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Walden University
2018

Abstract

Examining the Impact of Professional Learning Communities on School Performance

by

Jeffrey J. Jaroscak

MA, Cleveland State University, 1993

BS, Mount Union College, 1985

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

August 2018

Abstract

Implementing the principles of a professional learning community (PLC) in public schools has become a popular strategy for meeting school quality and accountability expectations. Whether PLC implementation results in improved school ratings represents a gap in the literature. Three out of the 4 elementary schools in the participating school district experienced a significant drop in state ratings. The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsGuided by the theory of the learning organization, this quantitative study was designed to identify the extent to which participants believed their schools operate as PLCs and to determine whether there is a significant difference in results between the participating schools. Participant perceptions of PLC implementation were measured through the Professional Learning Communities Assessment-Revised survey instrument. A total of 77 teachers across the 4 schools participated, and descriptive statistics were used to measure the level of PLC implementation. A one-way ANOVA was conducted to determine if there was significant differences in responses from the schools. The ANOVA revealed no significant differences in the responses between the school that did not experience a drop in ratings and the other schools. The results of this study could provide a framework to aid teachers and administrators to improve student learning by providing improved instruction. Quality instruction can lead to improved student learnings, and when student outcomes are improved, more students graduate and become productive members of their communities.

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Dedication

This work is dedicated to my wife, Susan, and my daughter, Jessica. Without their

unwavering love and support this would not have been possible.

Acknowledgments

I offer thanks to my professors at Mount Union College, Cleveland State University, and Walden University who moved my thinking forward. I offer special thanks to Dr. Derek Schroll whose patience and forbearance were undeserved but much appreciated.

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Chapter 1: Introduction to the Study

Demands to hold public schools and districts accountable for their results have manifested in school-performance indicators, standardized-test-score targets, and a sense of urgency to meet both. When state officials began to capture the performances of school districts and make those results public, most indicators were based upon the percentage of total students who passed statewide high-stakes tests (Candisky& Seigel, 2010). In recent years, states have begun to assess the performance of schools based upon the growth of all students, including those in clearly defined subgroups (Hall, 2013). Schools face changes in accountability measures that arise from two distinct changes: the inclusion of subgroup performance data as distinct targets and the move from proficiency to growth as a measure of student performance (Ohio Department of Education, 2014). New accountability programs require that schools and districts report the annual growth of certain subgroups, including some who have been considered underserved in the past (O'Donnel, 2013). African-American students, English language learners, and students with disabilities are examples of student groups whose growth and progress are issues of concern (Hall, 2013). The schools that participated in this study were required to meet an additional three specific accountability targets: the growth of the overall school population, the growth of the lowest-performing 20% of students, and the performance of those students identified as gifted.

Background

The inclusion of school quality indicators based upon the performance of groups of students who were previously unidentified, including students with disabilities, gifted

students, and students scoring in the lowest 20% on statewide tests, has caused schools to reexamine teacher professional development as a strategy for meeting new rating measures (Hochberg & Desimone, 2010; Saunders, Goldenberg, & Gallimore, 2009). Providing teachers with professional development to equip them with the skills necessary to provide high-quality learning experiences to students, with the expectation that the end result will be improved student learning, is the notion behind professional development. For this reason, professional development for teachers is at the forefront of most school improvement initiatives (Darling-Hammond & Richardson, 2009).

The concept of measuring school performance based upon the percentage of students successful on statewide high-stakes tests has been increasingly replaced by the idea that annual student growth is a more accurate measure of student performance. Accountability models based upon growth are based on the belief that schools should be rated by their success in moving students forward, rather than by the average number of students who are successful on a test (Blank, 2010). Additionally, growth measures can account for student mobility by using prior student performance as a starting point for measuring annual growth (Blank, 2010).

Teachers play an important role in ensuring that all students, in every possible subgroup, make adequate academic growth each year. While the notion that improved teacher performance, in the form of higher-quality instruction, can lead to improved student performance seems logical, demonstrating the existence of a link between the two remains a challenge (Desimone, Smith, & Phillips, 2013). Researchers agree that identifying the connection between professional development for teachers and the

changes in classroom instruction that results in improved student learning is a difficult proposition (Guskey & Yoon, 2007; Yoon et al., 2007). Despite the difficulty in clearly identifying the relationship between professional development and student achievement, those attempting to improve school results consider professional learning a critical component of their efforts (Hochberg & Desimone, 2010).

Professional development for teachers is seen as an effective means of addressing accountability demands. Hochberg and Desimone (2010) added that professional development is effective as long as it results not only in enhanced teacher knowledge and instructional skill, but also results in instruction that is aligned to standards and assessments and equips teachers to better meet the needs of diverse learners. As mentioned previously, new accountability measurements require not only that students meet increasingly rigorous academic standards but also that students in various subgroups, including those unaccustomed to academic success, make sufficient progress. Hochberg and Desimone believed that equipping teachers with a strong grasp of academic content standards and the ability to construct academic experiences that resonate with all students should be the goal of professional development activities.

One method of providing professional learning experiences for teachers in the areas of standards-based instruction and the diverse learning needs of students involves organizing schools into professional learning communities (PLCs). This promising strategy is becoming increasingly prevalent as a means of improving instructional practices and subsequently improving results for all students (Clausen, Aquino, & Wideman, 2009). Presenting a definition of PLC is difficult. DuFour (2007) pointed out a

decade ago that the term PLC has been used so frequently to describe any situation where teachers interact that it is difficult to develop a clear definition. I will present a detailed discussion of what PLC actually means in the literature review. At this point, it is enough to describe learning communities in an overly condensed manner, suggested by DuFour (2004) as groups of educators who collaborate to ensure student learning.

Problem Statement

A problem arose when 3 of the 4 elementary schools in the participating school district experienced a drop in at least two quality levels in state rating. The state department of education used previously obtained student achievement results to project how schools would perform if new accountability metrics were applied to the achievement results that the schools were currently producing. During the previous 5 school years, the participating schools scored at the state's highest levels. The schools that participated in this study did not experience decline due to poor performance on their part, nor did they experience an off year in scores on the state's high-stakes testing. The schools in this study used the same practices that had previously earned them the highest ratings level available in the previous system. Those very practices, if unchanged, would have resulted in significantly lower marks under the new system.

The Department of Education made its school rating system significantly more rigorous in an attempt to, according to the then state superintendent of public instruction, give a more accurate portrayal of school performance (Candisky & Siegel, 2012; O'Donnell, 2013). The results of this change impacted not only the participating district; under the existing school rating system, 382 school districts earned the state's top

performance rating, but under the new system, just 22 school districts would have earned

those marks. Schools that wish to maintain high ratings, and those that aspire to higher

ratings must examine their current practices, especially as they pertain to the performance

of students within newly added subgroups.

To better understand the changes made to the current accountability system, Table

1 shows how the new system issues letter grades to replace the performance levels in the

current system.

Table 1

Current School Rating Levels and the Letter Grades That Will Replace Them

Current Rating Levels	Proposed Letter Grade Levels
Excellent with Distinction	Not Possible
Excellent	A
Effective	B
Continuous Improvement	C
Academic Watch	D
Academic Emergency	F

Source: Retrieved from www.ode.state.oh.us on November 17, 2013

A relabeling of the performance levels is not the only change to the accountability

system; whereas the current system of rating school performance relies almost

exclusively on the percentages of students who were successful on achievement tests, the

new rating system also includes the use of a performance index, a progress measures of

students, and a calculation of how students are performing by category (Candisky &

Siegel, 2012, O'Donnell, 2013). In this study, I focused on two of the performance

categories that are particularly problematic for the participating schools, which are

growth of the lowest 20% of students and growth of gifted students, as shown in Table 2.

Table 2

*Participating Schools, Their State Ranking Under the Existing System, and Their
Projected Ranking Across New Performance Measures to Take Effect During the 2014–
2015 School Year*

School	Current Ranking	Proposed Performance Measures		
		Overall Value Added	Growth of Lowest 20%	Gifted Growth
Edison	Excellent	A	A	A
Hedgerow	Excellent	D	C	C
Westpark	Excellent	B	C	D
Maplewood	Excellent	A	D	NR

Source: Retrieved from www.ode.state.oh.us on November 17, 2013

Three of the 4 participating schools were projected to experience a drop in ranking

ranging from one to three levels in the areas presented; this suggested a potential gap in

practice. In order to achieve the ranking of excellent, the participating schools shared the

strategy of organizing themselves into PLCs. My examination of this strategy was the

underpinning of this study. Pseudonyms are used to protect the identity of the

participating schools.

Purpose of the Study

The purpose of this quantitative study was to explore the relationship between the

perceived depth of implementaiton of PLCs and a school's performance in terms of state

ratingsThe study had two intended outcomes. First, in the study I identified the level of

PLC in the participating schools as measured by the Professional Learning Community

Assessment-Revised (PLCA-R), an instrument designed specifically for this purpose (see

Hipp & Huffman, 2010). The second outcome of this study was to determine whether the school that did not experience a drop in state ratings implemented PLCs at a deeper level than the participating schools that experienced a drop in state rating. Examining the implementation of PLCs in the participating schools allowed me to determine whether the level implementation of PLCs was different at the school that maintained its high ratings. A difference in the level of PLC at the school that did not experience a drop in state ratings might help to explain why it was able to maintain its high ratings.

Research Questions and Hypotheses

The broad question that drove this study was: Does the depth of implementation of a professional learning community within a school, as measured by the PLCA-R, predict that school's performance, as measured by the state ratings?

I developed the following research questions to guide this study:

Research Question 1: To what extent do the participants report that their schools operate as professional learning communities as measured by the PLCA-R?

$H_0 1$: The mean for overall participant responses on the PLCA-R and the mean for each domain will not be higher than 3.0.

$H_1 1$: The mean for overall participant responses on the PLCA-R and the mean for each individual domain will be higher than 3.0.

Research Question 2: Is there a significant difference in the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R at the schools that experienced a drop is state rating?

$H_0 2$: There will be no significant difference in the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R, at the schools that experienced a drop in state rating.

$H_1 2$: There will be a significant difference between the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R, at the schools that experienced a drop in state rating.

Theoretical Foundation

This study was informed by the theory of the learning organization. This theory has been existence for decades, and Peter Senge (1990) is credited with having made the learning organization a popular framework for organizations seeking to improve their results (Santa, 2015; Smith, 2008). Senge described learning organizations as places where members continually improve and increase the ability of the organization to create the results it seeks. Learning organizations are characterized by the disciplines of personal mastery, mental models, shared vision, team learning, and the fifth discipline of systems thinking (Senge, 1990).

Learning organization theory was applicable to this study because it involves people situated within an organization who are investigating problems within the

organization that are preventing the desired results. (Senge, 1990; Senge et al., 2012).

Expanding on that notion, Mullen and Schunk (2010) asserted that teachers and others

within a school setting work towards the achievement of better results by participating in

personal and professional learning that takes place as part of their regularly scheduled

work day and by mentoring one another. Hipp and Huffman (2010) defined PLCs,

discussed in greater detail in Chapter 2, as professional educators working collectively

and intentionally to create and sustain a culture of learning for all students and adults

situated within a school. A PLC capitalizes upon the constructs of shared and supportive

leadership, shared vision and values, collective learning and application, shared personal

practice, and supportive conditions to create an organization that is capable of producing

the results it espouses to desire (Hipp & Huffman, 2010).

Learning organization theory can be applied directly to schools. In *Schools that
Learn: A Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares
About Education*, Senge et al. (2012) suggested that schools can function as learning

organizations, noting that schools can improve their ability to serve students well if they

adopt a learning orientation. PLCs embody the principles of learning organizations, and

many of their characteristics relate directly to the five disciplines put forth in learning

organization theory (Clausen et al., 2009; DuFour, 2004; Hord, 1997; Olivier et al., 2009;

Senge, 1990; Williams, Brien, & LeBlanc, 2012). In fact, Clausen et al. (2009) contended

that implementing PLCs in schools is the public education sector's way of

operationalizing learning organization theory.

Nature of the Study

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsSpecifically, I compared the level of implementation of PLCs, as measured by the PLCA-R survey instrument, to the participating schools' quality rating, as measured by the state department of education's Local Report Card. The independent variable was the level of implementation of PLCs at each school, as measured by the responses on the PLCA-R instrument, and the dependent variable was whether or not the school experienced a drop in state rating.

I selected a nonexperimental, quantitative design for this study. The study was designed to examine a set of conditions, the implementation of PLC practices, as they currently existed, making it nonexperimental (see Drew, Hardman, & Hosp, 2008). A quantitative methodology was used because I hypothesized a difference between schools in relation to the variables and that difference needed to be measured through the use of statistics (see Drew et al., 2008).

I selected a survey design because it could produce results that present a numerical representation of opinions or perceptions of a given population (see Cresswell, 2003). The PLCA-R was administered to the participants in this study. The instrument was designed to assess the perceptions of staff related to the five dimensions of PLC (Hipp & Huffman, 2010).

The participating schools represented the elementary schools of a single suburban school district in Ohio. I created and used pseudonyms for each school. One of the

schools, Edison, did not experience a decline in state rating when the department of education introduced growth and subgroup measures. The other three schools, Hedgerow, Westpark, and Maplewood, all experienced a significant decline in state ratings. I conducted this study to determine if there was a significant difference in PLC implementation at the school that did not experience a decline in state rating.

I analyzed data using descriptive statistics to determine the level of PLC implementation in each school and across the four schools. The data from the participating schools were further analyzed to determine if there was a significant difference in PLC implementation across the participating schools. Methodology, instrumentation, and data analysis will be discussed in detail in Chapter 3.

Definitions

Ohio Improvement Process: The system for addressing gaps in achievement or practice that are recommended by the Ohio Department of Education, and which may become mandatory if a school fails to make sufficient progress towards improvement (Ohio Department of Education, 2012).

Professional learning community (PLC): An organizational structure within schools that exists when the faculty and staff use shared inquiry into instruction and student learning and then deploy the results of that inquiry to improve student learning. Characteristics of this concept are thought to include shared and supportive leadership, shared vision and values, collective learning and application, shared personal practice, and supportive structures and relationships (Hipp & Huffman, 2010).

State ratings: A designation of school quality that includes measures of student growth across the entire student population and the performance of students in subgroups. Subgroups include students scoring in the lowest 20%, statewide, and gifted students (Ohio Department of Education, 2014).

Student growth: The difference between the performance of a student, or group of students, on the previous year's assessment of achievement and the current year's assessment of achievement. Student growth has become a metric for judging school performance and quality (Blank, 2010; Hall, 2013; Ohio Department of Education, 2016).

Assumptions

I made two assumptions with regards to the data in this study. First, I assumed that each school was organized into Data Analysis Teams (DATs) as mandated by district leadership and that the participants in this study were aware of the initiative. Second, it was assumed that each participant would respond to the survey items thoughtfully and honestly.

In this study, I used a one-way ANOVA to analyze the research data. The use of an ANOVA includes four assumptions. In the use of a one-way ANOVA, it is assumed that the sample includes three or more independent groups, that the responses contain some level of randomization, that the outcome data follows a normal distribution, and that there are equal variances in outcomes among the groups.

Scope and Delimitations

The scope of this study covered the professional elementary school teaching staff within one school district. Participants had the capability to offer insight as to how they

perceived the operation of PLCs in their school. I used the participant results to identify

the extent to which each school implemented PLCs, which represented the independent

variable for the study. This study was delimited by the surveying of the professional

teaching staff of the four elementary schools identified for participation.

Limitations

A limitation of this study lay in the limited extent to which the results could be

generalized to other schools or districts. This study was limited by the fact that in it, I

compared the implementation of PLCs to the school quality ratings issued by the state

department of education. Differences in state ranking can be explained by other factors

besides PLC implementation. This study was also limited by the fact that I did not

consider schools that did not organize their staffs into PLCs.

Significance

The purpose of this quantitative study was to explore the relationship between the

perceived depth of implementaiton of PLCs and a school's performance in terms of state

ratingsI also examined whether a greater depth of implementation of PLCs on the part of

the participating school that retained its high ratings might explain the difference in

results between that school and the other three schools in this study. The significance of

this study is evident both at the local level and to the general discipline.

At the local level, the significance of this study resides in the information the

results can shed on a local problem. The participating district received information about

the extent to which PLCs are being implemented in their elementary schools. Individual

schools will be able to compare the depth of PLC implementation at their school with the

levels of implementation at the other participating schools. Participating schools also were positioned to craft plans for addressing areas of PLCs that revealed lower levels of implementation. Results of the PLCA-R can inform school improvement efforts (Hipp & Huffman, 2010).

This study is also significant to the general discipline. School accountability is an issue across the United States, and the extant literature suggests that, when implemented well, PLCs can lead to improved student results (Goddard et al., 2007; Jones et al., 2013; Vescio et al., 2008). The results of this study provide valuable information to practitioners that are attempting to improve school results by implementing PLCs. Practitioners can replicate this study or consider the results of this study when planning the improvement strategy for their schools

Positive social change was forwarded by this study at both the local level and in the general field of education. At the local level, positive social change can be achieved by examining a local problem in a thorough, disciplined manner and drawing conclusions based upon the locally obtained data. Improvements resulting from participation in this study will lead to better outcomes for the students in the participating district. Positive social change can be achieved throughout the general discipline by placing study results into the literature so that researchers and practitioners alike can make decisions for the benefit of their students. Further, social change can occur as schools refine and enhance the implementation of PLCs, leading to improved student performance.

Summary

Chapter 1 contained an introduction to the study, the background that gave rise to the study, the statement of the problem that was addressed by the study, the purpose of the study, the research questions and hypotheses that guided the study, the theoretical framework that informed the study, the nature of the study, definitions of key terms, my assumptions in conducting the study, the scope and delimiters of the study, a discussion of the limitation of the study, and comments regarding the study's significance. In Chapter 2, I will present a review of the literature pertaining to PLCs. Chapter 2 will include reviews of the literature pertaining to the dependent variable, the theoretical framework, the characteristics of PLCs, PLCs as a means to imporoved practice, and PLCs as they relate to school improvement.

Chapter 2: Literature Review

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsThis literature review will be presented in six sections. In the first section, I will examine the issue of school accountability and address the recent shift to student growth as an indicator of school quality and the addition of new subgroups into the accountability system. In the second section, I will address schools as learning organizations and discuss the theoretical base of this study as it relates to schools. The third section will include a discussion of PLCs, professional learning, and characteristics of PLCs. The fourth section will be a review of the literature concerning PLCs and improved instructional practice. In the fifth section, I will review the literature relating to PLCs and school improvement, and in the last section, I will conclude the chapter with summary remarks.

I searched electronic databases in order to locate extant literature and achieve a level of saturation on the topic. The electronic databases used include the Education Resources Information Center, SAGE publications, and ProQuest Central. Additionally, I located valuable sources from works cited in the articles identified by the searches. In order to ensure that a wide net was cast, I used the following search terms: *accountability; student achievement; subgroups; subgroup achievement; student growth measures*; *student growth; professional development; professional development and evaluation; professional development and student achievement*; *professional learning*

communities, professional learning community, and student achievement; and

professional learning communities and *accountability*.

Review of the Literature Related to the Dependent Variable

Three out of the participating district's four elementary schools experienced a

significant drop in state ratings from the previous year. To make the problem clear, the

drop cannot be explained by any change in practice by the participating schools as the

state's department of education used the same student achievement data that resulted in

the four schools scoring at the highest levels and used it to determine ratings based upon

newly identified criteria. Specifically, the state moved away from ratings based upon the

number of students scoring at or above the proficient level on state required achievement

tests and issued ratings based upon inclusion of results of various subgroups within the

school population and upon the academic growth of students over the course or the year.

School accountability is not something new. In fact, as far back as 1871, the state

of Minnesota attempted to judge the quality of its public schools and report the results

(Mickulecky & Christie, 2104). By the 1990s, most states were rapidly moving towards

implementing K–12 accountability systems (Cronin & Dahlin, 2009). States across the

nation continue to wrestle with the issue of holding accountable the public schools within

their borders that expend public resources in an effort to educate students. The purpose of

creating statewide policies for rating schools is to keep parents better informed about the

quality of the school their children attend (Candisky & Sigel, 2013).

Statewide systems of accountability are made up of some type of content

standards that students are supposed to know and understand, regular assessments of how

well the students have mastered those standards, ratings that indicate how well the school

is performing, and consequences that can be imposed if the school and district do not

perform well (Cronin et al., 2009). Providing detail to the measure of how well students

have mastered the standards are measures of student growth and the performance of

certain subgroups within the school population. Concerns arose that measuring the

overall performance of students within a school or district might not paint a true picture

of what is happening with certain groups within that school and that the overall high

performance of students as a whole might mask the underperformance of certain groups

within the school population (Cronin et al., 2009). To combat these concerns, newer

accountability systems require that schools and districts report the performance of certain

subgroups, including some who have been considered underserved in the past (Hall,

2013). In my home state, students that are identified as gifted, students that are disabled,

and student who score at the lowest 20% in measures of achievement are examples of

such subgroups.

In addition to including the performance of subgroups, measures of student

growth are also a hallmark of state accountability systems. Advantages of including

student growth as a measure of school quality include the enhanced accuracy of models

that judge schools by their success in moving students forward rather than awarding

ratings based upon the average number of students who are successful on a test and the

ability to use prior student performance as a starting point for measuring annual student

growth (Blank, 2010). Another advantage of a growth, or value added, model is that

student progress is compared not to others in a generic cohort, but against that particular student's performance over the course of a school year (Callendar, 2004).

Discussion about how to determine the quality of learning that takes place in a school might be secondary to discussion about how to communicate that quality to stakeholders. In my home state, quality designations ranging from Excellent with Distinction to Academic Emergency were assigned to school districts and to the individual schools contained within them (see Table 1). Concerns that a move toward letter grade measures of quality might mask the fact that students are not achieving annual growth and that subgroups of the school population continue to underperform have been raised (Adams, Forsyth, Ware, & Mwavita, 2016). Nonetheless, those designations were replaced with letter grades ranging from A to F. The department of education in the state where the study was conducted made the move from performance descriptors to A to F grade reporting in order to make school quality indicators more user friendly (Candisky & Sigel, 2012).

Review of the Literature Relating to the Theoretical Framework

This study was informed by the learning organization theory, developed by Senge (1990). This theory holds that organizations can shape their own future when thoughtful organization members, situated in close proximity to the problems facing the organization, share knowledge and skill to collectively respond to challenges Senge, 1990). Earlier in this study, I presented a discussion that examined the link between learning organization theory and PLC. Senge asserted that while organizations can only learn if and when the individuals situated within the organization learn, individual

learning does not automatically ensure organizational learning. In the remainder of this subsection, I will review the current state of the literature pertaining to learning organizational theory.

Senge identified the components, or disciplines, of a learning organization as personal mastery, mental models, shared vision, and team learning. Implemented well, these four disciplines will produce the fifth discipline, systems thinking (Senge, 1990). Leadership within learning organizations works to foster the components among organization members to ensure that each component is present and well established within the organization. In the following paragraphs, I will discuss each of the components of learning organizations.

The first component of the learning organization is personal mastery (Senge, 1990). While personal mastery is grounded in the idea of competence, it goes beyond proficiency in that it encompasses the development of a creative approach to the work When personal mastery is present, individuals are constantly clarifying what is important to them. When a person's work consists of the navigating of problems associated with achieving a goal, it is possible that the person might lose track of why they are pursuing that goal in the first place. People that have achieved personal mastery can see the present reality more clearly than those that have not achieved personal mastery. Individuals that have a personal mastery of their work enjoy a clear understanding of the purpose behind the goals that are being pursued and occupy a space characterized by the continual revision of their understanding of the current reality. This constant revision allows those

with personal mastery to view the current state of affairs as helpful guide for achieving goals rather than a daunting reminder of how much work remains.

Senge (1990) urged the identification of the mental models that guide individual and organizational action and lamented the fact that many productive new ideas or practices fail to be implemented because they contrast so starkly with the underlying mental models that guide organizational behavior. Herein, lies the importance of mental models. The constructs that guide people's work often affects what they see and how they respond to what they see. The problem caused by mental models is not that they might be wrong but that they often remain below the surface of our thinking, where they remain unchallenged Senge, 1990). Things that remain unchallenged often remain unchanged, and when organizations and the people within them retain paradigms that are unquestioned, they frequently discount ideas and proposals that do not match their current thinking.

When an organization has a shared vision, people can easily and accurately describe what the organization is trying to do and why it is trying to do it (Senge, 1990). An organization has a shared vision when resources are expended to ensure that individuals are committed to what the organization is attempting to achieve, when members of the organization are bound by norms associated with the achievement of the organization's goals, and people express a desire to be bound together by the importance of the work. It is important that an organization have a shared vision because the gap between the current situation and the desired results provides information about the learning that is required to move towards the end result. This can be thought of as the

difference between adaptive and generative learning. Where adaptive learning is motivated by creating and implementing solutions to problems, generative learning occurs when people are trying to accomplish something and stems from an understanding of where they currently are and what will be required to move forward (Senge, 1990). Additionally, shared vision is important to a learning organization because when difficulties and barriers arise, and they always do, a shared vision directs attention to the desired results and the reason the organization wants them. This can provide a stimulus to persevere when barriers are encountered.

Team learning is the fourth component of a learning organization (Senge, 1990). This component is housed in the recognition that individuals in a team can work hard but that does not automatically equate to a stellar team effort. Team learning is important because it increases the capacity of the team to deploy expertise and collective action to bear on problems associated with the work. Although successful teams are collections of skilled members, team learning is a collective, rather than individual, effort. Senge (1990) mentioned discussion and dialog as tools used by teams in their learning process. Dialog refers to the relatively unstructured communication that allows teams to unpack complex issues by exploring the group-generated ideas surrounding them. Discussion refers to the presentation, defense, and evaluation of different views with the goal being the adoption of the best view for moving forward. Once a team is ready to move forward, they have to do so collectively with coordinated action.

Systems thinking is the final component of the learning organization and is the result that the previous constructs combine to produce (Senge, 1990). Systems thinking is

required by the complexity of the world and takes into account that decisions made in one part of an organization have an impact on all parts of an organization. When an organization operates in a systems thinking mindset, it is able to understand that problems consist of many interrelated parts and cannot be described simply by cataloging their adverse impacts on the organization. In addition, a systems thinking stance allows an organization to better recognize patterns that might reside in events that seem self-explanatory.

Austin and Harkins (2008) answered the question of whether learning organization theory can work for schools. They conducted a study that chronicled one school's attempt to transform itself into a learning organization. The authors reported the results of a consulting program that was implemented at a preschool in the hopes of increasing the organization's ability to use staff learning to solve existing problems. They conducted a needs assessment at the school to determine the content of the intervention. The participants, 61 employees, responded to three separate instruments designed to measure organizational learning before and after the intervention. In seeking to determine whether one school was better able to function as a learning organization after a consultative intervention, the authors noted that participants perceived an improvement in the school's ability to function as a learning organization. Moreover, Austin and Harkins noted that school employees across the board reported that they were better able to advance the school's mission.

Research into learning organization theory in the past several years has been geared towards determining whether the theory has run its course or whether it remains a

viable theory. The literature has been increasingly questioning whether learning organization theory remains a useful construct for improving the effectiveness of organizations, with some researchers even suggesting that the theory should no longer be pursued (Santa, 2015). I reviewed two recent studies in depth in order to provide insight into the current state of learning organization theory.

Santa (2015) reviewed the literature pertaining to learning organization research and presents arguments as to whether the theory is still relevant. The problems with learning organizational theory generate from a lack of specifics. Since no clear definitions are agreed upon, people are free to see in the theory whatever they want to see (Santa, 2015). The researcher used a two-step integrative literature review method that resulted in the identification and review of 137 articles and books. The researcher applied a good theory approach in order determine whether the literature supports learning organization theory's acceptance as a viable theory (Santa, 2015). One dimension examined is the extent to which a theory can be clearly and concisely defined. Santa reported that after more than 20 years, the literature still has not settled on one accepted definition of the learning organization. This lack of a generally accepted definition has prevented the development of more accurate measures to identify its presence in organizations under study. Given this shortfall, the current state of learning organization theory fails to meet that criterion. Santa distinguished between books and journal articles when describing how the theory is studies and reported. Books about learning organizations tend to rely on interviews, the personal experience of the author, or upon information reported in other sources when discussing the theory. Journal articles, on the

other hand typically use some type of survey instrument to determine whether the identified sample report the existence of learning organization characteristics. Although far from exhaustive, and frequently lacking adherence to strict standards of research, Santa considered the state of research to meet the criterion of generalizability. A final characteristic of a good theory is its ability to be measured. Santa reported that the instrumentation used to determine the presence or absence of learning organization characteristics were based upon descriptions of learning organization created by the authors themselves. This causes Santa to determine that the current state of learning organization research does not meet the requirement that a theory be able to predict outcomes. While falling short of describing learning organization theory as a good theory, Santa (2015, p. 255) proposes two suggestions that might revive its status. First, Santa suggested that an agreed upon definition be developed. Second, it is recommended that a measurement instrument, capable of withstanding tests of statistical significance be developed and utilized.

Pedler and Burgoyne (2017) directly examined the issue of whether learning organization theory remains relevant. The authors find that the question is not an easy one to answer, pointing out that those who are disposed to place value on the theory will find it useful and relevant while those who have been critical of the theory will find little use for it. Pedler and Burgoyne highlighted two misconceptions that exist pertaining to the theory. First, they noted that many consider it to deal with soft, fluffy, feel-good stuff. Second, they noticed the lack of a hierarchy in the theory, leaving people thinking that learning at different levels of the organization can produce the same results. The authors

also report the results of research, admittedly on a small scale, that they conducted in 2013. Sixteen participants were asked an open-ended question, is the learning organization dead or alive? The results were split down the middle with half of the respondents locating themselves in each camp. Among the reasons offered to support the belief that learning organization theory is dead mention that it is outdated, popular once, but not any more. They also mentioned that it is more of a buzz word than a workable framework, it has been labeled as a fad by some scholars, and that it was, in fact never alive. Those who believe that that the theory continues to be relevant cite that it is still talked about, it has its own academic journal, and that it continues to be widely accepted. Pedler and Burgoyne identified four themes from the responses. In what they refer to as performance verses learning orientations, the authors pointed to the fact that there is little research relating a learning organization approach to improved organizational outcomes. The second theme was that the learning organization theory is still relevant but is being called something else. Pedler and Burgoyne called the final theme fad or fancy. Although the respondents felt that a new description of the organization was appealing when it was first introduced, time and the persistent pressure to respond to day-to-day problems have caused its appeal to fade.

Professional Learning Communities

In an attempt to increase the level of student learning in order to meet state determined measures of school quality, many schools are turning to PLCs as a vehicle for achieving better results. By providing teachers with the time to collaborate, learn and apply new strategies, and collectively evaluate their successes, schools expect better

results in terms of student achievement. Despite the growing popularity of PLCs, providing a concise definition has proven difficult. This lack of a clear definition for a PLC causes problems for researchers and practitioners. DuFour (2007) lamented the difficulty in evaluating the PLC concept as a whole. He pointed out that, before anyone can determine whether a PLC initiative has been successful, one must first determine whether a PLC initiative has been implemented. Ambiguous and imprecise understandings of PLCs can lead to a watering-down of the concept. Levine (2010) wondered what might happen if the competing definitions of PLCs were to become sufficiently cloudy thus resulting in the notion that collaboration and collegiality were important, but with specifics never discussed.

Characteristics of Professional Learning Communities

PLCs can be described by identifying the characteristics that make a school a PLC. To accomplish this, the subsequent paragraphs of this literature review discuss the individual dimensions, or domains, of PLCs, as addressed in the survey instrument, the Professional Learning Community Assessment-Revised (PLCA-R). These domains include shared and supportive leadership, shared vision and values, collective learning and application, shared personal practice, supportive conditions-relationships, and supportive conditions-structures (Hipp & Huffman, 2010; Olivier et al., 2009).

Shared and Supportive Leadership

The first domain of a PLC is leadership, and the impact of leadership on student achievement is well grounded in the literature (Fullan, 2006). The effective leadership of PLCs exists across two dimensions: it is deployed in the support of PLCs, and it is

distributed, or shared. *Supportive leadership* refers to leadership's efforts to provide the time and resources necessary for the PLCs to carry out their work, while *shared*, or *distributed leadership*, refers to the diffusion of power throughout the school.

Supporting PLCs is ultimately the responsibility of a district's central office (Garrett, 2010; Thessin, 2015; Thessin & Starr, 2011). In order to transform to a learning organization by means of PLCs, central leadership must build ownership amongst all staff, provide professional development relating to the skills and dispositions of collaborative work, clearly communicate how PLCs fit the organization's improvement efforts, and develop and deploy a system of differentiated support for PLCs as they grow and mature (Thessin & Starr, 2011). A failure on the part of the district's central office can leave the members of PLCs confused and frustrated (Thessin & Starr, 2011).

Examples of support for PLCs at the district level include policies designed to solidify PLC practices into the school schedule. Barton and Stepanek (2012) suggested time- and space-creating policies, such as the strategic use of substitute teachers to free teachers for meetings, the scheduling of early-dismissal days where students are dismissed early to allow teachers to come together, extended lunch periods, and the scheduling of non-core academic classes in ways that relieve teachers of their classroom duties, as ways to support PLC. District support for PLCs, however, also transcends the carving out, and protecting, of time. Effective district-level support of PLCs also includes clear messaging about expectations. In a school district described by Barton and Stepanek, central-office staff met with each principal, to not only establish and protect time for teachers to meet, but to also express clear expectations for how and to what end

that time should be used. To ensure that the PLC initiative remained on track, this district also established a steering committee charged with leading implementation efforts, training central-office staff and school-level administrators in PLC practices, and providing a framework to measure the success of the initiative. DuFour (2004) painted a picture of how effective district-level leadership not only guides the implementation process, but also incorporates PLC principles. DuFour recounted how, in one district, meetings that once consisted of presentations by central-office staff were transformed into problem-solving sessions where principals drew upon the expertise of other principals to address problems associated with teaching and learning.

School-level leadership plays an important role in the work of PLCs. Because the school level is where students are most deeply impacted, the role of school principals is integral to the successful implementation of PLCs. Principals must work collaboratively with staff on both pedagogical and policy matters (Williams et al., 2012). The role of principals in supporting the work of PLCs mirrors the role-played by the district; at the school level, principals must ensure that teachers have the necessary time and resources.

The successful implementation of PLCs requires leadership that is shared, or distributed. Shared leadership, at the very least, requires that teachers have the autonomy to implement the course of action determined by their teams (Stewart, 2014; Williams et al., 2012). In order to capitalize on the promise of PLCs to address teaching and learning issues, those closest to the place where the work is being done must be given the authority to make decisions. It is impossible for principals to provide all of the leadership necessary to improve student achievement (Spanneut, 2010; Wilhelm, 2014). The

literature suggests that for PLCs to be successful, they must be made up of teachers that have the autonomy to make decisions (Stewart, 2014). Williams et al. (2012) noticed that when PLCs are operating effectively, teacher energy was expended in the productive pursuit of their own goals. Further, PLC members have to be given authority to determine their own learning needs, act upon those needs, decide what they will do to improve student learning, and act upon that (Tobia & Hord, 2012).

Providing teachers with the authority to conduct their work does not mean that the principal must assume leadership responsibility; on the contrary, Slavit, Kennedy, Lean, Holmlund-Nelson, & Deuel (2011) asserted that effective leadership in a PLC requires that principals recognize and call upon the expertise of teachers and build a collaborative culture, and went on to state that when leadership within a school is shared, both the adults and students win. When teachers are empowered to make the decisions that willmost directly impact the students schools benefit by having instructional decisions made by those most closely situated to where implementation will occur. When teachers can make these decisions, and act in accordance with building mission, PLCs have a better chance of taking hold and being successfully implemented.

Shared Vision and Values

Although talk of vision and values is seen by some as impractical, shared vision and values are important characteristics for schools functioning as PLCs (Huffman, 2003). Huffman (2001) described an effective school vision as having two characteristics. First, it is realistic in that it portrays what the organization currently is and sets a clear direction, through its specific goals, of what it strives to be. Second, the vision should

inspire organizational members to work towards organizational goals. The importance of shared vision and values resides in the fact that observance of these result in a series of institutional norms that guide the work of those within the organization (Hord, 1997). Linking the shared vision and values component to learning organizational theory, Senge (1990) commented that no organization can be considered a learning organization without a shared vision.

It is not enough for the leader of the school to announce the vision and set of values that the school will embrace in its quest to achieve improvement. This top down imposition of an organizational vision usually is not sufficient to inspire individuals within the organization to embrace it and work collectively towards achieving it (Huffman, 2011). This is not to say that the school leadership does not play an important part. Huffman (2003, 2011) believes that the job of the school leader is to unite the personal vision of organizational members.

Huffman (2003) reported on a 5 year study that examined 18 mature and less mature schools that had committed to operating as PLCs. Researchers interviewed the principal and lead teacher from each of the schools. In terms of the reasons why school developed a vision, general student concerns were listed as a primary reason. Providing students with a safe environment, maintaining an academic focus, and reading and writing, are offered as examples of general student concerns (Huffman, 2003). Additional reasons included raising test scores and the importance of lifelong learning. An examination of the purpose of the school vision revealed two dimensions. First, the researchers noted the importance of interpersonal skills. Huffman includeed in this

dimension the development of a trusting relationship between teachers and leadership and includes the elements of communication and collaboration. A second dimension concerned the specific areas of improvement that the school will focus upon.

Shared vision and values, then, provide a school with a framework with which to undertake its work. These constructs work together to identify what the school wishes to become and how the school will go about becoming the organization it strives to be. Examples of what the school wishes to become might come from statewide accountability standards and be referenced as a School of Distinction. Another example might be an expression of what the school hopes for its students, such as developing lifelong learners. Values describe what the school will do to bring about the intended outcome. Expressions of this might refer to a particular strategy, such as just in time learning, or academic rigor.

Collective Learning and Application

Collective learning and application is a dimension of professional learning communities. Learning in PLCs is multifaceted and can include traditional professional development programing as well as job-embedded learning that is directly applicable to participants' daily work (Hipp & Huffman, 2010). Professional learning in PLCs is a topic cover I greater detail in a later section of this chapter. For the purposes of the discussion here, I focus on the notion of inquiry as a source of professional learning. The following paragraphs review the literature on collective learning in PLCs.

Nelson (2008) studied the work of PLCs during the second year of a 5 year study examining a broader professional development initiative. She used qualitative

methodologies to examine the collaborative activities of PLCs, the questions raised by

PLCs, and the knowledge generated by PLCs. Coding of interview responses revealed

four important themes, the development of the group as a learning community, the

collective activities of the group related to the inquiry cycle, the impacts of PLC work on

student learning, and the impact of PLC work on participants' responses to interactions

with forces beyond the PLC. Nelson noted that it is necessary for PLCs to adopt an

inquiry stance as they approach their work. She offered two important findings that could

guide practitioners. First, it is not enough to simply provide time for PLCs to meet.

School leaders must also provide participants with information about the process of

inquiry and nurture the environment necessary for such inquiry to take place. Second,

PLCs must be provided with support to enable them to move past trouble spots. Nelson

specifically mentions assistance in refining ambiguous inquiry questions, support in the

development of the level of trust necessary to do PLC work, and the nurturing of shared

instructional practice.

Owen (2014) built upon the notion that the learning that takes place in PLCs is the

result of inquiry. Owen utilized a case study approach to examine the PLC efforts of three

schools that served three different levels of students. School documentation consisting of

reports and submission made by schools as part of a larger study, the responses of 58

PLC participants across the three schools, 10 semi structured interviews, and two focus

groups served as data for the study. It was found that PLCs in 2 out of the 3 schools

actively engaged in action research. As such the teams operate as PLCs in order for

participants to develop the instructional approaches in skills that will enable them to address the issues raised by their inquiry.

In addition to collective learning, this domain also encompasses collective application of the learning. This collective application can also be though of as collaboration. Few studies exist about how teachers actually collaborate. Meirink, Imants, Meijer, and Verloop (2010) conducted a study of five PLCs across five secondary schools. They examined the participating PLCs in terms of teacher learning, teacher collaboration: interdependency, alignment, and group cohesion. In the area of collaboration, the authors draw an important distinction between collaboration and cooperation (Meirink et al., 2010). Cooperation exists when teachers who are separate and operate autonomously from one another agree to work together in order to make their individual practices more successful. Teachers who collaborate share the responsibility and authority to make decisions about the instructional practices of the group. The authors note that instances of cooperation are observed with more frequency than instances of collaboration. Further, this study identified sharing was the most frequent way that the participating PLCs collaborated. They observed two categories of sharing, the context of exchanges and problems that were identified. Each of the categories contained two subcategories. Context of exchanges was further broken down into those in which ideas were exchanged and those in which experiences were exchanged. The problems that were identified were further broken down into shared problems and individual problems. The authors note that collaboration and learning are closely connected.

Shared Personal Practice

Although shared personal practice is an important characteristic of a PLC, it is often the element that is least present in most schools (Hipp & Weber, 2008). Hipp and Huffman (2011) described shared personal practice as involving teacher sharing of practices in both formal and informal ways. Formal sharing of practice might involve observing another teacher's classroom, or being observed by another teacher, and then sharing and discussing feedback. Informal sharing of practice might include the seeking or giving of advice discussed by Peokert (2012). In general, this domain refers to the deprivatization of teaching practice, necessary after decades of isolation (Lieberman & Mace, 2010; Vescio, Ross, & Adams, 2008). In their review of the literature, Vescio, Ross, and Adams noted that studies have demonstrated that PLCs have combatted the isolation sometimes present in the teaching profession by providing teachers with opportunities to share lessons, make decisions through shared structured processes, and providing pathways for teachers to share their work with others.

Hipp and Weber (2008) reported the results of their attempt to implement PLCs for school principals as part of the Wisconsin Urban Schools Leadership Project. This effort involved the identification and selection of 30 principals that were divided into three PLCs of 10 principals each. Their article chronicled the experiences of one of the three PLCs. The PLCs aimed to aid the growth of each individual principal and to a visit at their school. The authors referred to the transparency of practice that occurred when other professional had the opportunity to observe a school and provide critical feedback (Hipp & Weber, 2008). The sharing of feedback ultimately went beyond the principals in

the group and was shared at the district level, allowing for a wider group to capitalize on the learning.

Supportive Conditions

PLCs do not simply emerge out of thin air; they must be intentionally created, nurtured, and supported. Hipp and Huffman (2010) considered the conditions that support PLCs to be the domain that binds all of the other domains together. In describing the supportive conditions necessary for PLCs to flourish, Hipp and Huffman identify structures and relationships two areas within the domain of supportive conditions. Supportive structures include providing time for teachers to work together, a school culture that expects and encourages collaboration, and adequate training for teachers to prepare them to collaborate in PLCs. Relationships include trust, practices that encourage learning, and a sense of shared responsibility regarding issues of student learning. The following subsections address the dimensions of supportive structures and supportive relationships respectively.

Thessin and Starr (2011) describe the supports that are necessary to implement PLCs in a school district. They identify the role played by district administration in supporting PLCs. District leadership is responsible for ownership and support, professional development, the clear articulation of an improvement process, and providing differentiated support (Thessin & Starr, 2011, p. 51). Districts encourage ownership and support whey they involve teachers and building administrators in the process of planning for, implementing, and supporting the PLC process. The district described in the article did this by creating a PLC Steering Committee. Although this

committee initially consisted of school leaders, it ultimately included at least one teacher

and building level administrator from each school within the district. In addition to

functioning as a PLC in its own right, the committee was charged with determining how

best to support PLCs across all schools in the district. It cannot just be assumed that

teachers know how to collaborate effectively. Thessin reported that teachers that are just

instructed to begin collaborating become frustrated and little is accomplished. Thessin

and Starr reported that teachers in this situation began PLC work without an

understanding of what they should be working on and had no clear understanding of the

desired results. Professional development can ensure that all staff are prepared for the

work of PLCs.

       In reporting on conditions that represent either supports or barriers to

implementing PLCs, Williams, Brien, & Leblanc (2012) conducted a case study of 50

schools situated across five school districts in Canada. The researchers designed an

instrument that would measure the readiness level of schools seeking to move towards a

PLC approach across measures. These measures included culture, leadership, teaching,

and professional growth and development. The instrument was a Likert style survey that

measured participant responses on a scale from more bureaucratic structure to a learning

organization structure (Williams et al., 2012). Data were analyzed and a support was

considered to exist if the majority of teachers within a school rated the school as a 4 or a

5 on the survey. A barrier was considered to exist if 30% or more of the teachers rated the

school as a 1 or a 2 on the survey. In the area of culture, supports included a school

atmosphere of collegiality, trust and commitment and a culture that supports

collaboration. The area of culture identified barriers as time to collaborate. In terms of leadership, supports included a belief that school leadership demonstrated effective organizational practices. Barriers in the area of leadership included the lack of involvement of teachers in the hiring of principals, the delay that exists in getting data from formative assessments, administrative decisions in making the teaching schedule, and the assignment of non-teaching staff. With regard to teaching, supports were identified as the extent to which teachers are encouraged to use collaboration to learn effective instructional and assessment practices and interventions being provided to students that require additional support. Barriers in the area of teaching included the need for more professional development in the area of teachers working with paraprofessionals, the lack of time provided to collaborate with others, and the fact that assessment continued to be a solitary, rather than collaborative, activity.

Thessin (2015) interviewed 28 teachers at six different schools, observed 13 PLCs in action, reviewed PLC minutes and other available documents in order to inform the article *Learning from one Urban School District: Planning to Provide Essential Supports for Teachers' Work in Professional Learning Communities*. The article distinguished between high and low performing PLCs and determined that even though the PLCs varied considerably, both identified the presence, or lack of presence of key conditions as important to their work. These conditions, or structures, included professional development on PLCs, a school culture that placed value on collaboration, the readiness of school leaders to lead PLC work, and the communicated expectations of school leaders with regard to PLC work. When districts articulate a clear improvement process, teachers

have a better understanding of how PLCs are expected to contribute to the overall school improvement efforts and a clear picture of their individual roles within the PLC. Sometimes this improvement process includes a structured process for work within the PLCs (Thessin, 2015).

Closely linked to the structures that support PLC development are the relationships among the staff that implements the PLC process. The way that staff interacts and relates to one another can be a predictor of how well the PLC process gets implemented. Gray, Mitchell, and Tarter (2014) hypothesized that relational structures within a school can predict how will the PLC concept develops within that school. They examined the impact of collegial trust, trust in the principal and collective efficacy on PLC development. A total of 3,700 teachers from 67 different schools completed a survey. The researchers found out that the structural dimensions measured in the study had more of an impact on how well the schools functioned as PLCs than did the relational factors. Nonetheless, they noted that collegial trust had a significant effect ($B = .19, p < .05$) on PLC development.

An examination of trusting relationships and PLCs was examined by Cranston (2011). Cranston worked with a sample of 12 school principals in the Province of Manitoba. These principals represented a blend of pubic and parochial, large and small, elementary and secondary, and rural and urban schools. The researcher conducted two focus groups of six participants each and then followed those with individual interviews of the 12 participants. These measures were exerted in an attempt to identify the characteristics that are identified by principals in their conception of schools as

professional learning communities (Cranston, 2011). An iterative process of thematic

analysis revealed five themes. These themes included that trust develops as teachers are

in relationships, that trust requires the establishment of group norms in order to create a

climate conducive to professional growth, that relational trust supports effective

collaboration, that the principal is central to the establishment of a climate of trust, and

that faculty trust in the principal is crucial (Cranston, 2011). This study confirms the

notion that trust among faculty and between the faculty and school the school leader is

important. These relationships, anchored in trust, both improve teaching and bolster

student learning.

Professional Learning Communities and Improved Practice

Attempting to raise levels of student achievement by improving the instructional

practices of teachers lies at the heart of most school improvement attempts (Borko, 2004;

Darling-Hammond & Richardson, 2009; Hochberg & Desimone, 2010). The reason for

this focus on instructional improvement, through professional development programming

for teachers, follows straightforward logic. If professional development for teachers

results in the delivery of more effective instruction, and more effective instruction leads

to higher levels of student achievement, then professional development for teachers must

lead to higher levels of student achievement (Desimone et al., 2013; Hochberg &

Desimone, 2010; Jones, Stall, & Yarbrough, 2013). Despite the intuitive relationship

between professional development and student achievement, research has been slow to

confirm the connection (Guskey & Yoon, 2007). In attempting to identify the elusive

connection, researchers are still asking the question posed by Guskey (2012): does it make a difference?

The extent to which research has struggled to connect professional development for teachers to gains in achievement by students was described in a seminal piece of research conducted by Yoon et al. (2007). In this study, the researchers examined over 1,300 published studies and found that only nine met acceptable levels of rigor. In another report by Blank and de las Alas (2010) reviewed 25 studies and the authors found that only seven reported measurable effects on student outcomes.

The paucity of empirical studies that identified a link between professional development and student achievement does not mean that a link does not exist. The researchers referenced above conducted a subsequent meta-analysis of professional-development studies and found no less than 16 studies identified significant effect sizes in student-achievement gains (Blank & de las Alas, 2010). These results were bolstered by the fact each was rigorous, and many employed the use of experimental design. Although generalizable studies that demonstrate the connection between professional development and student learning are, at times, difficult to locate, studies of individual programs indicated that professional development for teachers as means of improving levels of student achievement, and meeting accountability targets, is a viable strategy.

How researchers approach the process of examining how professional learning, specifically participation in PLCs, impacts instructional quality includes a wide range of methods and variables. Poekert (2010) sought to determine whether the professional development offered by a university partner to public school teachers in Miami, Florida

resulted in improvements in classroom instruction. McGee (2016) examined the presence of indicators of professional community that impact instructional changes among high school science teachers in Chicago, Illinois.

Poekert (2010) selected two schools to participate. Criteria for participation included the requirement that each school house a student population where at least 80% were eligible for free and reduced lunch. Additionally, the must serve at least an 80% concentration of a single minority. Participating schools must have a student population of 700 student or fewer. This requirement ensured that the sample of participating teachers would represent a larger percentage of the overall teacher population than would be possible in schools with larger populations. Finally, in order to ensure that there were no carry-over affects from pervious programming, the study required that participating schools be in the first year of implementation of the collaborative program. McGee (2016) used a sample 15 high schools in one of six high school networks in the Chicago Public Schools.

Methodology and data collection are also varied across the reviewed studies. Poekert (2010) began with two observations of each participant's classroom. The observations were conducted by using the Classroom Assessment Scoring System (CLASS) and were intended to measure the degree to which the teachers utilized appropriate teaching practice. The protocol measured teacher effectiveness across four domains, Emotional Support, Classroom Organization, Instructional Support, and Student Engagement. The observations were completed at the beginning and the end of the school year. Following the observation, open-ended qualitative interviews were conducted with

each participant. The interviews were intended to elicit participant responses to the

professional development experiences provided to them throughout the year. Specifically,

the researcher wanted to know what the participants learned and what they felt the impact

on their classroom instruction was. Observations of the professional learning

communities at each school were conducted in order to gain information about the extent

to which the site based professional development was being implemented at each school.

Finally, Poekert examined artifacts that came about from participant participation in the

professional development activities. McGee (2016) considered the dependent variable,

changes in science teaching practices, in relation to eight aspects of teaching. Those

aspects included student assessment, student grouping, materials used, topics covered,

teaching methods used, kinds of work students do, kinds of questions asked, and

understanding the needs of individual students. Participants responded by using a seven-

point scale ranging from *not at all* to *a great deal* to communicate the degree to which

they changed their teaching practice. The first independent variable consisted of formal

professional learning opportunities including science professional development where

participants were asked to indicate the number of sessions they attended in the past year

on a scale ranging from *none* to *8+*, science courses, where participants were asked to

indicate the number of undergraduate or graduate level college courses they took in the

past year on a scale ranging from *none* to *4+*, and outside network participation where

participants were asked to indicate the number of times in the past year they participated

in a network with teachers outside of their assigned school on a scale ranging from *never*

to *10 or more times*. A second independent variable, indicators of professional

community measured the frequency with which teachers reported having conversations with colleagues across three dimensions. First, participants were asked about collaborative discussions and review of student work. They were asked about the frequency of conversations about what helps students learn best, development of new curriculum, the goals of this school, managing classroom behavior, science instruction, and content or performance standards in science. Second, the participating teachers were asked about their experiences with peer observation and feedback. This dimension covered information about how often the teacher observed someone else, how often someone else observed the teacher, and how frequently the teacher received feedback based upon an observation. Finally, the final dimension in the category was science advice seeking. Participants were asked to provide up to ten different people that provided them with advice, and the frequency with which such advice was sought. The results of Poekert's study revealed that a professional development program based on teacher collaboration can produce improved teaching practice. Despite a different sample and research design, McGee similarly concluded that teachers changed their practice in response to collaborative learning activities regardless of whether or not the school had though had a professional learning community structure.

These studies offer two important pieces of information to the overall body of research. First, both studies ultimately conclude that teachers improve their practice through collaborative activities with peers (McGee, 2016; Poekert, 2010). Perhaps more importantly, the studies highlight specific collaborative practices that can lead to improvement in instruction. Poekert (2010) noticed that the teachers that made the most

significant improvements in instruction were those that participated fully in the programming and also requested feedback regarding their implementation of program components. The most profound changes come from teacher participation in collaborative professional development combined with specific feedback about the nature of instruction (Poekert, 2010). Similarly, McGee (2016) reported that feedback, in the form of advice from peers, played an important role in instructional change. Collaborative practices that have links to improved instruction include conversations about formative assessments, curriculum, and the shared examination of student work also lead to improved practice (McGee, 2016; Poekert, 2010).

Professional Learning Communities and School Improvement

Like the impact of PLCs on instructional improvement, research on the impact of PLCs on school improvement represents varied samples and designs. The following paragraphs provide a review of the research on PLCs and school improvement. The review includes a discussion of how researchers define school improvement, select data for analysis, and come to conclusions about how PLCs lead to improved school outcomes.

The studies reviewed in this subsection indicate that teacher participation in PLCs can lead to improved school outcomes (Akiba & Liang, 2016 Goddard, Goddard, & Tschannen-Moran, 2007; Ronfeldt, Farmer, McQueen, & Grissom, 2015; Sigurdardottir, 2010). It is important to note that with regards to the independent variable it is important to consider that student achievement is the arbiter of school quality. When speaking about how schools are rated we are really speaking about how the general student population

performs, how specific subgroups of students perform, and how the current results compare to the previous year's results.

Independent variables in the studies reviewed here range from projections of how students would perform at the conclusion of tenth grade, to performance on standardized tests, to detailed analysis of statewide mandated performance data (Akiba & Liang, 2016; Goddard et al., 2015; Sigurdardottir, 2010). Sigurdardottir (2010) examined 19 schools in Iceland's capitol, Reykjavik. To be considered for the study the school had to contain all ten compulsory grades. The researcher examined the 19 schools in order to predict the level of student success at the conclusion of Grade 10 by analyzing student achievement results in grade 4 and factoring in parents' level of education. Goddard et al. (2010) studies 96 elementary schools and identified each school's mean achievement scores by grade and subject area as the independent variable. In *Teacher Collaboration in Instructional Teams and Student Achievement*, Ronfeldt et al. (2015) linked student performance data to the participating teachers in order determine if improved achievement could be linked to participation in PLCs. Akiba and Liang used school identifier to link student performance data from a statewide assessment program to survey responses from individual schools. As mentioned earlier, all of these independent variables deal with student performance. While it is recognized that student outcomes are not the only measure of school quality, most statewide measures of school quality rely on some sort of student performance measurement.

Identifying how researchers identify the dependent variable, teacher participation in PLCs is similarly important. Sigurdardottir used a survey instrument designed to

measure teacher perceptions of shared vision and values that focus on student learning, shared leadership, mutual support among staff, collaborative learning to address student needs, organizational arrangements supporting collaboration, habits of work supporting collaboration, social climate, expectations of student achievement, and satisfaction with working at the school. These dimensions approximate the dimensions measured by the PLCA-R instrument that was used in this study. Goddard et al. (2010) used a leadership inventory that contained elements pertaining to professional learning community. The collaboration items were grouped into three categories. Formal collaboration, frequency of collaboration, and teacher collaboration on instructional policy were measured items. Akiba and Liang (2016) utilized a survey instrument called the Teachers' Opportunity to Learn (TOTL) that was designed to measure teacher participation in an array of professional development programming. The research on teacher participation in PLC activities and the resulting impact on student achievement uses varying definitions of professional learning communities. A careful examination of the independent variable of the reviewed studies does, however, does reveal that the researchers examined areas of professional learning community that are congruent with those measured by the PLCA-R (Akiba & Liang, 2016; Goddard et al, 2007; Ronfeldt, Farmer, McQueen, & Grissom, 2015; Sigurdardottir, 2010).

The research points to a relationship between the amount of time teachers spend in collaborative activities and gains in student achievement (Akiba & Liang, 2016; Goddard et al. 2010; Sigurdardottir, 2010). The amount of time teachers spend collaborating with one another is linked to the performance of students (Goddard et al.,

2010). Akiba and Liang (2016) noted that increased time spent in collaboration with other teachers. They determined that an increase of one hour of collaboration time for teachers resulted in a one percent gain in student achievement.

While the amount of time spent in collaborative activities with other teachers is important, perhaps more important is what id done during that time. Ronfeldt et al. (2015) examined teacher collaborative practices including reviewing formative assessments, developing instructional strategies, addressing classroom management/discipline issues, and reviewing students' classroom work. Respondents reported that the issues of reviewing formative assessments and developing instructional strategies were discussed more frequently and in more detail than the issues of classroom management and reviewing classroom work. Respondents further reported that discussion across all of the domains of reviewing formative assessments and developing instructional strategies had been helpful or very helpful. Collaboration in the domains of classroom management/discipline, and reviewing students' work were much less helpful. It is likely that these practices allow teachers to communicate freely and openly about their belief about teaching strategies and increase collective analysis of results that leads to the creation of knowledge and improved practice (Akiba & Liang, 2016).

Summary

Chapter 2 of this study began with the identification of the sections contained in the literature review and a description of the research methods and search terms used to gather resources. The literature related to the dependent variable, theoretical framework, and PLCs was reviewed in subsequent sections. These sections were followed by an

review of the literature related to PLCs as measured by the PLCA-R. The final two sections reviewed the literature relarted to PLCs and improved teacher practice and PLCs and school improvement.

A review of the literature identified ample research based evidence that organizing schools in such a way that permits faculty and staff to inquire together, collectively interpret the results of their inquiry, and collaboratively deploy the results of their efforts, student learning, and, in turn school success, will be increased. This review also confirms that the six attributes associated with the PLCA-R are supported by research. Together the domains of (a) shared and supportive leadership, (b) shared vision and values, (c) collective learning and application, (d) shared personal practice, (e) supportive conditions-relationships, and (f) supportive conditions-structures provide a framework for exploring teachers' awareness of PLCs.

Chapter 3 contained a description the methods used in this study. It includes a description of the research design and provides a rationale for the study. Chapter 3 included information about the methods used for this study, including the population of participants, the handling of archival data, the instrumentation utilized, and the procedures for recruiting participants and collecting data. Chapter 3 contained a discussion about the threats to validity and the ethical protections for participants.

Chapter 3: Research Method

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsFour elementary schools in one suburban school district participated in this study. Three of the 4 participating schools were projected to experience significant rating drops once new accountability measures took effect, while one of the participating schools was projected to maintain its excellent ratings. In this section, I will describe the setting and sample, discuss the research design for the study, present the questions that guided the research, present information regarding the instrument used, explain the data collection and analysis that was conducted, address study limitations, and provide assurances that participants' rights were protected.

Setting

The setting for this study was a suburban school district that is situated almost halfway between two of the state's largest urban centers. The district consists of six schools, including one high school, one middle school, and four elementary schools. The district serves approximately 2,500 students in grades K–12 and employs just over 200 teachers. In this study, I focused on the four elementary schools that together house approximately 1,100 students. The four elementary schools in the participating school district have a total of 140 teachers.

Research Design and Rationale

In this study, the independent variable was the level of implementation of PLCs at each school, as measured by the responses on the PLCA-R instrument, and the dependent

variable was whether or not the school experienced a drop in state rating. There is certain information that researchers can only obtain by directly asking (Fowler, 2014). I considered numerous methodologies for collecting information about PLCs in the participating schools. Ultimately, given the fact that the research questions lend themselves to easily quantifiable answers and that the project study included a comparison between schools, a quantitative methodology was selected. One of the most efficient and generalizable forms of quantitative research is the survey (Hoy, 2010). Fowler (2014) acknowledged the growth in the use of surveys for educational research purposes, and Brewer (2009) suggested that survey research is useful when the researcher must examine the perceptions of the participants.

With Research Question 1 I asked: To what extent to participants report that their schools operate as professional learning communities as measured by the PLCA-R? I used descriptive statistics to describe the level of PLC implementation at each school and identify the relative areas of strength and weakness of each school, relative to Southwest Educational Development Laboratory (SEDL) standards. Answering this question required that I identify the degree to which the participating schools are implementing PLCs at the time the survey was given, and this was accomplished through the use of descriptive statistics (see Creswell, 2003). Descriptive statistics can present a picture of a situation at a certain place and time, and thus, can provide useful information; however, this is only a preliminary step in the identification of causal relationships (Hoy, 2010). True educational research must include the examination of the relationship between at least two variables (Hoy, 2010).

With Research Question 2 I asked: Is there a significant difference in the depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the depth of PLC implementation, as measured by the PLCA-R at the schools that experienced a drop is state rating? Addressing this question required that I collect survey responses from the school that did not experience a projected drop in state ranking and compare them to the schools that did experience a drop in state ranking. This comparison allowed me to determine if deeper implementation of PLCs was related to school performance. An additional benefit of a quantitative study is hypothesis testing. By converting participant perceptions into quantifiable data, I was able to perform the statistical analyses necessary to test the hypothesis (see Fowler, 2014). By collecting the perceptions of teachers as to the extent to which their schools function as PLCs, I could compare the responses from each of the three schools that experienced a drop in performance rating to the responses from the school that did not experience a drop in performance rating. An ANOVA was used to determine whether the perceptions of the teachers in the school can be attributed to a deep implementation of PLC principles, or simply a matter of chance (see Gravetter & Wallnau, 2005). ANOVA works in a logical manner to determine if one sample is different from the others (Gravetter & Wallnau, 2005).

Methodology

Population Selection

The sample for this study consisted of the 73 teachers across the four elementary schools in the district under study. This purposeful sample represented the fact that all of

the teacher participants work in one of the district's four elementary schools (see

Cresswell, 2003). This study required a purposeful sample because participants had to be

familiar with the improvement strategy that the participating schools employed. The

participants varied considerably in terms of teaching experience, age, and gender. This

study relied on a convenience sample of 73 teachers that were previously surveyed using

the PLCA-R.

Archival Data

I accessed archived data for this study. The district issued the PLCA-R to their

entire teaching staff between May 27 and June 6, 2014. Teachers received an e-mail from

the curriculum director asking them to participate in a district-wide, voluntary survey.

The e-mail contained a link taking them to the SEDL PLCA-R website. Staff members

were given 11 calendar days to complete the survey. In actuality, the survey remained

open until June 9, 2014. I received permission to conduct the study in the participating

school district, which included permission to access the archived data. The letter granting

me permission for the study is contained in Appendix A.

Instrumentation and Operationalization of Constructs

Information about participant perceptions of the extent to which PLCs are

implemented their school were gathered by using the PLCA-R. The PLCA-R was

intended to measure typical school wide and classroom practices as they relate to PLCs

(Hipp & Huffman, 2010). The PLCA-R uses 52 Likert-type questions to collect

information about five PLC constructs: (a) shared and supportive leadership, (b) shared

vision and values, (c) collective learning and application, (d) shared personal practice,

and (e) supportive conditions (Hord, 1997; Huffman & Hipp, 2010). Each question asks participants to rate their level of agreement with each statement on a scale ranging from *Strongly Disagree* to *Strongly Agree*.

The PLCA-R has strong reliability ratings. Table 3 shows the Cronbach Alpha reliability coefficient for the measured subscales.

Table 3

Cronbach Alpha reliability coefficients for PLC dimensions measured by PLCA-R (n=1209)

PLC Dimension Subscale	Reliability Coefficient
Shared and Supportive Leadership	.94
Shared Vision and Values	.92
Collective Learning and Application	.91
Shared Personal Practice	.87
Supportive Conditions (Relationships)	.82
Supportive Conditions (Structures)	.88

Source: Hipp and Huffman (2010) Demystifying professional learning communities: school leadership at its best.

The original PLCA was revised in 2010 in order to gather information on how practitioners gathered, analyzed, and acted upon data (Hipp & Huffman, 2010). The PLCA-R now contains questions pertaining to achievement-data usage within each appropriate dimension (Hipp & Huffman, 2010). The developers recommended that researchers use descriptive statistics along with a review of teacher responses to each individual item as the results can be taken to identify the strength of the actual school-level practices (Hipp & Huffman, 2010).

I measured the independent variable, the level of implementation of PLCs, by participant responses to the PLCA-R instrument. The level of implementation was identified by use of descriptive statistics. The dependent variable, whether or not the school experienced a drop in state rating, was measured through an examination of each school's Local Report Card.

Procedures for Recruitment, Participation, and Data Collection

After receiving approval from the Institutional Review Board (IRB), I drafted a letter to the superintendent, asking for access to the data from the four participating schools. Upon approval from the superintendent, the director of curriculum and instruction provided me with access to the data in an electronic format. The letter from the superintendent of the participating school district is presented in Appendix A.

Data Analysis Plan

The overall data analysis can be described as an independent-measures research design, as separate and distinct samples were considered (see Gravetter & Wallnau, 2005). I used descriptive statistics to identify the participants' perceptions regarding the depth of implementation of the PLC initiative. These statistics provided valuable information about current conditions in the PLC structure at each participating school. The descriptive data include the calculation of the mean, median, and standard deviation for the responses in each dimension of the survey for each school, which allowed me to determine the situation at each school. In addition, taking the recommendation of the survey developers, similar statistical analyses were conducted for each question on each dimension for each school (see Hipp & Huffman, 2010).

I used inferential statistical analysis to determine whether there was a significant and reliable difference between how PLCs are implemented at each of the participating schools. Results were analyzed through the use of a single factor, independent measures of variance (ANOVA) to compare the PLCA-R results from the school that did not experience a drop in ranking with the PLCA-R results from the other schools. For this study, I determined significance at an alpha level of .05.

Threats to Validity

I made two assumptions with regards to the data in this study. First, I assumed that each school was organized into DATs as mandated by district leadership and that the participants in the study were aware of the initiative. Second, it was assumed that each participant would respond to the survey items thoughtfully and honestly.

I analyzed the data gathered in this study by use of an ANOVA. This procedure assumes that the sample includes three or more independent groups, the responses contain some level of randomization, that the outcome data follows a normal distribution, and that there are equal variances in outcomes among the groups. If those assumptions were are not accurate, the validity of the findings can be threatened.

One limitation of this study lay in the limited extent to which the results can be generalized to other schools or districts. In addition, this study was limited by the fact that I did not consider schools that did not organize their staffs into PLCs and did not experience a projected drop in state ranking. It is quite possible that schools that do not operate as PLCs, located in other school distircts, did not experience a drop in state rating.

Ethical Protections

The data was accessed and analyzed with the consent and permission of the Walden University Institutional Review Board. Approval was received and this study was assigned number 12-11-14-0048754. I relied on archived data to complete this study. There was no need to obtain informed consent from participants because I used data that had already been compiled. On May 27, 2014, the teaching staff in the participating district received an e-mail from the curriculum director asking them to complete a voluntary survey about their experiences in relation to PLCs at their school. The survey did not collect any personal identifiers; however, participants were asked to select their school from a drop-down menu. I complied with all requirements contained in the guidelines put in place by the Walden University Institutional Review Board in this study.

Summary

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsTo that end, I identified the independent variable as the extent to which the participating schools implemented PLCs. The dependent variable was whether or not the participating school experienced a drop is state rating.

In Chapter 3, I detailed the methodology used to conduct this study. The PLCA-R was used to determine the extent to which staff at each participating school perceived the level of PLC implementation. I compared this data to each school's projected performance on state accountability measures to determine if a relationship existed

between the level of PLC implementation and school scores on state measures of school

quality. In Chapter 4, I will present the results of the study.

Chapter 4: Results

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsWith this study, I also sought to determine whether the school that was projected to retain its excellent ranking implemented PLCs at a deeper level than the schools that were projected to make significant drops in ranking. The PLCA-R was used to capture the perceptions of the teachers in the participating schools with regards to the level of implementation of PLCs in their schools.

This chapter will be presented in two sections. In the first section, I will discuss the collection of data, including information about the participants and the participation rate. In the other section, I will present the results of the study, including a discussion of the research questions.

Data Collection

I accessed and used archived data for this study. The participating district administered the PPLCA-R to their entire staff of 196 teachers between May 27 and June 6, 2014. Teachers received an e-mail from the curriculum director asking them to participate in a district wide, voluntary survey. The e-mail contained a link directing the participants to the SEDL PLCA-R website. Staff members were given 11 days to complete the survey because the initial deadline was extended through June 9, 2014.

The participating district administered the PLCA-R to its entire teaching staff. In this study, I focused only on the district's four elementary schools. Table 4 shows the number of participants per school and the participation rate at each school.

Table 4

Participation by School

School	Number of Teachers	Number of Responses	Participation Rate
Edison	46	24	52%
Hedgerow	34	14	41%
Westpark	31	20	66%
Maplewood	29	19	66%

All together, I analyzed 77 surveys from a total population of 140 elementary teachers. The overall response rate for participating teachers was 55%.

Results

Research Question 1: To what extent do the participants report that their schools operate as professional learning communities as measured by the PLCA-R? I developed the following hypotheses to respond to Research Question 1:

$H_0 1$: The mean for overall participant responses on the PLCA-R and the mean for each domain will not be higher than 3.0.

$H_1 1$: The mean for overall participant responses on the PLCA-R and the mean for each individual domain will be higher than 3.0.

To respond directly to the first research question, I will provide frequency tables in order to portray the responses to the PLCA-R. Table 5 presents the results for Domain 1: Shared and Supportive Leadership, and Table 6 presents the results for Domain 2: Shared Vision and Values. Table 7 presents the results for Domain 3: Collective Learning and Application, while Table 8 presents the results for Domain 4: Shared Personal

Practice. Table 9 presents the results for Domain 5: Supportive Conditions-Relationships, and Table 10 presents the results for Domain 6: Supportive Conditions-Structures.

SEDL (2015), who markets and supports the utilization of the PLCA-R, suggests that when analyzing survey results, responses above 3.0 can be taken to indicate a general agreement among participants that the item as described in the PLCA-R is present at their school. When analyzing the data for this study responses were, accordingly, taken to indicate that the item was present at the school. Similarly, items that produced scores below 3.0 were taken to indicate an area where the school could improve its implementation of PLCs.

Table 5 presents the results of the shared and supportive leadership domain. Overall, the results indicated that shared and supportive leadership was present in the participating schools. Of the 11 questions asked, the mean responses were above 3.0 for 10 of the questions. Particular strengths of the participating schools resided in the principal basing their decisions on input from staff ($M = 3.31$) and the use of multiple sources of data to make instructional decisions ($M = 3.36$). The single question that produced a mean response below 3.0 dealt with stakeholders assuming shared responsibility for student learning ($M = 2.92$). In terms of variability, the responses to one question item stood out as having a lower standard deviation ($SD = .65$). That item asked about the use of multiple sources of data being used to make instructional decisions.

Table 5

Summary of Responses for Domain 1: Shared and Supportive Leadership

Question	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean	Standard Deviation
	(1) *n*	(2) *n*	(3) *N*	(4) *N*	*M*	*SD*
Staff members are consistently involved in discussing and making decisions about most school issues	2	9	44	24	3.09	0.79
The principal incorporates advice from staff members to make decisions	1	6	38	32	3.31	0.79
Staff members have accessibility to key information	1	9	47	20	3.11	0.77
The principal is proactive and addresses areas where support is needed	2	8	33	34	3.28	0.87
Opportunities are provided for staff members to initiate change	2	14	40	21	3.03	0.83
The principal shares responsibility and rewards for innovative actions	1	5	44	21	3.25	0.75
The principal participates democratically with staff sharing power and authority	1	9	40	27	3.20	0.80
Leadership is promoted and nurtured among staff members	2	11	34	30	3.19	0.83
Decision-making takes place through committees and communication across grade level	3	8	41	25	3.14	0.80
Stakeholders assume shared responsibility and accountability for student learning without evidence of imposed power or authority	1	16	48	12	2.92	0.82
Staff members use multiple sources of data to make decisions about teaching and learning	1	4	38	34	3.360	0.65

Table 6 presents the results for the shared vision and values domain. The mean

response in 8 of the 9 questions was above 3.0. The range of mean results are less

variable (M = 2.94–3.19). This indicated that although shared vision and values in the

participating schools is a strength, no specific question stood out as a particular strength.

The one response that was below 3.0 was the question about the involvement of

stakeholders in creating high expectations (M = 2.94). In terms of variability, the standard

deviation (SD = .65) for the question dealing with the existence of a collaborative process

for developing shared values among staff stood out.

Table 6

Summary of Responses for Domain 2: Shared Values and Vision

Question	Strongly Disagree 1 *n*	Disagree 2 *n*	Agree 3 *n*	Strongly Agree 4 *N*	Mean *M*	Standard Deviation *SD*
A collaborative process exists for developing a shared sense of values among the staff	1	4	54	18	3.15	.65
Shared values support norms of behavior that guide decisions about teaching and learning	1	7	50	19	3.12	.68
Staff members share visions for school improvement about teaching and learning	1	4	54	18	3.15	.68
Decisions are made in alignment with the school's vision and values	2	5	46	24	3.19	.73
A collaborative process exists for developing a shared vision among the staff	1	6	53	17	3.11	.69
School goals focus on student learning beyond test scores and grades	2	9	38	26	3.18	.82
Policies and programs are aligned with school's vision	1	4	43	23	3.16	.71
Stakeholders are actively involved in creating high expectations that serve to increase student achievement	3	12	47	14	2.94	.81
Data are used to prioritize actions to reach a shared vision	1	9	43	23	3.15	.73

Table 7 presents the results from the collective learning and application. Collective learning and application is an overall strength for the participating schools, with 8 out of 10 questions resulting in mean responses above 3.0. School staff being committed to programs that enhance learning ($M = 3.30$) and staff members planning and working together to search for solutions to address diverse learning needs ($M = 3.29$) were items of strength. The item dealing with professional development being focused on teaching and learning presented the most variable ($SD = .84$) in this domain.

Table 7

Summary of Responses for Domain 3: Collective Learning and Application

Question	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Mean	Standard Deviation
	N	*n*	*n*	*n*	*M*	*SD*
Staff members work together to seek knowledge, skills and strategies and apply this new learning to their work	1	5	43	28	3.27	.67
Collegial relationships exist among staff members that reflect commitment to school improvement efforts	1	5	39	32	3.24	.73
Staff members plan and work together to search for solutions to address diverse student needs	1	8	35	33	3.29	.72
A variety of opportunities and structures exist for collective learning through open dialogue	1	14	44	18	3.03	.73
Staff members engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry	1	7	44	25	3.19	.69
Professional development focuses on teaching and learning	2	21	34	20	2.94	.84
School staff members and stakeholders learn together and apply new knowledge to solve problems	1	14	47	15	2.98	.74
School staff members are committed to programs that enhance learning	1	3	45	26	3.30	.66
Staff members collaboratively analyze multiple sources of data to asses the effectiveness of instructional practices	1	7	40	29	3.26	.69
Staff members collaboratively analyze student work to improve teaching and learning	1	7	40	29	3.26	.68

Table 8 presents the results for the domain of shared personal practice. This domain presents mean results below 3.0 for 4 of the 7 questions. This domain should be considered an area in need of improvement for the participating schools. Of the questions returning mean results above 3.0, the informal sharing of ideas ($M = 3.28$) was a particular strength. Of the items returning mean results below 3.0, staff members providing feedback to peers ($M = 2.64$) and opportunities for staff members to observe one another and offer encouragement ($M = 2.58$) were areas of concern. This domain produced results that were more variable than other domains. The exception was the informal sharing of ideas ($SD = .68$) that was less variable than other items.

Table 8

Summary of Responses for Domain 4: Shared Personal Practice

Questions	Strongly Disagree (1) n	Disagree (2) n	Agree (3) n	Strongly Agree (4) N	Mean M	Standard Deviation SD
Opportunities exist for staff members to observe peers and offer encouragement	6	28	35	8	2.58	.89
Staff members provide feedback to peers related to instructional practice	5	26	33	9	2.64	.87
Staff members informally share ideas and suggestions for improving student learning	2	4	41	30	3.28	.68
Staff members collaboratively review student work to share and improve instructional practices	1	9	47	20	3.11	.70
Opportunities exist for coaching and mentoring	4	20	39	14	2.81	.87
Individuals and teams have the opportunity to apply learning and share the results of their practices	2	9	46	20	3.09	.73
Staff members regularly share student work to guide overall school improvement	1	18	42	16	2.94	.74

Table 9 presents the results for the domain of supportive conditions-relationships. This domain represented a strength for the participating schools. This was the only domain in which all items returned a mean response above 3.0. The highest item mean response (*M* = 3.49) for the entire PLCA-R came in this domain in response to the item regarding caring relationships among staff and students. In addition, the responses to this item were the least variable (SD = .59) when compared to any other item on the PLCA-R.

Table 9

Summary of Responses for Domain 5: Supportive Conditions-Relationships

Question	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Mean	Standard Deviation
	n	*n*	*n*	*N*	*M*	*SD*
Caring relationships among staff and students are built on trust and respect	0	2	35	40	3.49	.59
A culture of trust and respect exists for taking risks	1	3	39	34	3.37	.75
Outstanding achievement is recognized and celebrated in our school	0	12	35	30	3.23	.78
School staff and stakeholders exhibit a sustained and unified effort to embed change into the culture of the school	2	9	47	17	3.07	.78
Relationships among staff members support honest and respectful examination of data to enhance teaching and learning	1	8	39	19	3.24	.71

Table 10 presents the responses for the domain of supportive conditions-structures. In this domain, participants returned mean responses above 3.0 in 5 of 9 items. Areas of concern included the extent to which the school schedule promotes collective learning and shared practice ($M = 2.81$) and whether fiscal resources are made available for professional development ($M = 2.77$). Of the items returning a mean response rate above 3.0, the proximity of grade level and department personnel was the highest ($M = 3.16$).

Table 10

Summary of Responses for Domain 6: Supportive Conditions-Structures

Question	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Mean	Standard Deviation
	n	*n*	*n*	*n*	*M*	*SD*
Time is provided to facilitate collaborative work	2	22	38	14	2.85	.66
The school schedule promotes collective learning and shared practice	3	24	34	16	2.81	.77
Fiscal resources are available for professional development	3	22	41	11	2.77	.83
Appropriate technology and instructional materials area available to staff	1	9	46	21	3.12	.62
Resource people provide expertise and support during continuous learning	1	18	47	11	2.88	.66
The school facility is clean, attractive and inviting	2	10	44	21	3.09	.74
The proximity of grade level and department personnel allows for ease in collaborating with colleagues	2	9	39	16	3.16	.81
Communications systems promote a flow of information across the entire school community including central office personnel, parents, and community members	1	10	46	20	3.09	.61
Data are organized and made available to provide easy access to staff members	2	6	52	17	3.09	.62

The study results demonstrated that the teachers in the participating schools felt that their school functioned as a PLC. Table 11 shows the survey results of each domain. The second column contains the percentage of participants who either agreed or strongly agreed with the statements in that domain. All domains returned a positive response rate of at least 85% except for the domain of shared personal practice that was under 80%.

Table 11

Participants by Domain That Either Agreed or Strongly Agreed With Statements

Domain	Percentage of participants who agree or strongly agree
Shared and supportive leadership	86.1%
Shared vision and values	88.8%
Collective learning and application	86.7%
Shared personal practice	74.7%
Supportive conditions-Relationships	90.1%
Supportive conditions-Structures	88.6%

I examined the PLCA-R results to determine the mean and standard deviation for the overall population and by domain. Table 12 presents the PLCA-R results for all of the participants and breaks them down by domain. The instrument produced an overall mean ($M = 3.093$) adequate to state that in total, the participants agreed the characteristics of PLCs were present in the participating schools. An examination of the means for the six domains revealed that 5 out of the 6 domains produced a mean response above 3.0. The exception was the domain of shared personal practice ($M = 2.927$) with a mean below 3.0. Table 13 presents the mean and standard deviation for the participating schools in the

total PLCA-R and in each domain. Only 1 of the 4 schools, Edison, had a mean response below 3.0 in each domain. Aside from Edison, only one school, Hedgerow ($M = 2.97$) in supportive conditions structures, had a mean response below 3.0 in any domain. The overall mean for the PLCA-R was above the 3.0 threshold for rejecting the null hypothesis, but the mean for shared personal practice was below the 3.0 threshold, and therefore, I failed to reject the null hypothesis.

Table 13

PLCA-R Results and Results by Domain

		Edison	Hedgerow	Maplewood	Westpark
Total PLCA-R results	M	2.857	3.146	3.175	3.354
	SD	.5660	.4740	.4064	.4252
Shared and supportive leadership	M	2.893	3.194	3.220	3.495
	SD	.6140	.4977	.5799	.4123
Shared vision and values	M	2.888	3.1428	3.1579	3.400
	SD	.5833	.4938	.4833	.3406
Collective learning and application	M	2.895	3.264	3.215	3.445
	SD	.6457	.5212	.4058	.4285
Shared personal practice	M	2.607	3.020	3.007	3.174
	SD	.6623	.7194	.4936	.4830
Supportive conditions-relationships	M	2.958	3.357	3.315	3.600
	SD	.6100	.4586	.4936	.4830
Supportive conditions-structures	M	2.857	2.907	3.147	3.113
	SD	.5309	.4763	.4181	.5958

The results presented in Tables 5–13 indicate the participants in this study agreed that their schools function as PLCs.

Research Question 2: Is there a significant difference in the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R at the schools that experienced a drop is state rating?

To answer this question, a one-way ANOVA on the results of the PLCA-R from each school was performed. The results of the one-way ANOVA determined that there is a statistically significant difference between at least one of the groups of responses (f = 4.105, p = .009). An ANOVA does not identify which of the schools presented responses

that were significantly different. The results of the one-way ANOVA are presented in

Table 14.

Table 14

Results of the One Way ANOVA

	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	7619.486	3	2539.829	4.105	.009
Within Groups	45161.501	73	618.651		
Total	52780.987	76			

In order to determine if the responses from the school that was not projected to

experience a drop in state ranking was the school that produced significantly different

responses, a Tukey post hoc test was conducted. The Tukey post hoc test revealed

statistically significant differences in PLCA-R results between Edison and Westpark. An

examination of the mean values revealed that Westpark implements PLCs more deeply

than Edison. This test established that Edison, the school that did not experience a drop in

state ranking, did not report deeper levels of PLC implementation, as measured by the

PLCA-R, than the other participating schools. Therefore, the null hypothesis was

confirmed. The results of the post hoc test are presented in Table 15.

Table 15

Results of the Tukey Post Hoc Test

(I) School	(J) School	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Edison	Hedgerow	-14.48810	8.36459	.315	-36.4804	7.54042
	Westpark	-25.86667	7.53058	.005*	45.6662	-6.0672
	Maplewood	-16.52193	7.63791	.143	-36.6036	3.5597
Hedgerow	Edison	14.48810	8.36459	.315	-7.5042	36.4804
	Westpark	-11.37857	8.66729	.558	-34.1667	11.4096
	Maplewood	-2.03383	8.76070	.996	-25.0676	20.9999
Westpark	Edison	25.86667	7.53058	.005*	6.0672	45.6662
	Hedgerow	11.37857	8.66729	.558	-11.4096	34.1667
	Maplewood	9.34474	7.96826	.646	-11.6055	30.2950
Maplewood	Edison	16.52193	7.63791	.143	-3.5597	36.6036
	Hedgerow	2.03383	8.76070	.996	-20.9999	25.0676
	Westpark	-9.34474	7.96826	.646	-30.2590	11.6055

Summary

In Chapter 4 the results of the PLCA-R administration and the data analysis that was conducted was presented. The instrument was used to determine the perceptions of the participants regarding the level of PLC implementation within their school. Research Question 1 dealt with the level of PLC implementation in the participating schools. An examination and analysis of the data reveal that the four participating schools implemented PLCs to a high degree. In Research Question 2 I asked if there was a significant difference in the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R at the schools that experienced a drop is state rating? Results of the one-way ANOVA, and subsequent post hoc test, indicate that it does not report significantly higher responses. These results lead to the confirmation of the null hypothesis. Chapter 5 will include an interpretation of the

research findings, recommendations for action, recommendations for future study, a discussion of the implications of this study in terms of social change, and concluding remarks.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative study was to explore the relationship between the perceived depth of implementaiton of PLCs and a school's performance in terms of state ratingsA problem arose when 3 out of the 4 elementary schools in the participating school district experienced a significant drop in state ratings. PLCs are a popular strategy employed by schools to meet accountability requirements. The district that participated in this study received notice from the state department of education indicating that when new accountability measures go into effect, three of the district's four elementary schools would likely experience significant drops in rating. The fourth elementary school in the participating district was projected to retain its high rating. The four participating schools implemented PLCs in a similar manner, each using the Ohio Improvement Process. I sought to determine the level of PLC implementation in the participating schools and to determine whether the school that was not projected to experience a drop in state rating implemented PLCs to a significantly different extent. In this chapter, I will review the research conducted, provide an interpretation of the results, and include recommendations for action and further research. The chapter will conclude with an explanation of the implications for positive social change of this study.

Summary of Research

The PLCA-R consists of 52 Likert-type questions that cover six domains. The survey population for this study consisted of 77 teachers across four participating schools. I presented the frequency of responses across the six domains in tables in Chapter 4. The data collected from participants allowed me to address Research Question

1 dealing with the implementation of PLCs, as defined by the participants' perceptions as measured by the PLCA-R. The Statistical Package for the Social Sciences was used to calculate the mean score and standard deviation, by school, for each of the dimensions. In order to determine if there was a significant difference between the schools' responses, I used the Statistical Package for the Social Sciences to perform an ANOVA to identify the p value and level of significance. The results of the ANOVA indicated a significant difference between the schools' responses. This result necessitated that post-hoc testing be performed to determine which of the independent samples was different. I conducted the Tukey post hoc test and determined that the school that was not projected to experience a drop in rating was not the school that reported the implementation of PLCs to a significantly higher degree. With this result, I failed to reject the null hypothesis . Despite my failure to reject the null hypothesis, important information about the level of PLC implementation was obtained in this study.

Interpretation of the Findings

This study was guided by two research questions. The first question concerned the level of implementation of PLCs in the four schools. With the second question, I asked if there was a significant difference in the perceived depth of PLC implementation, as measured by the PLCA-R, at the school that did not experience a drop in state rating and the perceived depth of PLC implementation, as measured by the PLCA-R at the schools that experienced a drop is state rating? I used descriptive statistics to describe the depth of implementation in response to the first question. An ANOVA, with post hoc testing, was used to respond to the second question.

Research Question 1 addressed the extent to which the participants believed that they were part of a PLC, as measured by their responses to the PLCA-R. The results indicate that the participants believed that they are part of a PLC. The SEDL, the institution that makes the PLCA-R available, provides a guide for the analysis of results. The first step in analyzing results is to identify responses where the mean is less than three ($M < 3.0$). To interpret the results according to the measures advocated by SEDL, I first examined the overall mean for the survey and found it to be 3.09 . This indicated that the responses met the threshold established by SEDL for determining overall agreement with PLC practices.

I then examined the results by domain and they indicated that only one domain, shared personal practice, had a mean less than three ($M = 2.92$). The other domains all recorded means above the threshold for determining agreement. I examined the results by mean, by school, and by domain. Edison, the school that was not projected to experience a drop in state rating, was the only school to record means below the threshold of agreement in every domain. The other schools, collectively, produced a mean below the threshold in only one instance. That instance was Westpark in the area of supportive conditions-structures ($M = 2.90$).

I then examined the PLCA-R results on a question-by-question basis. In 79% of the questions, the participants reported mean results above the threshold for agreement. Question 10 ($M = 2.92$) dealt with the assumption of shared responsibility for student learning without the imposition of power or authority. Question 19 ($M = 2.94$) involved stakeholders being actively involved in creating high expectations. Question 26 ($M =$

2.93) was about professional development that focuses on teaching and learning.

Question 27 ($M = 2.98$) dealt with staff members learning together and applying that new

learning to solve problems. Seven of the 52 items produced responses with a mean below

3.0. Question 31 ($M = 2.58$) concerned the existence of opportunities for staff members to

observe and encourage peers. Question 32 ($M = 2.64$) involved staff members providing

feedback to their peers relating to instructional practice. Question 43 ($M = 2.85$)

concerned the amount of time provided for collaborative work. Question 44 ($M = 2.81$)

was about the schedule and whether it promoted collaborative work. Despite the overall

mean response being beneath the threshold set by SEDL for agreement, I concluded that

the participants reported being members of a functioning PLC. That conclusion was

based on the fact that 3 of the 4 schools had mean responses above the threshold, 5 out of

the 6 domains measured contained means above the threshold, and 41 out of 52

individual questions had mean results above the threshold.

Research Question 2 concerned whether or not the participating school that did

not experience a drop in state rating was implementing PLCs to a significantly different

degree than the three participating schools that did experience a drop in state rating. My

rejection of the null hypothesis would mean that the deep implementation of PLC

practices predicts a school's placement on a state rating system. The results, however, did

not permit the rejection of the null hypothesis. The results of the ANOVA identified with

a level of significance that was below the .05 level I had determined ($p = .009$). This

required me to perform post hoc testing to determine which of the four samples was

significantly different than the others. A Tukey post hoc test was performed because the

results generated made it clear which of the schools' results were different by the others (see Table 12). An examination of the post hoc testing results showed that Westpark's results were significantly different from Edison's results. Because Westpark was not the school that was projected to retain its excellent rating, I failed to reject the null hypothesis.

The results of this study were congruent with at least three other studies. Day (2016) considered the difference in PLCA-R results of general education teachers and special education teachers, Smith (2012) compared the PLCA-R results from school that made adequate yearly progress and those that did not, and Lippy (2012) compared PLCA-R results according to teaching experience. All of these researchers were also unable to reject their null hypothesis.

Recommendations for Action

A rejection of the null hypothesis would have resulted in a suggestion that the participating schools that were projected to experience a drop in state rating examine their practices through the lens of PLC implementation at Edison. The results, however, did not warrant that. The results did indicate that action should be taken by the participating school district. Shared personal practice is the domain in which the participating schools produced the lowest mean score ($M = 2.92$). Three of the 11 questions producing mean scores below the SEDL threshold, Question 31 ($M = 2.58$), Question 32 ($M = 2.64$), and Question 35 ($M = 2.81$), belong in the shared personal practice domain. These questions dealt with the provision of opportunities for staff to observe others' practice, learn from one another, and share student work samples. Four

questions in the supporting condition-structures domain, Question 43 ($M = 2.85$),

Question 44 ($M = 2.81$), Question 45 ($M = 2.77$), and Question 47 ($M = 2.88$), earned

mean scores beneath the SEDL threshold. These questions concerned having the time

necessary to do collaborative work, a school schedule that promotes collaboration, fiscal

resources for professional development, and the availability of resource people to provide

expertise and support. Two items scoring below the SEDL threshold were contained in

the collective learning and application domain: Question 26 ($M = 2.93$) and Question 27

($M = 2.98$). These items dealt with professional development focused on student learning,

and staff members learning together to apply new knowledge to solve problems. Shared

and supportive leadership, Question 10 ($M = 2.92$) and shared vision and values,

Question 19 ($M = 2.94$) round out the remaining questions failing to reach the SEDL

threshold. These items pertain to stakeholders assuming shared responsibility and

accountability for student learning without the imposition of authority, and stakeholders

being actively involved in creating high expectations, respectively.

To respond to these findings, I believe the district should:

1. Examine closely the way that it expends resources in support of the PLC
   initiative.
2. Investigate the readiness of staff to engage in the sharing of practice.
3. Revisit the district professional development plan to ensure that all offerings
   focus on teaching and learning and include opportunities for staff to
   collaboratively apply new learning in pursuit of solutions to problems.

The fact that a single school scored lower than the others on the PLCA-R and had no domain with a mean above the SEDL threshold for agreement with the statements, yet was the only school that was not projected to drop in state rating, is certainly confounding. Explaining the results of the study, using only the data involved, leaves three avenues. First, it is possible that the PLCA-R failed to capture accurate levels of PLC implementation at the school that was projected to experience no drop in state rating and that school really is implementing PLCs to a deeper degree than the other participating schools. Second, the calculations that allowed the school to maintain its high rating were inaccurate and the school actually produced results more in line with its PLCA-R results. Finally, it is possible that deeper implementation of PLC principles is not associated with higher levels of student achievement.

It is possible that the 22 teachers at Edison that did not complete the PLCA-R all had perceptions that the school is implementing PLCs to a high degree. This might explain the fact that the school reported implementing PLCs to a lesser degree than other participating schools. This explanation, however, could be applied to the other schools as well. The fact remains that every teacher in the participating schools had an opportunity to complete the survey instrument. The validity and reliability statistics presented by SEDL were relied upon and accepted.

A possible explanation for this result is that the projections that gave rise to this research were made from the 2014–2015 school year test data and were based upon scores from a different test that was used in subsequent years. The state in which the research was conducted changed achievement tests, making the computation of growth

measures impossible. The tests adopted for 2015–2016 differed again from the test administered in 2014–2015. Given this, I could not examine the projections for accuracy. It is possible that the school that did not experience a drop actually did experience a drop. It is also possible that the schools projected to drop in state ratings did not actually drop as much as predicted.

A third explanation would be that since all of the participating schools use the Ohio Improvement Process as their primary strategy for meeting accountability requirements, a disconnect exists between the Ohio Improvement Process and the measured characteristics of PLC. Assuming the schools follow the Ohio Improvement Process with fidelity, it is possible that there is a disconnection between the process and the implementation of PLCs. The Ohio Improcement Process focuses on the use of preassessment data, the creation of a common instructional approach, and the collaborative analysis of the resulting achievement data (Ohio Department of Education, 2012). The extent to which the process was designed to incorporate PLC principles is unclear.

Support for PLCs can take many forms. The instrument I used in this study produced results indicating that participants believe that they do not have the necessary time, within the current school day, to conduct the collaborative work required of PLCs; that the district does not provide sufficient fiscal resources for professional development; and that schools lack resource persons with the expertise necessary to support the work of PLCs. In the following paragraphs, I will discuss my recommendations for local action that appeared earlier in this chapter.

Operating a school as a learning organization requires that collaboration be built into the regularly scheduled day. Learning in teams is essential for learning organizations (Senge, 1990). The role of leadership in learning organizations is to ensure that members of the organization have the resources, in this instance time, necessary to carry out their work. It is understood that the resources available to public school districts are not unlimited. Best practices described in the literature must be weighed in terms of how they impact the district's bottom line. It is not recommended that the participating district overextend itself or act in a fiscally irresponsible way. It is recommended that district personnel review the time allotted for collaborative work and examine the expectations it has for work completed within that time. At a school level, leaders are encouraged to consider some of the creative ways to increase the amount of time available for collaboration recommended by Thessin and Starr (2011).

The results of the PLCA-R suggest that participants are ready to engage in the sharing of practice. The literature speaks extensively of making practice more public (Barton & Stepanek, 2012; Lujan & Day, 2010; Maloney & Konza, 2011; Williams et al., 2012). The sharing of personal practice can move people out of their comfort zones. District personnel are encouraged to begin with less threatening activities such as the collaborative examination of student work before moving into activities that include peer observation and feedback (Hord, 1997; Spanneut, 2010).

The PLCA-R results indicate that participants believe that the district provided professional development could be focused more on matters of teaching and learning and that the professional-development programs include opportunities for participants to

collaboratively apply what they have learned to the real problems they are facing. These findings apply directly to learning organization theory. School leaders have the obligation to make sure that teachers are prepared to work as part of a PLC (Thessin, 2015; Thessin & Starr, 2011). School leaders are encouraged to examine the current levels of individual instructional practice of their teachers, and ensure that their current procedures for selection the content and context of professional development programs are sound (Senge, 1990).

Recommendations for Future Study

The results of this study indicate that further research is necessary. Recommendations for further study are as follows:

1. This study should be conducted on a larger scale, using more precise measures of school accountability.

2. Distinguish between PLC and implementation of the Ohio Improvement Process by developing a measure of implementation of the process and determining if deep implementation predicts higher scores on the PLCA-R.

The relationship between levels of PLC implementation and the attainment of state accountability targets was examined in this study. Projections made about four elementary schools within the participating district were relied upon. To gain a broader, more generalizable, understanding of the relationship between the variables, this study could be conducted in a larger sample of schools and the PLCA-R results could be compared to the achievement statistic, Performance Index, upon which most accountability targets in the researcher's home state are based.

The participating schools in this study all implemented the Ohio Improvement Process. The extent to which the process is based upon the principles of PLCs is not clear. A study that compares the extent to which participating schools are implementing the process and then comparing the PLCA-R results from those schools would provide information about the extent to which the Ohio Improvement Process causes schools to operate as PLCs.

Implications

Student outcomes in the form of scores on standardized tests of achievement have become the arbiter of the quality of a child's education and are increasingly the basis by which the effectiveness of schools is determined. In an attempt to raise the level of student achievement measured by these test scores schools have begun to examine their practices to ensure that they are operating in ways that maximize achievement levels of students. It has been postulated that people within an organization can, and do, shape the outcomes that the organization achieves (Senge, 1990; Senge, et al., 2012). This theory of the learning organization, when applied to the public schools, is called professional learning community (Williams et al., 2012). That professional learning can ultimately lead to improved student outcomes is grounded in the literature (Darling-Hammond & Richardson, 2009; Desimone et al., 2013). The extant research further establishes that PLCs are a promising way to structure professional learning (Desimone et al, 2013; Jones et al., 2013). When teachers critically examine their practices in collaboration with one another, analyze the their findings, and collectively apply their new insights, students benefit from the improved instruction. Students that receive better instruction are likely to

perform better on measures of achievement. Students ultimately benefit by being better

equipped for post-secondary education or gainful employment. Society as a whole

benefits as a well-educated citizens are better able to meet the challenges of the future.

The school district in which the study was conducted benefits by having baseline

data about the perceptions of teachers regarding the depth of PLC implementation in their

schools. The results of this study can inform professional development efforts, cause a

reexamination of current practices regarding PLCs, and result in a realignment of district

resources to support the work of PLCs. Policymakers at the state level benefit from this

study as they examine the accountability targets and highlight the strategies that they

recommend for attaining them. Specifically, they can learn about how state recommended

improvement efforts correlate to the principles of PLCs. Finally, researchers can benefit

from this study as it becomes part of the collective literature regarding PLCs and school

quality. This study provides a framework that can be adjusted for local practices, and

replicated.

Conclusion

This chaptercontained a summary of the research conducted, an interpretation of

the findings, recommendations for action based upon those findings, recommendations

for further study, and a discussion of how this study can result in social change. School

districts will continue to strive to meet accountability measures set by states. The

organization of schools intoPLCs, in conjunction with the theoretical framework of the

learning organization, remains a viable strategy for schools to create the results they

aspire to. Although this study did not produce the results that allowed for the

confirmation of the alternate hypothesis, it did yield important information about the

current state of practice in the participating schools and led to practical recommendations

for immediate action.

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Appendix A: Professional Learning Communities Assessment –Revised

Directions:
This questionnaire will assess your perceptions about your principal, staff, and stakeholders based on the dimensions of a professional learning community (PLC) and related attributes. This questionnaire contains a number of statements about practices which occur in schools. Read each statement and then use the scale below to select the scale point that best reflects your personal degree of agreement with the statement. Shade the appropriate oval provided to the right of each statement. Be certain to select only one response for each statement. Comments after each dimension section are optional.

Scale:
1 – Strongly Disagree (SD)
2 – Disagree (D)
3 – Agree (A)
4 – Strongly Agree (SA)

Statements	Scale			
Shared and Supportive Leadership	SD	D	A	SA
1. Staff members are consistently involved in discussing and making decisions about most school issues.				
2. The principal incorporates advice from staff members to make decisions.				
3. Staff members have accessibility to key information.				
4. The principal is proactive and addresses areas where support is needed.				
5. Opportunities are provided for staff members to initiate change.				
6. The principal shares responsibility and rewards for innovative actions.				
7. The principal participates democratically with staff sharing power and authority.				
8. Leadership is promoted and nurtured among staff members.				
9. Decision-making takes place through committees and communication across grade levels.				
10. Stakeholders assume shared responsibility and accountability for student learning without evidence of imposed power and authority.				
11. Staff members use multiple sources of data to make decisions about teaching and learning				

Statements	Scale			
Shared Values and Vision	SD	D	A	SA
12. A collaborative process exists for developing a shared sense of values among the staff.				
13. Shared values support norms of behavior that guide decisions about teaching and learning.				
14. Staff members share visions for school improvement about teaching and learning.				
15. Decisions are made in alignment with the school's values and vision.				

	Statements	SD	D	A	SA
16.	A collaborative process exists for developing a shared vision among staff.				
17	School goals focus on student learning beyond test scores and grades.				
18.	Policies and programs are aligned to school's vision.				
19.	Stakeholders are actively involved in creating high expectations that serve to increase student achievement				
20.	Data are used to prioritize actions to reach a shared vision.				

Statements		Scale			
Collective Learning and Application		SD	D	A	SA
21.	Staff members work together to seek knowledge, skills and strategies and apply this new learning to their work.				
22.	Collegial relationships exist among staff members that reflect commitment to school improvement efforts.				
23.	Staff members plan and work together to search for solutions to address diverse student needs.				
24.	A variety of opportunities and structures exist for collective learning through open dialogue.				
25.	Staff members engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.				
26.	Professional development focuses on teaching and learning.				
27.	School staff members and stakeholders learn together and apply new knowledge to solve problems.				
28.	School staff members collectively analyze multiple sources of data to assess the effectiveness of instructional practices.				
29.	Staff members collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.				
30.	Staff members collaboratively analyze student work to improve teaching and learning.				

Statements		Scale			
Shared Personal Practice		SD	D	A	SA
31.	Opportunities exist for staff members to observe peers and offer encouragement.				
32.	Staff members provide feedback to peers related to instructional practices.				
33.	Staff members informally share ideas and suggestions for improving student learning.				
34.	Staff members collaboratively review student work to share and improve instructional practices.				
35.	Opportunities exist for coaching an mentoring.				
36.	Individuals and teams have the opportunity to apply learning and share the results of their practices.				
37.	Staff members regularly share student work to guide overall school improvement.				

Statements		Scale			
Supportive Conditions-Relationships		SD	D	A	SA
38.	Caring relationships exist among staff and students that are built in trust and respect.				
39.	A culture of trust and respect exists for taking risks.				
40.	Outstanding achievement is recognized and celebrated regularly in our school.				

41.	School staff and stakeholders exhibit a sustained and unified effort to embed change into the culture of the school.				
42.	Relationships among staff members support honest and respectful examination of data to enhance teaching and learning.				

Statements	Scale			
Supportive Conditions-Structures	SD	D	A	SA
43. Time is provided to facilitate collaborative work.				
44. The school schedule promotes collective learning and shared practice.				
45. Fiscal resources are available for professional development.				
46. Appropriate technology and instructional materials are available to staff.				

Statements	Scale			
Statements	SD	D	A	SA
47. Resource people provide expertise and support for continuous learning.				
48. The school facility is clean, attractive, and inviting.				
49. The proximity of grade level and departmental personnel allows for ease in collaborating with colleagues.				
50. Communication systems promote a flow of information among staff members.				