a better understanding of teacher perspectives with regard to equating collaboration with leadership.

Another area in which PLC engagement potentially influenced teachers' perception of their leadership was through the use of data and assessments. Domain V of the Teacher Leader Model Standards indicates that a teacher leader promotes the use of assessments and data for school and district improvement. The quantitative data indicated that teachers perceived themselves as knowledgeable about assessments, and worked with colleagues to implement effective formative and summative assessments. Additionally, the interview comments indicated that most participants worked with data in some context within the lens of PLC engagement, which suggests that PLC engagement can support teachers in realizing this teacher leader standard. However, the way that participants described their work with data was diverse. The use of data ran on a continuum from accessing and looking at data to analyzing it, and finally to using it to drive instructional practices. One participant in School 1 said, "So in looking at the data, if my kids haven't mastered a standard…I am able to go to my PLC and have a conversation about the standard as a team, let's work to get all of our students to do their best." This example indicated that the sought out data points were collaboratively analyzed to shift instructional practice. One participant even credited the improved organizational structure of her PLC as a contributing factor to an increase in data driven instructional practices. While the use of data in general was resplendent within the

comments, it is the promotion of data that indicates teacher leadership. In one case, this was noted by a participant who said, "We have some teachers that are really strong at using data…then they're able to support other teachers in that area." Wenner and Campbell (2017) assert that teacher leaders are supportive of professional learning within their schools, understand the main goal of improved student achievement, and engage in work to improve the organization. While the participant comments indicated some collaborative effort with the use of data, only one comment indicated that knowledge was shared through embedded professional development. And, even in this case, the action was not specifically described as leadership by the participant. This study is important and extends existing research as it indicates that engaging in authentic PLC practice has the potential to develop teacher leadership by providing the structure in which the use of data is promoted and fostered. Additionally, this study provides the voice of teachers about authentic interaction with data, which provides valuable insight into how to set the stage so that work with data grows to be promoted and fostered as opposed to reviewed and analyzed.

The Teacher Leader Model Standards (2011) defined a teacher leader as one who facilitates improvements in instruction and student learning. Both sets of data heartily revealed the theme of improving instructional practice. The quantitative data reflected that participants felt they modeled an attitude of continuous learning, and the qualitative data described this practice further. For instance, one teacher from School 4 commented, "If I'm facilitating a PLC, it's about implementing something in instruction or we might be analyzing all the data and trends so we can make those next step goals for student improvement." In this case, reflecting on strengths and weaknesses provides the

direction for growth and improvement. Furthermore, the practice of peer observation for personal or professional development was frequently noted as an element of PLC engagement and an active example of facilitating improvement within the organization. One teacher from School 7 commented,

> I'll go in and watch one of my PLC members do, if we're talking about responsive classroom, I might go into her classroom one morning to see how she might handle a disruptive behavior. It's good to see in action if what you're doing is right, or that you have the best ideas, but it's also good to see it in action and see how other people handle it. The PLCs have promoted that a lot.

From this comment, it is clear that this teacher valued this practice, and is reflective of the impact observation can have upon one's own practice. PLCs were also credited in fostering this practice by making peer observations more comfortable. This was noted when a teacher said, "I feel like it (PLCs) make it more comfortable too, going and seeing how other people teach. I think that I've heard a lot of positives, and I feel like my instruction has gone up from it." This participant viewed these observations as a benefit and opportunity as opposed to a punishment. This idea was also reinforced by another teacher who stated, "I saw her doing things differently in her classroom when she started implementing more formative assessments and things like that. I was able to learn from her, and that's what encouraged me." In this case, this teacher was referring to a new district initiative. Therefore, this practice not only provided this teacher with instructional improvement ideas, but also actually led to her courage to engage in a new endeavor the following year.

These comments provided authentic examples to support the idea that peer observation is a viable way of facilitating improvement within teachers' organizations. This corroborates the current research that indicates that leadership capacity can be

developed by peer coaching to support practice inquiry (Charteris & Smardon, 2014). In this type of peer coaching, a system of reciprocal learning and support exists in a process in which teachers are empowered to construct knowledge within their organization (Zepeda et al., 2013). While existing research and the data from this study support the notion of teacher leadership by definition, none of the participants identified or perceived this practice explicitly as teacher leadership. This suggests a disconnect between participants' understanding of teacher leadership by definition and an understanding of teacher leadership through practice.

Additionally, reflective practice was perceived as a practice by participants in both strands of the study. Research supports the important implications that reflective practice has upon the educational organization because when teacher inquiry is embedded within the larger culture of the organization, a culture of inquiry can exist (Rinke & Stebick, 2013). Furthermore, for this type of inquiry to exist within an organization, teachers play a central role in developing knowledge through their own practice (Rinke & Stebick, 2013). While not a specific domain of teacher leadership, the value of reflective practice to teacher leadership is implicit (Teacher Leader Model Standards, 2011). Inquiry as practice is also one of the five design concepts of improvement science which further supports the importance reflective practice has upon continuous improvement (Perry, 2013). Interview comments suggested that the reflection participants experienced was one guided by student learning and continuous self-improvement. As a teacher in School 6 commented, "We might do a lesson or a couple of them, and I think to myself, 'What am I doing wrong, why aren't the kids getting this?" This idea was further supported by a teacher from School 1:

I think embedded in the trust of the PLC allows people to be really reflective and allows people to say, 'My gosh, that was amazing and great. All the kids are engaged and on the flip side, saying, my gosh, that lesson was a bomb. Why? How can we make it better, and how can we improve?

These comments indicated that participants reflected both individually and collaboratively on the effectiveness of their instructional practice through the lens of PLC practice. Therefore, this research supports the notion that authentic PLC engagement fosters reflective practice and continuous improvement. Domain III of the Teacher Leader Model Standards (2011) states that a teacher leader promotes professional learning for continuous improvement. While research connects this practice to teacher leadership, none of the comments indicated that engaging in reflective practice impacted perception of teachers' own leadership. Also, continuous learning was cited as a component or outcome of participants' PLC practice, but the actual promotion of it was not noted through the comments. Reflective practice can play an important role in continuous improvement because it is through reflection that areas of growth can emerge. Therefore, the findings from this study can support organizations in moving from engaging in reflecting practice to promoting it to increase potential opportunities for teacher leadership.

Even though the data from this research included multiple comments made by participants that support characteristics of teacher leadership by definition, these actions were not identified as leadership by the participants themselves. These findings are valuable, though, as the comments and research support the idea that the implementation and engagement in authentic PLC practice can potentially provide the structure and framework for teachers to practice teacher leadership. Additionally, they indicate that the components of teacher leadership are not globally understood, and this research could be

important to shifting that understanding. More so, this study provided a voice to teachers about perceptions of their leadership, which can be helpful to organizations finding ways to promote it.

Research Question 3

Research Question (RQ3): How do New Jersey public school teachers describe their leadership practice through authentic PLC practice?

When asked about teacher leadership, teachers first described their perception of teacher leadership in a general sense. Through this commentary, participants indicated that they considered teacher leaders to be one that might serve as a liaison to administration, engage in lifelong learning, and/or possess a personality that makes engagement with others easy. These responses suggested that a clearly defined understanding of teacher leadership was not uniformly represented from district to district, or even from individual to individual within the study. These responses also serve as explanation to other findings in which teachers clearly engaged in leadership practice, but did not identify it as such. Furthermore, few teachers indicated or expressed that they considered themselves a leader. This contributes to existing research in that teacher leaders often do not view themselves as leaders, but perceive that they successfully accomplish work and tasks through collaboration and the sharing of expertise (Angelle & Beaumont, 2007).

While the identification of lifelong learning can easily be linked to the Teacher Leader Model Standards (2011), few of the other comments suggested other viable connections. Cosenza's (2015) research study indicated that the teachers in his study defined teacher leadership in a way that supported six of the seven domains of the

Teacher Leader Model Standards (2011), and yet the results of this study did not necessarily support that claim. The participants here were not asked explicitly if they perceived the stated Teacher Leader Model Standards as an authentic description of teacher leadership, and when given the opportunity to freely describe teacher leadership, few intersections resulted between the standards and their responses. This supports the idea that a common understanding of what constitutes teacher leadership is not universally accepted. Furthermore, few teachers indicated or expressed that they actually considered themselves a leader. However, some of these same teachers described actions that by definition would constitute them as a teacher leader. These authentic accounts from teachers provide valuable insight into teacher perception, and uncover areas of clarification that are necessary. In order to promote teacher leadership, a clear understanding of it is necessary.

Self-perception of teacher leadership. Within the narrative data, teachers commented in ways that supported the idea that leadership could be perceived, developed, or exercised through the lens of authentic PLC engagement. One teacher from School 1 indicated that PLCs provided a potential structure for leadership development by saying, "I think it (PLCs) could be an opportunity to increase my leadership." Another teacher from School 7 also stated, "I feel like the PLC has allowed me to mentor the new teachers and show them the way of the PLCs," which also supported the claim that PLCs provide an opportunity for leadership development by supporting the professional growth of a colleague. This corroborated current research that indicated that participating in a peer coaching community can impact how teachers perceive their practice and can develop leadership capacity (Charteris & Smardon, 2014).

Others felt that leadership could be developed, but it was dependent on the topic as indicated by the following comment from a participant from School 4:

> Leadership can be developed, but it depends on the topic…some people are more comfortable with certain topics than others. For instance, he's a Schoolology guy…he would have no problems leading ---whether it's a large group, small group, whatever. People would go to him for that.

This particular comment promoted the idea that teacher leadership could be based upon the content or situation at hand. This was further supported by a comment made during the interview at School 4 by a teacher who stated, "Just because we may be a teacher leader in a specific skill, we'll reach out to other teachers for other skills." This supports the current research that states all teachers have the capacity to be teacher leaders, but not all wish to or should necessarily engage in this leadership (Spillane & Diamond, 2007). This research study extends the existing research by also suggesting that engaging in teacher leadership could be dependent upon the situation or content area. In this regard, it suggests that leadership might only be enacted in certain situations or by personal choice.

In one school, PLC facilitators were identified through a formal role that received a stipend and training. It was noted that support and training were provided to foster their ability to lead and facilitate PLCs. Research has shown that when administration and colleagues formally recognize roles within teacher leadership (Vernon-Dotson, 2008) or provide recognition through financial compensation (Borchers, 2009), the inclination to partake in teacher leadership is positively impacted. While only one of the participating PLC interview groups had formally recognized leaders with annual stipends, their comments suggested that the training they received provided them a framework to develop as teacher leaders.

However, not all participants felt as though PLCs had impacted their perceptions of themselves as teacher leaders. In some responses, participants expressed that they did not feel as though PLCs had developed their leadership, but teacher leadership was never universally defined by participants. Furthermore, while some participants explicitly stated that PLC engagement would not automatically teach leadership, it was touted as a potential structure in which leadership could be exhibited. This was supported by a comment from a teacher at School 8 who explained, "I don't think the PLC process teaches leadership. I think it allows you to facilitate in whatever but if the person doesn't have leadership skills, he or she is not going to get it through the PLC process." This idea that PLCs offer a place to practice leadership as opposed to learn leadership was supported by another colleague from School 8 who said, "They'll (teacher leaders) would be able to flourish (in PLCs). But, if they don't personally have the leadership skills from something else, the PLC process will not automatically give it to them." This reiterates that PLCs could be a place to exercise leadership, but not necessarily be the source of leadership development.

These results suggest that engaging in authentic PLC practice can provide a framework to display and exercise teacher leadership, but that without training and support, leadership cannot be realized. This corroborates current research, as Wenner and Campbell (2017) assert, that aside from content area and pedagogical training, leadership training is essential so that teachers have the opportunity to develop their leadership skills.

Discussion of Findings

The strongest indicator of the quantitative study was that almost all participants agreed or strongly agreed that they modeled an attitude of continuous learning and reflective practice for colleagues. When traced across the entire study, this theme was explained with more detail to better illustrate how participants modeled this attitude of continuous learning and reflective practice.

The practice most often cited that exemplified continuous learning was the practice of peer observations. When colleagues chose to observe peers for personal or professional development, the observations provided a framework to improve practice while engaging the participants in continuous learning. One participant indicated how this was a voluntary practice for learning by saying, "If one person was really good at math workshop, they would put that out there, so teachers knew that they could go to that teacher to see that." This indicates the comfort level of this group of teachers in their readiness to share practice. Recent research supports the idea that when PLCs provide the opportunity for teachers to learn from each other, pedagogy improves (Capraro et al., 2016). The effectiveness of structures for peer learning such as learning walks in place within the organization is supported by the knowledge of systems related to improvement science (Langley et al., 2009). Peer observations corroborate with improvement science research since meaningful change efforts for improvement must incorporate the interdependence among resources within an organization (Langley et al., 2009). The effectiveness of learning walks is also supported by concepts of improvement science because learning walks do not introduce a new resource by investigating ways to use available resources within the organization to obtain better overall outcomes (LeMahieu

et al., 2017). These results suggested that "learning walks" support the integration and implementation of improvement science within the context of educational organizations.

Additionally, reflective practice was strongly noted across both the quantitative and qualitative findings. Reflective practice was noted in the comments as both an individual phenomenon and a collaborative one. In some cases, reflective practice was noted as being part of the culture of the organization. This supports the potential growth of teacher leadership capacity in that reflective practice is implicitly emphasized throughout the Model Teacher Leader Standards (2011). Furthermore, the inclusion of reflective practice is inherent in improvement science (Perry, 2013). Additionally, this study corroborated the current research that posits that reflective practice can critically examine classroom practice (Rinke & Stebick, 2013). While reflective practice was not noted within any of the qualitative responses as explicitly being a component of leadership, the researcher and research support the idea that its presence is a requirement to support a framework for teacher leadership to thrive. Therefore, identifying strong attributes of an organization, such as continuous learning and reflective practice, might be an appropriate place to integrate leadership development.

Limitations

While the researcher of this study gathered over 100 quantitative responses and interviewed more than 30 public school teachers, the results are limited to these teachers' perceptions. Additionally, authentic PLC practice and teacher leadership were determined quantitatively by each teacher's perception. The assumption that all of these teachers understood the definition and components of an authentic PLC and the standards of teacher leadership was made by the researcher, and this could have impacted the

results. This study was also limited to New Jersey, where PLCs are mandated but offer varying quality of implementation. An attempt to mitigate these limitations was made by the researcher by including as many potential participants as possible from an array of districts to represent many experiences. Additionally, interview questions asked participants to describe their PLC practice to further assess authentic PLC practice.

Implications

This research study has supported some existing research but also unearthed some implications that influence leadership practice, educational policy, and indicated future areas of research that can be explored.

Leadership Practice

These findings have provided some implications for school leaders that can support the growth and realization of teacher leadership within their organizations. This study supports the existing research and current literature related to Professional Learning Communities having the potential to support teacher leadership in its members. However, teachers did not often perceive themselves as leaders; therefore, a stronger distributed leadership model within their organizations might strengthen this perception and provide room for teacher leadership to flourish. Prestine (1993) identified that principals must be able to share authority, facilitate staff initiatives, and participate without overtaking for effective changes to occur. Furthermore, Diamond and Spillane (2016) have researched distributed leadership in educational organizations and identified a framework of leadership as it relates to teaching and learning in schools. Through this framework, the welfare and success of all students is addressed through the learning opportunities they are offered (Diamond & Spillane, 2016). Leadership practice that

engages in distributive leadership derives its meaning from the interactions among leaders, followers, and the situation with the overarching theme that leadership can be engaged by all members within the organization (Spillane et al., 2001). When leadership focuses on the interactions, as opposed to the responsibilities of specific roles, the idea of distributed leadership can thrive (Diamond & Spillane, 2016). While PLCs may be in place in many New Jersey public schools, the leadership of the organization could empower individuals more by utilizing an authentic distributed leadership model. Additionally, the impending New Jersey Teacher Leadership Endorsement will necessitate that principals have the knowledge and understanding of how to use teachers as leaders within their organizational structure.

This research also suggests that the framework of PLCs alone does not organically create leadership, but that specific training in leadership could be beneficial. Carver's (2016) research indicated that more clarity is needed that better prepares teachers for roles of leadership. The current study contributed to this need and suggests that organizations provide specific training for PLC facilitation so that teacher leadership can grow within the framework. The findings align with current research as teachers could be offered leadership training, as well as training in content and pedagogy (Wenner & Campbell, 2017). The training could support the facilitation of PLCs and potentially strengthen the organization by increasing its capacity through the distribution of leadership.

Policy

With the emerging Teacher Leadership Endorsement underway in New Jersey, this study provides authentic teacher insight to perceptions of teacher leadership and

leadership within the lens of PLCs. This data could be used to support and shape the development of the coursework and/or training provided for teachers to earn the endorsement. Furthermore, this research could support districts in finding space and ways within the organization for teachers to enact their endorsed leadership skills.

Another area of policy that could be impacted by this research relates to teacher and principal evaluations. Since leadership is included in most teacher evaluation instruments that have been approved by the New Jersey Department of Education, this research could clearly identify roles and opportunities for teacher leadership, thus clarifying existing policy. Furthermore, principal evaluations could include a component on leveraging teachers as leaders to insure that all parts of the organization are accountable for supporting teacher leadership.

Recommendations

It is recommended that school districts begin to prioritize the development of teacher leadership within their organizations by providing opportunities, training, and space for development. Furthermore, it is recommended that pre-service teaching programs consider the idea of teacher leadership within their preparatory framework so that pre-service teachers could begin to view the profession of teaching as a field of growth and opportunity from within the classroom. Additionally, providing pre-service teacher training on leadership skills could positively affect the overall capacity of the organizations in which teachers become employed. If teachers enter the field with training and skills for leading from within the classroom, the ability to function and prosper as a teacher leader will grow.

Furthermore, this study recognizes that the concept of teacher leadership is not universally understood by the definition used in the Teacher Leader Model Standards (2011). Offering state led professional development for teachers and administrators on teacher leadership through PLC facilitation could strengthen both understanding of its nature and support teachers' growth in this area.

Future Research

This study attempted to fill the research gap about teachers' perceptions of their leadership through the lens of PLC engagement, but more research is needed. One area of potential research development would investigate how school districts have developed teacher leaders through PLC engagement. This research unearthed the idea that many of the participants' descriptions of teacher leadership contrasted with the research base and Model Teacher Leader Standards accepted by the state of New Jersey. Delving more deeply into current teacher leadership development and practice in New Jersey public schools would be a beneficial step forward.

This study also did not address the relationship between demographic data and perception of teacher leadership practice. While beyond the scope of this study, this is an area of potential future research. Understanding the differentiated needs of teachers in their leadership development based on different demographics might provide insight into training for and organizational response to teacher leadership.

Conclusion

This study was conducted to determine the relationship between teachers' perception of their leadership and PLCs. The quantitative data suggested a moderate positive correlation between teachers' perception of engagement in authentic learning

communities and individual perception of their leadership. Within the qualitative data, teachers' interview comments suggested that their PLC practice supported a collaborative culture, fostered the use of data and assessments, provided a place to reflect on practice, improved instructional practice, and in some cases developed teacher leadership. While all of the themes that emerged related to the defined and accepted standards within the Model Teacher Leader Standards (2011), for the most part, teachers did not describe their work in these areas as leadership. It was notable that participants described leadership as indicated in the standards, but did not associate most of these actions as leadership, and therefore did not perceive them as such.

The integration of data revealed both reflective practice and continuous learning as the strongest indicators by most participants. These two ideas are integral pieces to both PLC engagement and teacher leadership through PLC practice, and their strong presence in the results of this study might indicate these as areas of focus when supporting teacher leadership capacity.

Understanding the perception of teachers about their leadership through the lens of PLC participation is important to understanding how practice could shift to best support growth in this area. Ensuring that an organization operates within the tenets of the distributive leadership model is an essential attribute to both authentic PLC implementation and the development of teacher leaders. Also, supporting the development of teacher leaders through training and growth opportunities could support the capacity of the organization. Moreover, the results of this research study can help shape the future opportunities of those who choose to fulfill the requirements of the teacher leader endorsement in New Jersey.

While there are many issues to address in public education in New Jersey, the solutions to some may already exist within our organizations, but simply have not been developed properly. More attention should be given to the valuable teacher resources that inhabit the classrooms in P-12 organizations. By developing these resources, instructional leadership is spread among the experts in the field who are in a position to make changes immediately. Historically, educational initiatives have presented new and rebranded ideas to solve the plaguing issues in education, but using the valuable assets that already exist in our schools might prove more fruitful than any new flashy educational initiative. Using a framework such as PLCs could help to support this change in leadership development and ultimately improve student achievement by casting a much larger net than one-and-done initiatives have been able to accomplish to date. Instead of replicating the "adopt, attack, and abandon" (Rohanna, 2017) cycle in solving educational issues, schools must investigate better ways to use the valuable resources that already exist within their organizations – teacher leaders.

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Appendix A

Lawshe's Content-Validity Worksheet

Item Number	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	CVR
1	X	X	X		X	X	X	X	0.75
2	X	X	X	X	X	X	X	X	1
3	X	X			X	X		X	0.25
4	X	X		X	X		X	X	0.5
5	X		X	X	X		X	X	0.5
6	X	X	X	X	X	X	X	X	1
7	X	X	X		X	X	X	X	0.75
8	X	X	X		X	X	X	X	0.75
9	X	X	X		X		X	X	0.5
10	X	X	X	X	X	X		X	0.75
11	X				X			X	-0.25
12		X			X		X	X	0
13	x	x		x	x	x	x	x	0.75
14	x	x		x	x	x	x	x	0.75
15	x		x		x	x	x	x	0.5
16	x		x		x	x	x	x	0.5
17	x		x		x	x	x	x	0.5
18	x	x		x	x	x	x	x	0.75
19	x	x	x		x		x	x	0.5
20	x	x			x	x	x	x	0.5
21		x	x		x		x	x	0.25
22		x	x		x	x	x	x	0.5
23	x	x			x	x	x	x	0.5
24	x	x			x		x	x	0.25
25	x	x	x		x	x		x	0.5
26	x	x	x		x		x	x	0.5
27	x	x	x		x		x	x	0.5
28	x	x	x		x	x	x	x	0.75
29	x	x	x		x	x	x	x	0.75
30	x	x			x	x	x	x	0.5
31	x	x	x		x	x	x	x	0.75
32	x	x	x		x			x	0.25
33	x	x	x		x	x	x	x	0.75
34	x	x	x	x	x	x	x	x	1
35	x	x	x		x	x	x	x	0.75
36	x	x	x		x		x	x	0.5
37	x	x		x	x	x	x	x	0.75
38	x	x	x	x	x	x	x	x	1
39	x	x	x	x		x	x	x	0.75
40		x	x		x		x	x	0.25
41	x		x		x	x	x	x	0.5
42	x	x	x		x	x	x	x	0.75
									0.577
CVR(Critical) for a panel size (N) of 8 is 0.75.									

Appendix B

Survey

PLC Engagement and Teacher Leadership Survey

Q1 You are invited to participate in this online research survey titled the Relationship Between Teacher Leadership Perception and Professional Learning Communities. You have been invited to participate in this survey because you are a public school teacher in New Jersey and participate in Professional Learning Community practice.

The survey may take approximately 5-10 minutes to complete. Your participation is voluntary. If you do not wish to participate in this survey, do not respond. Completing this survey indicates that you are voluntarily giving consent to participate in the survey. You will have two weeks to complete the survey.

The purpose of this research study is to explore the relationship between participation in authentic professional learning communities (PLCs) and teacher perception of their leadership practice in New Jersey public school teachers. The goal is to provide school leaders more clarity as to practices that can support and grow teacher leadership within their organizations.

There are no risks or discomforts associated with participating in this survey. This survey will not collect any personally identifying information. There is no direct benefit to you, but your responses can contribute to a growing body of research about the connection between PLC participation and teacher leadership.

At the completion of this survey, you will be asked if you are interested in participating in the second phase of research, which is a group interview with your Professional Learning Community. These interviews will be conducted virtually using Google Hangouts or Skype. You will be asked to use pseudonyms throughout the interview so no personal identifiers are collected. If you decide to participate in the interview, I am

asking for your permission to audiotape as part of that study. You do not have to agree to be audiotaped to be included in the survey. The recordings will be used for analysis by the researcher and not include any identifiers. The recordings will be stored in a secure file on a Rowan Drive organized by district pseudonyms and destroyed at the completion of this study. Your agreement to audiotape is given when you supply your contact email information at the conclusion of this survey. This grants permission to be recorded as described in the above-referenced study. The investigator will not use the recording(s) for any other reason that those stated without your written permission.

Your response will be kept confidential. Data will be stored in a secure computer file on the Rowan Google Drive and the file will be destroyed upon completion of this study. Any part of the research that is published as part of this study will not include any identifiable information. If you have any questions about the survey, you can contact Dr. Lisa Vernon-Dotson at 856-256-4500 x 53880.

Please complete the questions below:

☐ To participate in this survey, you must be 18 years or older and serve as a public school teacher in New Jersey. Please click the circle if you meet these requirements. (1)

☐ Completing this survey indicates that you are voluntarily giving consent to participate in the survey. (2)

Q2 Please indicate the grade level(s) that best describe your teaching assignment.

○ PreK - Grade 2 (1)

○ Grades 3-5 (2)

○ Grades 6-8 (3)

○ Grades 9-12 (4)

Q3 Please indicate the highest level of education achieved.

- ○ Bachelor's Degree (1)
- ○ Master's Degree (2)
- ○ Master's Degree plus additional credits or certifications (3)
- ○ Doctorate (4)

Q4 Please indicate the number of completed years you have been employed as a teacher.

- ○ 0-5 (1)
- ○ 6-10 (2)
- ○ 11-15 (3)
- ○ 15 + (4)

Q5 Please select the best descriptor of your district.

- ○ Suburban (1)
- ○ Urban (2)
- ○ Rural (3)

Q6 What percentage of the students in your school are characterized with low socioeconomic status?

- ○ less than 10% (1)
- ○ 10-24% (2)
- ○ 25-49% (3)
- ○ 50% or more (4)

Q7 I am regularly involved in decision-making about many school issues.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q8 I feel that school-based administration uses input from staff members to make decisions.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q9 I feel accountable to work towards our school vision and for student learning.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q10 I regularly work collaboratively with colleagues to learn about new skills and teaching strategies and apply them to my practice.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q11 I work together with colleagues to find different approaches to instruction and seek solutions that address the needs of students.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q12 I engage in informally sharing ideas with colleagues to improve student learning.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q13 I feel that genuine and caring relationships exist among staff and students that reflect trust and respect.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q14 I feel that taking risks to improve instruction is respected and encouraged.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q15 I regularly use data to make instructional decisions about teaching and learning.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q16 I collaborate with colleagues and administrators to plan professional learning that is team-based, job-embedded, sustained over time, aligned with content standards, and linked to school/district goals.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q17 I facilitate professional learning among colleagues.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q18 I model an attitude of continuous learning and reflective practice for my colleagues.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q19 I facilitate the collection, analysis, and use of classroom and school-based data to identify opportunities for instructional and/or school improvement to increase student learning.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q20 I am knowledgeable about formative and summative assessments and work with colleagues to identify and use multiple assessment tools aligned to state and local standards.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q21 I collaborate with my colleagues in the design, implementation, scoring, and interpretation of student data to improve practice and impact student learning.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q22 I use my knowledge and understanding of different cultures and backgrounds in the school community to promote effective interactions among colleagues, families, and the community.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q23 I assist my colleagues' understanding of community culture and diversity and help them develop culturally responsive strategies to increase the engagement and learning for all students.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q24 I collaborate with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q25 I advocate for access to professional resources that allow colleagues to spend significant time learning about effective practices and developing a professional learning community focused on school improvement goals.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q26 Thank you for your participation in this survey. If you would be interested in participating in the second phase of this research project, a focus group interview conducted in person at a location of your convenience, please click here: https://rowan.co1.qualtrics.com/jfe/form/SV_5nz5rfANzko9x4N

Appendix C

Interview Protocol

Focus Group Protocol:

Thank you again for volunteering for the second phase of the research *Examining the Relationship Between Teacher Leadership Perception and Professional Learning Community Engagement*. To participate in this research, you must be a public school teacher who is 18 years of age or older.

The focus group interview will take approximately 45 minutes to complete. Your participation is voluntary. If you do not wish to participate, please excuse yourself from it. The number of subjects to be enrolled in this study is between 18 and 30.

Participating in this focus group indicates that you are voluntarily giving consent to participate. There are no risks or discomforts associated with this interview. There may be no direct benefit to you, however, by participating in this study, you may help us to understand the relationship between Professional Learning Community engagement and teacher leadership more deeply.

Please note that this interview will not contain any personally identifying information as it is not relevant to the purpose of this research. You can select or will be provided with a pseudonym for this research.

Additionally, I am asking for your permission to audio-record your responses. The recordings will not include any personally identifying information as no names will be used within the focus group. The recordings will be kept confidential and only used for analysis by the research team. They will be stored in a secure computer file and the file will be destroyed once the data has been published. Any part of the research that is published as part of this study will not include your individual information. Do you have any questions?

If this is agreeable to you, please state (each of) the names you would like me to use today and the date. If you do not wish you participate, please remove yourself from the focus group, and at any time you wish to stop participating, please do so.

Q1: Can you each tell me a little about the work of your PLC?

Q2: How would you describe a typical PLC meeting? Cycle?

Q3: How would you describe a teacher leader?

Q4: Has PLC work changed how you view yourself as a teacher? As a colleague? As a leader?

- Can you describe?
- Can you give me a specific incident or more details?

Q5: Describe how your PLC creates a climate of trust and critical reflection.

- How have you engaged in challenging conversations about practice and/or learning data to improve practice.
- Has reflective dialogue become a part of your regular practice?

Q6: Has your PLC work changed how you view teacher leadership? Has it changed your perception of your own practice?

Appendix D

Descriptive Statistical Analysis

Frequencies and Percentages of PLC Engagement Items from Survey Responses

Survey Items	SA	A	D	SD
1. I am regularly involved in decision-making about many school issues.	8 6.06%	55 41.67%	56 42.42%	13 9.85%
2. I feel that school-based administration uses input from staff members to make decisions.	16 12.12%	77 58.33%	34 25.76%	5 3.79%
3. I feel accountable to work towards our school vision and for student success.	63 47.73%	64 48.48%	3 2.27%	2 1.52%
4. I regularly work collaboratively with colleagues to learn about new skills and teaching strategies and apply them to my practice.	65 49.24%	57 43.18%	9 6.82%	1 .76%
5. I work together with my colleagues to find different approaches to instruction and seek solutions that address the needs of students.	62 46.97%	57 43.18%	11 8.33%	2 1.52%
6. I engage in informally sharing ideas with colleagues to improve student learning.	75 56.82%	53 40.15%	4 3.03%	0 0.00%
7. I feel genuine and caring relationships exist among staff and students that reflect trust and respect.	62 46.97%	66 50.00%	4 3.03%	0 0.00%
8. I feel that taking risks to improve instruction is respected and encouraged.	42 31.82%	70 53.03%	19 14.39%	1 .76%
9. I regularly use data to make instructional decisions about teaching and learning.	44 33.33%	68 51.52%	19 14.39%	1 .76%

Notes. N=132.

Frequencies and Percentages of Teacher Leadership Items from Survey Responses

Survey Items	SA	A	D	SD
1. I collaborate with colleagues and administrators to plan PD that is team-based, job-embedded, sustained over time, aligned with content standards, and linked to school/district goals.	32 24.24%	63 47.73%	29 21.97%	8 6.06%
2. I facilitate professional learning among colleagues.	29 21.97%	62 46.97%	37 28.03%	4 3.03%
3. I model an attitude of continuous learning and reflective practice for my colleagues.	55 41.67%	75 56.82%	2 1.52%	0 0.0%
4. I facilitate the collection, analysis, and use of data to identify opportunities for instructional improvement to increase student learning.	22 16.67%	73 55.30%	34 25.76%	3 2.27%
5. I am knowledgeable about formative and summative assessments to identify and use multiple assessment tools aligned to state and local standards.	36 27.27%	87 65.91%	9 6.82%	0 0.0%
6. I collaborate with my colleagues in the design, implementation, scoring, and interpretation of student data to improve practice and impact student learning.	27 20.45%	72 54.55%	31 23.48%	2 1.52%
7. I use my knowledge and understanding of different cultures and backgrounds community to promote effective interactions among colleagues, families, and the community.	38 28.79%	82 62.12%	11 8.33%	1 0.76%
8. I assist my colleagues' understanding of community culture and diversity to help develop culturally responsive strategies to increase the engagement and learning for all students.	21 16.03%	85 64.89%	24 18.32%	1 0.76%
9. I collaborate with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community.	18 13.74%	71 54.20%	41 31.30%	1 0.76%
10. I advocate for access to PD that allows colleagues to spend time learning about effective practices and developing a PLC focused on school improvement goals.	22 16.67%	71 53.79%	36 27.27%	3 2.27%

Notes. N=132.

Appendix E

Qualitative Research Codebook

Code/Definition/Criteria	Example from Interview Transcriptions
Communicating with Coworkers **Definition:** Responses that indicate collegial communication **Inclusive of:** communication between teachers and other staff members in the school community **Exclusive of:** Communication with students and/or community members	"We talk mostly about planning, like if we can plan topics like from doing systems of the body. We'll plan Jump Rope for Heart or just talk…talk about students too, or how we deal with different problems." (School 6) "I'm in second grade, and we know everyone is on the same page…so we check in with each other…and it kind of keeps us all on the same page" (School 6) "It's talking about where you are in the program, where you're going with the next few lessons and what they look like." (School 5) "You feel comfortable talking to other teachers about certain things because of this group (PLC)" (School 2) "We try to talk and make sure we don't all assign tests on the same day or that the homework load doesn't get too much for the students." (School 2) "We bounce things off of one another…how can we seam the gap between our subjects?" (School 4) "I teach resource room, so it's nice just to see when I meet with them where they gen ed is as opposed to the resource. We check in with each other and what point are you at…are you going to move onto the new topic, are you going to stay? And it kind of keeps us all on the same page." (School 6)
Communicating with the Community **Definition:** Responses that indicate relational conditions with parents and other community members **Inclusive of:** communication and collaboration with parents, guardians, and community members **Exclusive of:**	"It's a time where we have conferences with parents, since we're all meeting at the same time during the day." (School 2) "We reach out as a team, to parents to come in." (School 2) "Our schoolwide PLC goal this year…we had a lot of issues last year with parents about our discipline policy….we did a climate survey with the parents last spring, and got about 70% of the families to respond… This shaped our goal for this year. " (School 7)

Code/Definition/Criteria	Example from Interview Transcriptions
Collaboration with staff members and/or students	
Collaborating with Colleagues **Definition:** Responses that indicate input from two or more colleagues on a school-based issue / concern/ instructional focus **Inclusive of**: discussion about curriculum, instruction, behavior management, student needs, assessment with teacher colleagues during PLC meetings **Exclusive of:** Discussion with administration, parents, students	"Well now I'm a seasoned teacher, but when it was first year, second year, I liked the PLC just for asking for advice. Like what would you do, what do you do in your classroom?" (School 2) "I think the PLC is a big district initiative that they do to support collaboration for us." (School 2) "I think that being in a PLC rather than just being in my room doing work, I think that's given me a broader range of topics and I'm able to hear from other people, from other disciplines in other ways in which they conduct their classes. I think it gives me a more broad view of education in general on being able to reflect on my own practice through the lens of others.". (School 2) "It's allowed me to take ownership without taking things too personal. So like in looking at that data, if my kids haven't mastered a standard, and I've spent like five weeks on it like okay, it's not necessarily me failing as a teacher. It's like, okay, now how can I look at things in a different way to be able to get my kids to master that standard, or am I able to go to my PLC and have a conversation about the standard and having the standard and kind of thinking, what's the issue…as a team, let's work get all of our students to do the best they can." (School 1) "It's given us time to actually say, 'How do you teach this?'" (School 1) "This year we implemented the standards-based report card, so some of our meetings we were just discussing how are you just trying to uniformly assess? Like how are you going to determine if they're approaching the standard or meeting the standard?" (School 1) "I definitely think there's different people who have different strengths in things. We've had before where a teacher, who was in another PLC, come up with something, like a cool way of entering SGO data and then sent it out to everyone. From PLC to PLC, we're good at sharing things to the whole staff." (School 2)

Code/Definition/Criteria	Example from Interview Transcriptions
	"We spend our PLC time noticing problems within our students and how we can collaborate as a whole to be able to address and fix those problems." (School 1) I think just with XXX and I, we've had more time. Like I'll say to her, 'Hey, what are you doing?' Like, it's given us the time to actually say, "How do you teach this?" (School 1) "Some of this sharing comes from PLC, just from the opportunity of us sitting together and the word spreads. If you need something, and know someone is good at that, we'd say "She's really good at that. Go see her and she'll help you. She helped all of us in our PLC." (School 2) "If I have a question about something with language arts, and I'm not sure exactly how I can do better at it, XXXX and I regularly talk about the different resources we have, because we both teach 5th and 6th grade language arts. We have this sort of culture created here where we can talk to each other about things, and how are you doing this, and it's just like a norm for people to bring things up." (School 1) "It's nice to sit down with my colleagues and see how they handle something in the curriculum, or even with classroom management." (School 4) "We meet to discuss what's happening on the math team. We have a new program in place, so usually we're trying to figure out the new program because we never had any proper training in it." (School 5) "We are talking about the program, where you're going with the next few lessons and kind of dissecting them. How are we going to make them fit? How are we interpreting the program…those kinds of things." (School 5) "It's a time to meet to go over what you're doing." (School 5) "Every PLC varies, but we seem to always go back to program. We spend a lot of time talking about our new

Code/Definition/Criteria	Example from Interview Transcriptions
	math program, what's working, what's not working." (School 6) "We talk about what went well. We talk about where we're going next. I feel a lot of times, we collaborate on how we could have done it this way, or next time, we'll try this, who's doing which pieces." (School 6) "PLCs are very collaborative, but so is our school. We're very small. I know I can go to the first grade teacher if I have a student who's really advanced, and we'll share different resources and things like that." (School 7) "I think the PLC gives us an opportunity to collaborate, which I think benefits the students and the teachers overall." (School 8) "Make sure we're all on the same page, make sure we're aligned with what we're teaching each other ideas of what works for one, time to share some ideas that are working that you can use." (School 8) "… we are able to have those open conversations and we are able to, like he said, bounce those ideas back and forth, and really by the end make that determination of what would be the best decision." (School 4)
Developing, Practicing and Exercising Teacher Leadership **Definition:** Responses that indicate recognition or a feeling of teacher leadership through the lens of PLCs or outcomes of an organization that houses PLCs **Inclusive of**: adjectives about leadership and leadership capacity, leadership roles, and	"I think in this group, they're all leaders. I feel like there's not one particular because I think they work together as a whole. I don't see anyone that comes up and I don't want to say takes over, but holds the reins of the group. I think everyone has their own say in some certain things with a student or an issue that arises, so I think it's collaborative leadership." (School 2) "I think we all have established roles, but I also think that people that are not in those roles also assume some of those duties, like I know there's a lot of people that re not necessarily PLC facilitators or peer coaches, but they still have an open classroom for someone to do a peer observation." (School 1) "I think it (PLCs) could be an opportunity to increase my leadership."

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leadership activities as seen in practice **Exclusive of:** general descriptions of teacher leadership (not specifically recognized within the organization)	" I totally agree, but because it's a structure in place. Leadership style is a critical piece to making that work." (School 1) "We are in contact a lot with our administrators. We have a say, they really come to us to ask us if things are effective. I think the PLC has allowed us to voice our opinions more than we would have in another setting." (School 7) "XXX and I as the facilitators, go to a monthly PLC training after school, where we work on SMART goal development. We work on strategies to use in facilitating our PLCs and we're also kind of used as the communicators." (School 1) "I would say leadership can be developed but it depends on the topic….some people are more comfortable with certain topics than others, for instance, he's a Schoolology guy…he would have no problems leading- whether it's a large group, small group, whatever. People would go to him for that." (School 4) "For the specific skill….yes, definitely. In all of our heads, just because we may be a teacher leader in a specific skill, we'll reach out to other teachers for other skills." (School 4) "I think PLCs has allowed me to come into my own more as a teacher leader by providing the opportunity to share teaching ideas and give PD to the district." (School 7) "They all have their own niche, and probably I would say they don't take formalized turns as far as established norms or protocols with, 'I'm going to be the leader this time,' which could possibly be the next stepping stone in that evolution. I think the same people leading the groups all the time, it's not really the same charge that should occur with an equal representation of the groups." (School 4) "I feel like the PLC has allowed me to mentor the new teachers and show them the way of the PLCs." (School 7) "They'll (teacher leaders) would be able to flourish (in PLCs). But, if they don't personally have the leadership

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	skills from something else, the PLC process will not automatically give it to them." (School 8)
Fostering Relationships **Definition:** Responses that describe the environment supported by an organization that engages in PLC practice **Inclusive of**: specific examples of feelings and adjectives and self - perception about the work environment, relationships, and trust **Exclusive of:** general descriptions of culture and climate not linked to the specific individual or organization	"I worked for a year in a district that didn't do the PLC model and it's nicer here that I feel that everyone's here to help me. That if I have a question or concern…when I was a first year, second year teacher, I didn't know a lot of things. So a lot of it is just experiential and so going to people and saying what's your experience with this, how would you handle the situation, it's nice to know that here are people that are help to help. That you don't feel alone in it." (School 2) "I remember starting out, it was nice to have that sense of community and support because I have worked in school where I was afraid to ask for help because I felt that it made me look Iike I didn't know how to do my job, whereas here, I never felt that. I was never afraid to go to my team." (School 2) "I think PLCs help to form relationships with teachers. I have the time to do tech integration in the school, or I can bounce ideas off the instructional coach…just yesterday we sat for 20 minutes and discussed this new tool…we have that type of relationship." (School 4) "No one's really dragging their feet saying, 'Oh, we have to be at PLC.' It's a nice time to actually get together, because we don't get that during the week otherwise." (School 7) "I think it makes it more comfortable to speak to other teachers other than your team. It gives you practice on learning how to work with other people in a different capacity. Maybe not as much as a leader, but you will be comfortable talking to another teacher about certain things outside this group." (School 2) "It was nice that it was facilitated by a teacher. As a new teacher I felt a lot more comfortable going through XXX, because a lot of times you do peer observations if you're struggling with something or like 'I'm really struggling with blank. I know so and so is really good at blank. I would like to observe them doing that. To be able to have that conversation with XXX made it a lot better than

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	having to have that conversation with a superior." (School 1) "I would consider them coworkers and also friends, which is really nice. I know a lot of my friends, who are teachers, don't have that where they work." (School 2) "I know I can take the instructional coach and bounce ideas off, formalized or just through an email message or text message. The relationship is closer, I trust her with her decisions." (School 4) "I feel very comfortable with everyone I work with in this PLC and never felt that I was being judged. I always felt I was welcomed. It felt…it was very nice." (School 2) "I think that has to do with building relationships with your colleagues. The fact that over the past four years since we've started PLCs, we have built that relationship where we are able to have those open conversations… " (School 4) PLCs…definitely brings us closer." (School 6) I feel that we really are invested in our relationships, because we are getting the prior year's teacher's kids." (School 7) "We have built up trust with each other. We value each others' input on everything. I have to say, I don't mean to brag, I think we have the best PLC because we talk outside of school as well as inside." (School 2) "Also, I think know the right resources to tap into, and I feel like that trust component that trustworthy component…Sometimes we'll have staff members come up to us anonymously…'I'm really struggling with A, B, and C.. Can you help me?' And I might not be able to have that resource, but I'm able to go to my curriculum director and say there's a staff member and not give out names…or maybe I'll go to the principal or whoever to get the resources that they need." (School 1)
Reflecting on Practice **Definition:**	"As a special area teacher, it's neat to see how XXX handles classroom management to say how the media teacher does, and then how that transfers over to the

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Responses that indicate reflection or discussion of instructional practices after instruction has occurred **Inclusive of**: personal experiences of reflection through discussion with others, observation, self-reflection, and/or other actions to reflect about instruction and/or practice **Exclusive of:** general descriptions or definitions of reflection or reflective practice	classroom teacher. It's a really reflective experience." (School 4) "I think we are always discussing, like 'How did this person do it? Or, how did that child see it?' Just a few minutes ago, I had a conversation and normally we would have had it in PLC, but she was leaving. She saw teaching the lesson one way, and I'm like, "No, that's not the way I see it, and after talking we realized we are seeing it the same way, just from a different perspective. She's going to try it her way, and me my way and we're going to compare how it went" (School 5) "We might do a lesson or a couple of them and I think to myself, 'What am I doing wrong, why aren't the kids getting this?' And then meeting all together and finding out the same struggles are happening in that classroom or this classroom." (School 6) "I'll keep a sheet. We have a sheet that we keep. It's things that the students said during the lesson, things that you heard the teacher say. Then we will come back together and talk about that." (School 7) "I think embedded in the trust of the PLC allows people to be really reflective and allows people to say, 'My gosh, that was amazing and great. All the kids are engaged and on the flip side, saying, my gosh, that lesson was a bomb. Why? How can we make it better, and how can we improve?" (School 1) "Right now, one of our focuses for reading is the reader's notebooks. It's a lot of, what are the students already doing in their notebooks? How is that meeting unit goals and what do we need to do to improve on student strengths, as well as student weaknesses?" (School 4) "We self-assess (our PLC meetings). We have a rubric that we use every week to see whether we kept on track, because we were finding, like in the previous years… (School 7)
Observing Colleagues to Improve Practice **Definition:**	"If one person was really good at math workshop, they would put that out there, so teachers knew that they could go to that teacher to see that. If someone else was really good with strategy groups, or reading or writing, they knew that they could go to that teacher as well. It really

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Responses that indicate practice of observing colleagues and/or peers to view instructional practices **Inclusive of**: instances of peer observations that are voluntarily done or done as a matter of regular practice; evidence of a system of peer observation in place **Exclusive of:** mandated peer observations or recommended peer observations from administration or superiors	did become that comfort level between these colleagues as well." (School 4) "We do learning laboratories. I'll go in and watch one of my PLC members do, if we're talking about responsive classroom, I might go into her classroom one morning to see how she might handle a disruptive behavior. It's good to see in action if what you're doing is right, or that you have the best ideas, but it's also good to see it in action and see how other people handle it. The PLCs have promoted that a lot." (School 7) "I feel like it makes people more comfortable, too, going and seeing how other people teach. I think that I've heard a lot of positives, and I feel like my instruction has gone up from it." (School 7) "The learning walk is where you can sign up and you want to do the walk, but the other teacher also has to say that's okay for people to come into their classrooms. We put an emoji on the door." (School 2) "Yeah, it's good to pop in just to see different teaching styles. It's something I wanted to do, not something I had to do." (School 2) "I was coming back from leave and learning a lot from her. Like I saw her doing things differently in her classroom when she started implementing more formative assessments and things like that. I was able to learn from her, and that's what encouraged me…" (School 1)
Improving Instructional Practice **Definition:** Responses that indicate measurement of instructional success and action or discussion of instructional shifts **Inclusive of**: specific incidences of self-imposed instructional shifts through recognition	"If somebody does a lesson, and it went well, then we might change our plan of how we're going to do it because of how well it worked in someone else's classroom." (School 6) "If I'm facilitating a PLC, it's about implementing something in instruction or we might be analyzing the data and trends so we can make those next step goals for the student improvement." (School 4) "I'd say, we spend the lion's share on talking about instruction, and how to make it better for students." (School 6)

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of need, use of goals to guide shifts, discussion of instructional improvement with colleagues **Exclusive of:** dictated instructional needs from administrators/supervisors	"We have the overarching SMART goal, and then each PLC, at the beginning of the year, in one of our first in-service days, then create our own SMART goal." (School 7)
Identifying Barriers **Definition:** Responses that indicate or describe barriers to PLC functioning and/or teacher leadership capacity or development **Inclusive of**: descriptions and/or actions that impede the functioning of authentic PLC practice and/or development or practice of teacher leadership at an organizational level **Exclusive of:** descriptions or complaints about non-negotiable situations such as state and federal policy mandates; personal situations or conflicts that impede PLC progress	"We're given a specific task that we need to accomplish that day and people teach different sciences and they collaborate with the other people who teach the same content area and we accomplish the task, whatever it is for the day." (School 8) "Administration has dictated, 'This PLC is dedicated to this' as opposed to whatever we're deciding to use our PLC time for." (School 5) "We're given directives. We're told what we're supposed to cover." (School 8) "I think the tone is set from leadership and it trickles down from there." (School 8) "Although sometimes it's not a math meeting, we're pulled by the curriculum director or other administrator to do other kinds of training or other kinds of meetings." (School 5) "You only have 30 minutes in building for PLC, that doesn't give a lot of time for that reflection." (School 4) "It's hard to get caught up in the things and lose track of the students. What I mean by that is, a lot of times we'll identify we're going to meet during this prep for 40 minutes. By the time everybody goes to the restroom, makes a phone call, checks an email, and makes copies, you're talking about 30 minutes. It's hard to invest on something purposeful when you have limited time." (School 4)
Using Data and Assessments **Definition:**	"We pre and post test for all the units in writing. So that's supposed to inform our conferring and small-group work. And, we also do a data dig in the beginning of the school year. So, for example, one of the things we noticed in our data dig was that our very low scores, in part, are on

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Responses that indicate use of student and/or district data individually or collaboratively **Inclusive of**: discussion and/or actions that indicate the creation or implementation of summative, formative, and/or anecdotal student data within practice **Exclusive of:** data housing systems, national data trends	authors' perspective and purpose. And, we we've been trying to build that into our units of study as more of a focus." (School 6) "We use benchmarks.. We use our PARCC scores. We use classroom assessments, and we really use a little bit of everything, I think." (School 1) "So in looking at the data, if my kids haven't mastered a standard…I am able to go to my PLC and have a conversation about the standard …as a team, let's work to get all of our students the best." (School 1) "PLCs are more organized now…devoting a prep period each week,…it became more data driven. When in the past if there was a district benchmark that we had to give or a state assessment we had to give, that was kind of an isolated event, where our previous curriculum director took a leadership role in teaching us how to take that data, break it down, analyze it across students, analyze it across standards, analyze it across just how you would actually put it to practical use in your classroom, like using it to group kids flexibly, or whatever you needed to do. So I think that was a big change in me as a teacher.". (School 1) "Teachers are looking at data. One of my focuses is trying to get teachers to bring that data to a PLC, to begin to analyze it." (School 4) "We're able to come to a PLC to start to look at that data, to be able to analyze students' strengths and weaknesses, to see what goals need to be set." (School 4) "With our writing assessments, we've normed them at times where we've sometimes we've graded other peoples' in the past…because we use a rubric so we wanted to make sure that we were all kinda grading similarly." (School 6) "We use the PLC time, also, to address other needs. Like for example, we'd noticed that every grade level in September disagrees with the running record scores that have been passed up from the grade before. They say, no way are those kids reading that high. So, some of that is

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	summer slide, but we've also recognized there is a need to really standardize our implementation of Fountas & Pinnell since we are using it for benchmarking, and for report cards, and for progress monitoring, and for identifying our intervention kids." (School 6) "Our SMART goal last year was looking at streamlining data collection, because we were finding that we all have various ways of collecting data. It was to make it more streamlined as a school for a whole, and also for parents to view the data for the kids." (School 7) "We looked at streamlining data because the anecdotal modes were becoming too cumbersome. Also, we worked on creating portfolios that would become something across grade levels that we shared from one year to the next." (School 7) "I think one of our goals is to access the reports with STAR, which is our progress monitoring tool, to access those reports ourselves and analyze data in our PLC…to see which reports are useful in driving instruction." (School 4) "We have some teachers that are really strong at using data…then they're able to support other teachers in that area. There will be times in PLC if teachers are uncertain of where a student is falling, we're able to then look at that piece together and make those determinations on where the students is failing on the progressions as well. Which, leads to great conversations of, this is what this level looks like compared to this level, so all teachers get a solid grasp on analyzing the data." (School 4) "We'll give a check in at the end of class as they leave, and we'll see.. Some sort of formative assessment…and I'll report back how my students learned or what their results were and she'll report back hers." (School 5) "At certain times of the year, we use data. Like, I think we will, some of our team are starting DIBELS today and some of us are starting tomorrow, so I could definitely see us next week bringing our DIBELS and saying, what did you find, what did you do?...those kinds of things." (School 6)

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Describing Teacher Leadership **Definition:** Responses that indicate perceptions and descriptions of teacher leadership **Inclusive of**: adjectives about teacher leadership, teacher leadership roles, and teacher leadership activities described in a general sense **Exclusive of:** specific and organizationally founded descriptions of teacher leadership in practice	"I would say someone who really takes initiative and is able to have some of those courageous conversations really between administration and colleagues to be able to…you know, there's an issue with the team to really be trusted enough to go to administration and say, ' Our team is having an issue with blank,' and to be able to help facilitate that response and help." (School 1) "I think someone who is outgoing and who is not afraid to share their thoughts and opinions." (School 4) "Sharing what their strength is for that meeting. Teacher leaders might change at different PLCs depending on what the focus is." (School 4) "I would say somebody who is taking charge. And, I don't mean charge as in dictating what to do but organizing." (School 5) "Someone who is willing to maybe take the role of, I don't want to use the word leader, but someone who is willing to, you know, do things for the grade level. Maybe go to a math meeting for them or just take a role in a specific content and kind of be the leader of that." (School 6) "Or if we have concerns, or things, especially about curriculum, like going to the coach or going to the administrator, to kind of, you know, express those concerns that maybe the whole grade level has." (School 6) "A teacher leader is when you try new strategies in the classroom and see how it works. Like, with professional development and you go to a conference and try it out with their class or try it out with their students, and kind of try out the good things and then pass it along to the colleagues." (School 6) "The word facilitator comes to mind. That person that says, okay, I'll start to get us organized, and the note taking, and who is going to do what. You know, that's always a big thing because it's a hard responsibility for everybody to do all the parts even of a PLC meeting." (School 6)

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	"A teacher leader is somebody that feels comfortable enough in their teaching, is willing to try new things, to experience new things, even if it might be a flop the first time. Somebody who's willing to be collaborative and share ideas, take criticism, and turn that into positive, and not get defensive if an idea or critique is given.. Somebody that's a go-getter, is always learning, wanting to better themselves as a teacher. Even if you're in the classroom for 15 years, you could be a teacher leader." (School 7) "I think somebody who's willing to learn new things and always grow as an educator, and not become complacent." (School 7) "I think a big trait that often gets overlooked is you have to know your craft, you have to be willing to put yourself out there. I think a big one is you have to be approachable. People want to work with people, and they feel that they're inclined to allow themselves to open up. It's really the balance of having the knowledge and the skill set, but also people being willing to seek out that help." (School 4) "Not everyone's trained on PLCs or leadership. There's a core group of people who are trained on it and then they're the leaders of the department PLCs." (School 8) "I don't think the PLC process teaches leadership. I think it allows you to facilitate in whatever, but if the person doesn't have leadership skills, he or she is not going to get it through the PLC process." (School 8) "Collaboration and leadership are two different things. So if I rewind the tape back to my corporate days, when someone wanted to be a leader, there was about five or six things you trained them how to do, not just be the knowledgeable person in charge of something. Communication, organization, team building, those are not what I'm talking about. Collaboration is great, but the leadership skills that people teach you won't get you through this process." (School 8)