

ABSTRACT

Title of Dissertation THE POWER OF PROFESSIONAL
COMMUNITY: EXAMINING THE
RELATIONSHIP BETWEEN SCHOOL
CONDITIONS AND THE PRESENCE OF
PROFESSIONAL COMMUNITY

Segun C. Eubanks, Doctor of Education, 2012

Dissertation directed by: Professor Emeritus Willis Hawley
Department of Teaching, Learning, Policy and
Leadership

This quantitative study examines the relationship between school conditions and the presence of professional learning community (PLC) in schools. The analysis addresses the research question: How do school conditions correlate with the presence of professional learning community in schools? A series of multiple linear regressions examine six school conditions and their relation to three measures of PLC designed specifically for this study: Working Together Toward Shared and Ambitious Learning Goals; Conversations Focused on Teaching and Learning; and Public Practice. A supplemental analysis included in the appendices addresses the research question: How does the presence of professional learning community in schools correlate with measures of student achievement? A logistic regression examines the relationship between three measures of PLC and student achievement.

Data for this study is derived from over 1,200 schools participating in the Keys for Effective Schools (KEYS) survey, sponsored by the National Education Association. The study found a statistically significant relationship between several school conditions and each measure of PLC. Effectiveness and Supportiveness of School Leadership and Frequency and Focus of Professional Development were positively associated with all three PLC measures. Teacher Empowerment and School Level were positively associated to two of the three PLC measures. Findings are consistent with the limited empirical research on the conditions that foster or inhibit PLC (Bolam, et al., 2005; Hord, 2004; Louis, Marks, & Kruse, 1996; Louis & Marks, 1998; Newmann & Wehlage, 1995; Vescio, Ross, & Adams, 2008).

THE POWER OF PROFESSIONAL COMMUNITY: EXAMINING THE
RELATIONSHIP BETWEEN SCHOOL CONDITIONS AND THE PRESENCE OF
PROFESSIONAL LEARNING COMMUNITY

by

Segun C. Eubanks

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Dissertation Committee

Professor Emeritus Willis Hawley, Chair
Dr. Edward Crowe
Dr. Jacques Nacson
Professor John F. O'Flahavan
Professor Sylvia Rosenfield

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Dedication

To my wife, best friend, and fellow Ed.D.

I love you, Shyrelle

To my smart, determined, resourceful, fun, independent, resilient children

Sijara, Jibran, Damani, and Yasmin – I'm so proud of each of you

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Table of Contents

Dedication	ii
Acknowledgements	iii
List of Tables	vi
List of Figures	vii
Chapter 1: Introduction	1
Why PLC?	2
Context	4
Problem Statement	6
Research Framework	7
Theoretical rationale.	8
Concept map.	9
School Improvement, Teaching Quality, and PLC	11
School improvement.	11
Teacher and teaching quality.	15
Research Questions	24
Significance of Study	26
Chapter 2: Literature Review	28
Professional Learning Community	28
Defining PLC	29
History and foundation of PLC.	31
Characteristics of PLC	33
The impact of school conditions on PLC.	40
The impact of PLC on teacher practice and student outcomes.	45
Research Limitations and Challenges	51
Summary	52
Chapter 3: Methodology	54
Analytical Framework	54
The Data: NEA KEYS Survey Database	56
Defining and Creating PLC Variables	60
Defining and Creating School Conditions Variables	67

School climate variables.....	67
School structure variables.....	71
Student demographic variables.....	73
Analysis of Variables	74
Data Analysis	79
Limitations and Challenges	80
Summary	81
Chapter 4: Findings.....	82
School Conditions and Professional Learning Community	82
Summary	90
Chapter 5: Discussion	92
Summary of Problem Statement	92
Summary of Purpose and Research Questions.....	93
Summary of Methodology	94
Summary of Findings	95
Implications.....	98
Contributions to research.....	99
Recommendations	101
Further research.	101
Policy.	102
Conclusion.....	103
Appendix A: Additional Tables and Figures	104
Appendix B: Supplemental Research on Student Achievement.....	117
Introduction	117
Defining and Creating the Student Achievement Variable	118
PLC and Student Achievement	120
Summary	122
Appendix C: Implications for the National Education Association.....	124
Appendix D: KEYS Administrative Survey	129
Appendix E: KEYS Staff Survey.....	133
References.....	142

List of Tables

Table 1: Characteristic of PLC: Shared Norms and Values	34
Table 2: Characteristic of PLC: Reflective Dialogue and Collective Inquiry	35
Table 3: Characteristic of PLC: Collective Focus on Student Learning.....	36
Table 4: Characteristic of PLC: Collaboration	37
Table 5: Characteristic of PLC: De-Privatization of Practice.....	37
Table 6: Supports for Professional Learning Community	43
Table 7: Comparison of KEYS and US Schools by school level	59
Table 8: Comparison of KEYS and US Schools by geographic location.....	59
Table 9: Profile of KEYS Schools by socio-economic status.....	60
Table 11: Principal Component Loadings for Analysis on Components of PLC.....	65
Table 12: Principal Component Loadings for Analysis of School Conditions Items.....	70
Table 13: Correlational and Descriptive Statistics for Study Variables (N = 1,028)	78
Table 14: Multiple Regression Analysis Predicting Working Together (N = 1,048).....	87
Table 15: Multiple Regression Analysis Predicting Conversations (N = 1,036).....	86
Table 16: Multiple Regression Analysis Predicting Public Practice (N = 1,026)	89
Table 17: Summary of School Conditions Relationship to PLC	98

List of Figures

Figure 1: Concept Map for Professional Learning Community	10
Figure 2: Analytical Framework	56
Figure 3: Scree Plot of Principal Component Analysis for PLC	64
Figure 4: Scree Plot of Principal Component Analysis for School Conditions	69

Chapter 1: Introduction

The 2001 reauthorization of the Elementary and Secondary Education act, known as “No Child Left Behind,” is a controversial law. However, there is broad consensus on the assumption that underlies it: that all children can learn to high standards and that public schools are primarily responsible for ensuring this, regardless of the racial or economic background or other conditions that may otherwise inhibit learning (Piche & Ruth, 2004). This belief in the role of schools has further supported and expedited the development and implementation of comprehensive standards, accountability, and assessment systems at federal, state, and local levels (McClure, 2005; Porter, 1994). Policies associated with the law have yet to fulfill their objective, as significant achievement gaps among U.S. students persist and achievement of U.S. students as a whole still lags behind most other developed countries.

The current education reform movement continues to struggle with the failure to reach national education goals by implementing a wide range of strategies and policies, most of which focus on distinct programs and processes—such as class size, test scores and individual teacher effectiveness. It rarely attempts to engage in broader or more substantive systemic change. Yet, improving schools and enhancing student learning outcomes, particularly in the most disadvantaged communities, will require deeper, systemic change. Such transformation must occur on many levels, from changing how education is organized and funded to changing how schooling is organized and how schools are operated. Small, incremental change may be necessary but should occur in the context of more comprehensive reform, rather than in isolated or random occurrences.

Recent policy and research to improve school and student outcomes have emphasized teaching quality and teacher effectiveness. This reform agenda has called for transforming or even eliminating many of the traditional processes designed to promote teaching quality, including preparation, licensure, professional development and teacher evaluation. Current policy and research debates, while complex, can be summarized by two competing ideas, each of which share the foundational belief that quality teaching is a key variable to improving student outcomes. The first idea is that new systems must be developed to recruit more talented individuals into teaching and reward them (or hold them accountable) based on their actual impact on students and schools. The second posits that improving – and providing adequate resources for – systems of support for both teacher candidates and practicing teachers is a more effective way to improve teacher practice and student outcomes. This concept of creating systems of support in schools that help teachers grow and improve is central to the idea of Professional Learning Community.

Why PLC?

“Professional Learning Community” (PLC) is an increasingly popular concept as scores of schools have implemented some or all elements of professional learning community. Researchers, practitioners, and advocates for PLC argue that it can be an essential component of school reform and can change how teachers and school staff work and interact. Researchers and advocates of PLC have offered an array of arguments about the potential merits of this strategy, most of which could be summarized in three themes. First, teaching has traditionally been viewed as occurring almost exclusively

within a single classroom with a single teacher. Yet, there is growing recognition that effective teaching is a collaborative process. When the National Board for Professional Teaching Standards was developed in 1987, one of its five core propositions of accomplished teaching was that “Teachers of Members of Learning Communities” (National Board for Professional Teaching Standards, 1989). Second, is the argument that enhanced teacher professionalism is a prerequisite to achieving higher and more equitable learning gains for students. One essential element of this enhanced professionalism is moving beyond individual to collective engagement in efforts to improve teacher practice (Kruse, Seashore Louis, & Bryk, 1994). Third, is the argument that shared goals and values – which can be developed through professional community – are necessary school norms in efforts to enhance student learning. School reform efforts can be successful only if they empower staff to create a vision based on shared values that align curriculum, instruction, and assessment (Huffman, 2003).

While arguments for the value of PLC may be persuasive, what a PLC actually is, how (and whether) PLC can work and under what conditions are questions that too often go unanswered. How the concept of PLC does or does not fit into a larger picture of school improvement and reform is an important question to address if these learning communities are to become anything more than the next fad or merely lead to small pockets of excellence.

This study examines how the concept of professional learning community could be part of school reform and improvement efforts. It also looks at how PLC can be a tool for improving the delivery of education in schools. This study will outline a broad

conceptual framework for, and review the literature on, how professional learning community can contribute to school reform and how it may help to improve student learning outcomes. The core of the research for this study will be an examination of the relationship between school conditions and the presence of professional learning community in schools. The research will use data from a rich and previously untapped database of comprehensive surveys of thousands of school staff in more than 1,200 schools from around the country.

Context

There are a myriad of problems and challenges facing public education and its stated goal of teaching every child to high standards. Educators and policymakers face a long list of issues that must be addressed, from funding to student discipline and from student learning standards to seemingly insurmountable achievement gaps. The major challenges that provide the context for this study include issues pertaining to the organization of schools and to the systems for supporting and enhancing teaching quality.

Many schools in America are not organized to advance student learning. In particular, many schools are not set up to advance goals that call for all students learning to high standards. Current school structures have been designed to work effectively as sorting mechanisms or to support a status quo in which some groups of students have greater access to learning than others. Our goals for public schooling have changed to embrace the concept of equity and high achievement for all students, and current school structures need to change to address the current goals (Borman, Hewes, Overman, & Brown, 2003). Current accountability systems have looked to hold schools responsible

for results, but insufficient attention has been paid to the question of how schools could be more effectively organized to support these results.

Current processes for enhancing teacher skill, knowledge, and effectiveness have yielded insufficient evidence of a positive impact on student learning. There is a large body of research on teacher preparation, selection, induction, and professional development, but there is no real consensus about the value any of these have in ensuring effective teaching or on models of delivery that ensure such effectiveness (Allen, 2005; Darling-Hammond, 2000; Harris & Sass, 2007; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007;). While ongoing professional development and learning is a core practice of schools, there is evidence that professional development, in its current most common forms, may not have the impact needed to actually improve student outcomes (Garet et al., 2008).

A primary focus of policy to improve teacher effectiveness has been on measuring, assessing, improving, rewarding, and/or punishing *individual* teachers. Little emphasis has been paid by policy makers to the need to improve overall *teaching* effectiveness via collaboration and professional learning communities. Evidence of individual teacher impact has led to proposed policy solutions such as pay-for-performance and the revamping of teacher evaluation based on individual teachers' impact on student performance. Yet, there is growing literature on the value of professional learning communities and team teaching (Vescio, Ross, & Adams, 2008), although empirical evidence on student impact is somewhat limited. This new literature broadens the focus beyond individual measures of teacher effect to improving the teachers' effectiveness by ensuring that teachers work and learn together and focus

together on student learning. Finding ways to significantly improve teacher practice could be a much more efficient way to boost student learning than transforming the teacher workforce by bringing in large numbers of talented new teachers.

Problem Statement

This research aims to shed light on three problems and challenges related to school improvement and PLC:

1. PLC is a poorly understood concept that has not been clearly articulated and has rarely been implemented in schools. Many schools have programs or processes labeled as a professional learning community, but often participants in these proclaimed PLCs do not have the commitment, effort, and understanding needed to create and sustain such a community in schools (DuFour, 2004). In fact, PLC is not a “program” for implementation. It is a concept that involves an array of conditions, processes and practices that can exist (or be absent) in schools regardless of whether the school is identified as having a “PLC.” DuFour (2007) notes:

It should surprise no one to learn that there are school faculties throughout North America that refer to themselves as professional learning communities (PLCs) but do none of the things that PLCs do. Conversely, there are faculties that could serve as model PLCs but may never reference the term. A school does not become a PLC by enrolling in a program, renaming existing practices, taking

a PLC pledge, or learning a secret PLC handshake. A school has a professional learning community only when its educators' practices align with PLC concepts. (p. 4).

2. There is insufficient information and evidence about the school conditions and climates that can best foster PLC. As shown in the Literature Review section of this study, there is a growing body of practice-based literature about the connections between school conditions and PLC but too little definitive research about the connections that might have the most significant impact.
3. There is insufficient evidence about the possible impact of PLC on schools and on student outcomes. Getting schools to make the types of structural and cultural changes that would foster PLC will be contingent on growing the body of evidence that such an effort would lead to improved student learning outcomes.

Research Framework

The conceptual framework for this research project is based on the connection between improving how schools are organized, growing professional learning community, and improving student learning. This research project will focus mainly on the potential effect of professional learning community, but it is embedded in a broader conceptual framework of school reform and school improvement.

Theoretical rationale.

The theoretical rationale addresses how PLC interacts within a school to effect change and meet the ultimate goal of improved student outcomes. Improving the teaching and learning process is central to improving a school and to improving student achievement. The quality of teaching is the factor most directly related to student achievement. It affects student learning more directly than any other component of school reform. Improving the quality of teaching will require new and more effective forms of professional learning and growth that will improve teacher knowledge and enhance teacher practice. Effective and continuous school improvement cannot exist without high quality teacher learning and engagement. “At its heart, *school improvement almost always calls for enhancing the knowledge, skills, and dispositions of teachers (and supporting staff)*” (Hawley & Sykes, 2007, p. 168, emphasis in original text). This connection between school reform, teacher development, and student learning is the core of PLC (Lieberman & Miller, 2007).

While PLC interacts with many ideas relating to school improvement, two primary concepts provide the foundation of the theoretical rationale. First, teaching quality effects student learning and teacher learning is a central driver of teaching quality. Second, improving schools requires new organizational structures that are collaborative and cooperative and focus on learning and improvement. Each of these concepts has its own extensive literature and research base, which will be very briefly outlined in the Literature Review. The theoretical rationale for professional learning community is based on an understanding the PLC is not a “program” to be “implemented” but rather a natural outgrowth of a school’s continuous efforts to improve (DuFour 2004, 2007).

The theoretical rationale for PLC starts with improving the organization of schools in ways that support teaching and learning. This school improvement process will, in theory, foster the organic growth of professional learning communities as teachers and other staff work collaboratively and learn together with a clear focus on improving student learning. The collaborative work of PLC enhances the skills and knowledge of teachers and improves teacher practice in a cycle of practice, reflection, and dialogue. Ultimately improved teacher practice increases student learning. This study doesn't explore all of the important connections in this theoretical rationale (for example the important links between PLC and teacher knowledge and practice is not directly addressed) but does look specifically the essential links between school conditions and PLC which addresses the theory that improving schools to support teaching and learning (school conditions) fosters PLC.

Concept map.

The concept map shows how elements in the school organization work together to create PLCs. It offers a picture of the school conditions that could support or inhibit PLC development. This concept map assumes that a professional learning community does not need to be an explicit program or process, even though efforts to explicitly design and implement PLCs are growing (Wei, Darling-Hammond, Andree, Richardson, & Orphanos 2009). This research project is based on the concept that professional learning communities exist in schools if certain conditions and practices are present, whether or not anyone formally identifies the presence of a PLC. PLC exists in schools when leadership, structure, climate, and teacher expertise are aligned toward a shared objective

of improving practice and enhancing student learning. Figure 2 shows the interaction in schools that can foster the existence of professional learning community.

In this concept, leadership, school structures, and teacher expertise all contribute to the presence of learning community in a school. The stronger the learning community, the more likely staff will be able to work together to enhance student learning. Rather than testing all of the research concepts, this research report will test several of the key elements of leadership, teacher characteristics, and school conditions.

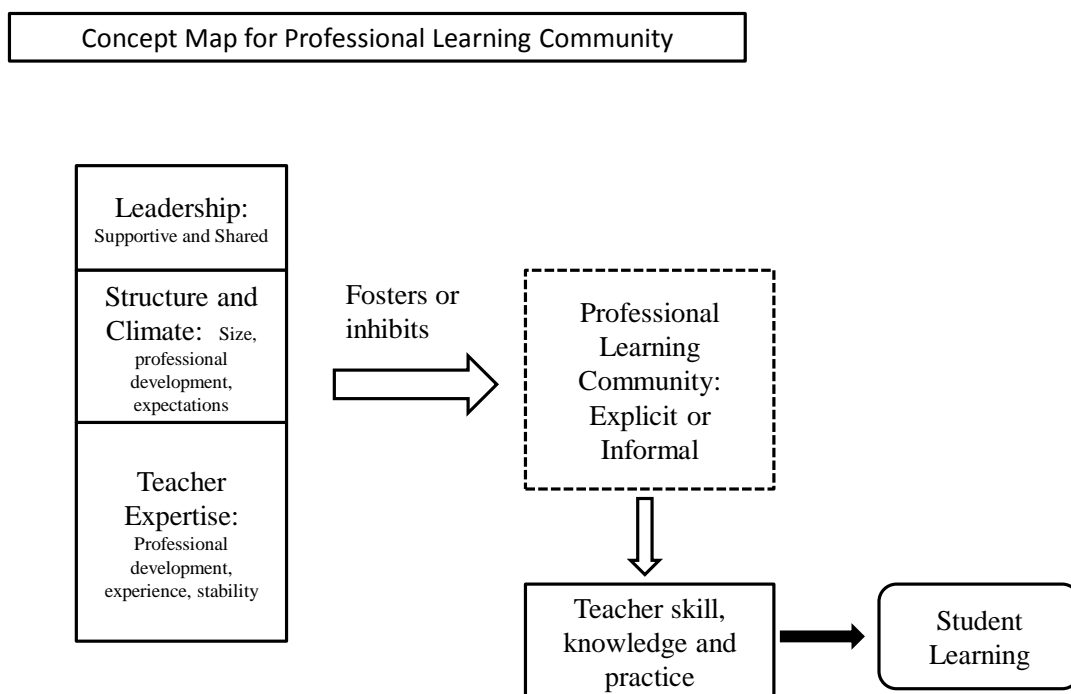


Figure 1

School Improvement, Teaching Quality, and PLC

The theoretical rationale and concept map outlined above argue that PLC is an essential element of continuous school improvement. This argument rests on three key assumptions. First, that improving the organization of schools to deliver educational service to students will result in improved student outcomes, even if outside of school factors remain constant. Second, that teachers are the key influence on student learning so schools will not improve without improving the quality of teaching. Third, that traditional forms of ensuring and improving teaching quality, such as teacher credentials and traditional professional development, have not sufficiently improved teaching quality. The following sections briefly outline the literature and research evidence supporting these assumptions. In particular, research on school improvement, teaching quality, and professional development are outlined and their connections to PLC as a key contributor are examined.

School improvement.

The PLC concept is embedded in a larger conceptual framework of reforming schools as learning organizations. The school as a learning organization is based on a broad definition of learning organizations as places where people expand their capacity to meet shared goals, where new thinking is supported and nurtured, and where continuous learning connects cognitive development with behavioral change (Cousins, 1998; Senge, 1995). Fullan (1995) asserted that schools are not yet learning organizations and teaching is not yet a learning profession. He outlined principles for organizational learning, such as continued capacity development, redesigned use of time, and new roles for teachers and school leaders. Several different but related ideas have developed,

founded on the principle of improving the organization of schools in order to improve outcomes for students. These ideas include “continuous school improvement,” “comprehensive school reform,” and “school restructuring.” The following summary of the literature addresses these theoretical concepts and briefly describes each.

Continuous school improvement is an organizational process and philosophy taken from research and practice outside education, mostly in business, and applied to schools. Literature on continuous school improvement outlines principles for school improvement that include; developing consensus on values, goals, standards, and assessments of student performance; continuously assessing student performance; engaging in collaborative evidence-based problem solving; and implementing promising practices (Hawley & Sykes, 2007). While continuous improvement has several definitions in the literature, extensive research by Mark Smylie (2009) identifies eight descriptive characteristics that are common to many definitions. Smylie characterizes continuous improvement as: regular and ongoing; oriented toward small incremental change; intentional and strategic; proactive as well as reactive; focused on the whole organization; inclusive of all organization members; oriented toward the organization’s mission and core values; and integral to an organization’s mission, identity, design, and basic function.

Smylie’s (2009) comprehensive literature review of continuous improvement in schools found that while there are few empirical studies of the outcomes of continuous improvement, the overall evidence is positive. In schools with the characteristics associated with continuous improvement, teachers’ views of their own practice were

substantially different than in schools identified as “learning impoverished” (Rosenholtz, 1989). Another study found that high performing and improving schools were more likely to exhibit properties and practices associated with continuous improvement (Smylie & Wenzel, 2003).

Comprehensive school reform (CSR) is based on program models that encompass virtually all aspects of school operation and organization, including instruction, assessment, classroom management, professional development, parental involvement, curriculum, and school management. The CSR concept gained significant momentum in schools and research following federal funding for design of programs in 1997 (Sterbinsky, Ross, & Redfield, 2006). While empirical evidence is limited, research has found some indications that CSR models can improve student outcomes (Borman et al., 2003; Sterbinsky et al., 2006).

School restructuring is a broad concept that addresses changes to pedagogy and school organization systems in order to improve student learning. Many types of school organizational change have been characterized as restructuring, including school choice programs, site-based management, teacher and student teaming, and multi-age student/teacher grouping (Newmann & Wehlage, 1995). In a study of restructuring high schools, Lee & Smith (1999) used data from the National Educational Longitudinal Study of 1988 to assess the impact of school restructuring. The authors found that student gains in achievement and engagement were significantly higher in schools that were undertaking restructuring efforts. Newmann & Wehlage (1995) also found promising results in their study of restructuring, and they concluded that “...restructuring offered no

panacea, but it advanced student learning when it concentrated on the intellectual quality of student work, when it built schoolwide organizational capacity to deliver authentic pedagogy, and when it received support from the external environment that was consistent with [school needs]” (p. 4).

In a recent study of school improvement based on a seven-year study of Chicago Public Schools, Byrk, Sebring, Allensworth, Luppescu, & Easton (2010) developed a framework of five supports for school improvement with professional community as a key aspect of one of those supports. The study concluded that improving the five supports systemically (school leadership, parent and community ties, professional capacity of the faculty and staff, a student-centered learning climate, and an instructional guidance system) lead to significant improvement in student learning. The study noted that professional development was most effective when combined with a supportive professional work environment, aligned curriculum, and effective leadership.

This literature provides some evidence that schools can improve when models of systemic reform are implemented, though significant challenges exist. In particular, these studies have clear implications for teacher learning and teacher practice. Fullan (2007) points to the necessary connection between schools as learning organizations, districts as learning systems, and teaching as a learning profession. The concept of teaching as a learning profession is the foundation for supporting efforts to promote teaching quality as outlined in the next section of this review.

Teacher and teaching quality.

The PLC conceptual framework has two key elements: (1) improving teaching quality is essential to improving student outcomes; and (2) teacher learning and development is essential to improving teaching quality. There is a strong and growing research base showing the direct and significant affect teachers have on student achievement and how that affect varies among teachers (Ladd, 2008). The question of how teachers affect students and how that affect can be maximized is still being debated in the policy and research communities. Research in this area includes studies that examine the overall effect of teachers on student achievement, studies that examine the affect of teacher qualifications and/or characteristics, and studies that examine the effects of professional development on teacher knowledge and practice.

Teacher effectiveness.

A growing body of research based on student achievement data from state tests linked directly to teachers – often referred to as “value-added” research – has provided compelling evidence that variation in teacher quality contributes significantly to variation in student achievement. A 2008 research synthesis by Helen Ladd concluded that there is convincing evidence that teachers matter for student achievement, although the precise contribution has not been established. However, Ladd also identifies several important limitations to the research using value-added and hierarchical linear modeling, including the fact that students are not randomly assigned to teachers.

Hanushek, Rivkin and various coauthors have conducted several studies on teacher effect using Texas data (Hanushek, 1996; Rivkin, Hanushek, & Kain, 2005). Hanushek, Kain, & Rivkin (1998) used a fixed effects, value-added framework to

investigate mathematics and reading achievement in grades four, five, and six. This quasi-experimental research design used data from the Texas Database, which includes data on demographic information about students and teachers along with state standardized test scores for every public school student, linked to individual teachers. The study sought to obtain estimates of differences in teacher contributions to student learning while eliminating possible contamination of other factors, such as student selection or teacher assignment. The study reported three primary findings.

- School quality and school differences are important factors for student achievement.
- Variations among teachers are the major determinant in school quality differences.
- Class size, teacher experience, and teacher education are only small factors in explaining differences in school quality.

Wright, Horn, & Sanders (1997) used data from the 1994 and 1995 TCAP tests given to all Tennessee students in grades two through eight. This research focused on achievement results of students in grade three through five in two Tennessee school systems. Using statistical mixed-model methodology, the research compares teacher effect on student achievement to class size, student previous achievement level, and intraclassroom heterogeneity. Using the Tennessee Value-Added Assessment System, this research attempted to make a direct connection to individual teacher effect on student achievement. The findings indicate that the teacher's impact and the prior achievement level for the student were the most important factors in student gains. The third most

important factor was the school system; class size was a notably insignificant factor. Another important finding was that intraclassroom heterogeneity is not an important predictor of academic growth of students. Sanders & Rivers (1996) research concluded that students of different ethnicities responded equally to teachers of various effectiveness levels, indicating a significant connection between teacher effectiveness and gains in student learning regardless of ethnicity.

The studies highlighted above are often cited as the seminal works in measuring teacher effect, but other research has reached similar conclusions. A study that examined teacher effects using data from the Tennessee class-size experiment (Nye, Konstantopoulos, & Hedges, 2004) concluded that teacher effects are real and consistent with those of other studies and that effects within a school are larger than effects across schools. Taken together, these studies provide convincing evidence that teachers matter for student achievement. At the same time, there remains significant debate about the stability of teacher affect, particularly in measuring the effects of individual teachers (Ladd, 2008). In addition, these studies, which use large data sets and value-added statistical modeling, do little to shed light on what makes teachers effective or how a teacher can become more effective.

Teacher qualifications and characteristics.

Traditionally, teacher characteristics such as state licensure, advanced degrees, and years of experience have been considered the primary indicators of teacher quality. However, until recently, there has been limited research on whether these characteristics have a measureable impact on teacher effectiveness. Given the significant policy and financial implications of measuring teacher quality based on these characteristics, it is

imperative to have more evidence of the impact. However, the research on the impact of teacher characteristics shows mixed results, and studies often come to conflicting conclusions.

Darling-Hammond (2000) examined the correlation between teacher qualifications and student achievement by using data from surveys of state policy, case study analyses of state policymaking, and quantitative examination of the distribution of state achievement scores and resources. The findings indicate a strong connection between students' outcomes in reading and math and teacher quality characteristics (certification status, degree in teaching field). Unlike most of the recent research on this topic, the Darling-Hammond study did not use data directly linking teachers with student achievement scores.

The most common characteristics studied include teacher experience, licensure status, and advanced degrees. A 2003 literature review by Rice and a 2008 literature review by Ladd both conclude that all three of those characteristics are shown to be positively related to student achievement. Ladd (2008) concludes that teacher characteristics are important predictors of student achievement but cautions that teachers with similar credentials exhibit substantial variation in their impact on achievement (p. 24). In addition to the impact of teacher experience, licensure status, and advanced degrees, Rice (2003) also finds strong evidence of impact from: attending a relatively selective teacher preparation program; coursework in subject area and pedagogy combined; and teachers' own test scores on literacy levels and verbal ability.

- *Teacher Experience:* Several studies have shown that teacher experience affects student achievement, at least during a teacher's first few years

(Ladd, 2008; Rice, 2003). Clotfelter, Ladd, & Vigdor (2007) used a North Carolina data set in a quasi-experimental design and concluded that teacher experience has a statistically significant affect on student achievement, with two-thirds of the effect occurring in the first few years of teaching.

- *Teacher Licensure:* Ladd (2008) found that nonregular licensure, such as lateral entry licensure, is negatively associated with student achievement relative to regular licensure and that the affect is greatest at the high school level. Rice (2003) concluded that there is strong empirical evidence showing a positive affect of licensure only in high school mathematics, and that effects at the elementary level are small or even negative.
- *Master's Degree:* Similar to the impact of licensure, Ladd (2008) found a master's degree to be a positive predictor of student achievement for high school teachers but, in contrast, a slightly negative predictor of student achievement for elementary school teachers who pursue a master's degree midway in their teaching career.

In a somewhat unique research approach, Boyd, Loeb, Wyckoff, Lanford, & Rockoff, (2008) examined the impact of efforts in New York City to narrow the teacher qualifications gap between poor and affluent schools. They found that improvements in teaching qualifications, especially among the poorest schools, resulted in improved student achievement.

In contrast to the somewhat positive findings of those studies, a recent study by Winters, Dixon, & Greene (2011) found virtually no predictive value in most of the teacher characteristics studied. This quasi-experimental study, which used a Florida state dataset, concluded that:

Similar to prior work, we find little to no relationship between observed teacher characteristics and student learning in math. A teacher earning a master's degree is unrelated to student proficiency, as are years of experience. A teacher's coursework in pedagogy outside of the math field is positively related to student achievement, while coursework in behavior and management as well as curriculum and assessment are negatively related to it. (p. 10)

Several prior studies using quasi-experimental designs found either no or negative effect of experience and masters degree on student achievement (Hanushek & Rivkin, 2006; Harris & Sass, 2007).

Research using data from New York City public schools (Rockoff, Jacob, Kane, & Staiger, 2008) suggests that teachers with "attractive" credentials (such as certification pathway, content knowledge, high SAT scores, and feeling of self-efficacy) show a statistically significant relationship to student outcomes on test scores, but only when characteristics are combined into two primary factors summarizing cognitive and non-cognitive teacher skills. These results, combined with the mixed results in measuring the value of teacher credentials, suggests that the primary levers for assuring teacher effectiveness may lie at least in part on determining and growing effectiveness once teachers enter the profession.

Professional development.

The primary vehicle schools have used to help teachers improve their practice has been traditional forms of professional development. These traditional forms of professional development consist mainly of workshops and trainings on relatively narrow instructional or curricula issues conducted over a relatively brief and finite period of time (Wei et al. 2009). The quality, value and impact of traditional professional development has long been questioned in the practice, policy, and research communities (McLaughlin & Talbert, 2006) and until recently there has been little empirical research on how professional development impacts teacher practice and student learning.

The quality and depth of professional development. Wei et al. (2009)

conducted research on conditions of professional development in the United States particularly compared to higher-achieving countries. These researchers used data from the 2003-04 Schools and Staffing Survey, the 2004-05 Met Life Teacher Survey and the National Staff Development Council's Standards Assessment Inventory to analyze a range of issues related to the availability, character, and quality of professional development. One of the findings from this research is that while most teachers participate regularly in professional development, it is unclear the extent to which teachers engage in the type of collaborative learning indicative of professional learning communities. For example, while 70% of teachers reported participating in collaborative activities with other teachers, fewer than 20% indicated that there was a "great deal" of collaboration or a concerted effort at collaboration.

When comparing US data to that of high achieving countries, Wei et al. (2009) concluded that the U.S. is significantly behind in providing professional learning such as observational visits to other classrooms, collaborative action research, and regularly scheduled collaboration among teachers on issues of instruction. “It appears that teachers in the United States are not provided with nearly as much opportunity and support to engage in this kind of job-embedded learning in professional communities as those in many other countries.” (p. 59).

The impact of professional development. Two recent studies examined the relationship between professional development, teacher practice, and student outcomes. Garet, Porter, Desimone, Birman, & Yoon (2001) used data collected as part of a national evaluation of a federally funded professional development program. According to the authors, this research represents the first large-scale empirical comparison of the effects of professional development on teachers’ learning and examines how both the structure and content of professional development can improve.

The study examined the relationship between features of professional development and change in teachers’ knowledge, skills, and classroom teaching practice. Researchers examined a growing body of research suggesting that “reform” type professional development, such as study groups or mentoring and coaching, may be more effective at increasing teacher knowledge and skill than “traditional” type professional development, such as workshops and trainings.

Overall, the research found a consistent and somewhat linear correlational relationship between the structural features of professional development and their impact

on teacher outcomes. In particular, the study found that reform type activities are longer in duration and have a slightly more positive effect on teacher knowledge and skills; that professional development is likely to be of higher quality if it is both sustained over time and involves substantial hours; and that enhanced knowledge and skills have a substantial positive influence on change in teacher practice. Another important finding was that although reform type activities showed some greater impact, most teachers still participate mainly in traditional professional development activities.

Garet et al. (2008) assessed the impact of professional development on both teacher instruction and student achievement. The study used a random design experiment to implement two variations of a comprehensive professional development intervention. Ninety (90) study schools with 270 teachers and about 5,500 students were involved in the study. Schools were randomly assigned to three categories: one received the professional development intervention, one received the professional development intervention plus additional coaching and the third was a control group that received no additional intervention. The study measured three potential intervention effects: teachers' knowledge about reading instruction; teachers' use of research-based instructional practices; and students' reading achievement.

Finding of this research project were interesting and not particularly positive. Teacher knowledge in both intervention groups showed statistically significant growth but teacher practice changed significantly in only one of three measured variables. Most significantly, there was no statistically significant difference in student outcomes as a result of these professional development interventions. Given the thorough nature of this

research project, which used randomized control experiments and multi-regression analysis, these results are particularly significant and when combined with the results from Garet et al. (2001), suggest that new forms for professional development, such as professional learning communities, could be more effective than traditional forms of professional development in both changing teacher practice and improving student outcomes.

These studies of professional development provide important evidence about the need to find new, more effective professional development strategies and the potential of certain types of professional development to improve teacher practice. These studies do not directly address PLCs and have limited evidence about how to use professional development to improve student learning. However, PLCs could provide new strategies for teacher learning and practice that will have a more direct impact on student learning, as will be further explored in the Literature Review.

Research Questions

The purpose of this investigation is to explore the presence, strength, and value of professional learning community in schools by creating a valid measure of PLC in schools and examining the relationship of PLC to a variety of school conditions. This research will use a rich and previously untapped source of information about schools from the Keys to Effective Schools (KEYS) program offered by the National Education Association. This school improvement tool has been developed over a 20-year period and is designed to help schools assess their strengths and weaknesses relative to a range

of school quality indicators. This is one of the first independent studies that will use the KEYS data as the primary source.

The primary research questions of this study are:

How do school conditions correlate with the presence of professional learning community in schools? Which school conditions have the strongest relationship to the presence of professional learning community in schools? To examine these questions, measures of PLC are developed using KEYS data based on the literature and research on defining PLC in schools.

A supplemental research question, examined in Appendix B of this study is:

How does the presence of a professional learning community in schools correlate with measures of student achievement?

These questions are designed to test the hypotheses that professional learning community can be fostered by increased understanding of the school conditions that support it, and that enhancing professional learning community can improve student learning. The analytic model for this study will examine:

- Six measurable school conditions, many of which can be changed or enhanced at the school level. These include Effectiveness and Supportiveness of School Leadership; Frequency and Focus of Professional Development; Teacher Empowerment; Teacher Experience; School Level; and School Size.

- Four key school demographic characteristics, including student race, free and reduced lunch, special education population and English as a second language population.
- These schools conditions will be correlated with three measures of professional learning community developed by conducting exploratory factor analysis using questions from the KEYS survey based on a strong body of existing research on defining PLC. The three measures of PLC are: Working Together Toward Shared and Ambitious Learning Goals; Conversations Focused on Teaching and Learning; and Public Practice.

Significance of Study

This study builds on several areas of research on PLC. First, it offers support and additional evidence on the school conditions which can foster PLC in schools. There is a limited but promising body of research suggesting that the climate, culture, and structure of schools can be enhanced in ways that will support the collaboration, leadership, and commitment needed to build and sustain PLC (Hord, 2004; Louis, Marks, & Kruse, 1996). Second, it builds on a relatively small body of research suggesting that strong PLC in schools increases student achievement in measurable ways (Louis & Marks, 1998; Vescio et al., 2008).

Given the variety of interpretations and definitions of PLC in both the research and practice community (DuFour, 2007; DuFour, DuFour, & Eaker, 2008) this study may help to understand how to define PLC and how to identify the processes, characteristics, and markers of strong PLC in schools. The measure of PLC developed

for this study could provide valuable insights for practitioners looking to grow and sustain PLC and to researchers looking to identify and study a phenomenon that has proven to be complex and elusive. In addition, this study could be significant to policy makers as they explore how to improve teacher and teaching quality in more effective and efficient ways, particularly given what is known about the limitations of traditional professional development for teachers and about the importance of teaching quality to student outcomes.

Chapter 2: Literature Review

This literature review provides an analysis of research on professional learning communities. It will examine the theoretical literature on PLC, which lays out the rationale for why PLC can be a viable and useful process for schools and teachers. It will then examine how PLC is defined and characterized in the literature, including the wide array of descriptors and the consensus found throughout the literature. Next, the review will examine the research on school conditions which foster or inhibit PLC. Finally, it will review existing evidence of PLC's impact on teacher practice and student learning.

Professional Learning Community

While there is no single definition of professional learning community, the fundamental idea of educators learning together toward common student learning objectives is prevalent throughout the literature. Applications of this principle include building community within a school and building community across schools in a discipline or field. For the purpose of this analysis, PLC refers to communities within a school. The bulk of the academic discourse on professional learning communities is either descriptive analysis of what professional learning communities are or implementation evaluations of how professional learning communities work in schools or districts. However, there have been a number of quantitative and mixed methods studies that have examined the relationship between PLCs, teacher practice, and student learning. Also, given the extensive writing about PLCs, there is a rich literature on the theoretical foundation for PLCs and how they fit into efforts to improve schools and learning. This research base, combined with research on separate components within PLCs, provides sources for assessing the potential impact of this educational strategy.

Several of the seminal studies on PLC have used data collected between 1991 and 1994 as part of the School Restructuring Study of the Center on Organization and Restructuring of Schools (CORS) (Kruse et al., 1994; Louis et al., 1996; Newmann & Wehlage, 1995). This data source includes surveys from over 900 teachers in 24 nationally selecting restructuring elementary, middle, and high schools. Researchers also relied on data from the National Educational Longitudinal Study of 1988, which included surveys of over 10,000 high school students in a nationally representative sample of over 800 high schools (Newmann & Wehlage, 1995).

Defining PLC.

There are many variations on the definition of PLC in schools. Hord's literature review on PLCs (1997) is perhaps the most frequently cited descriptive analysis of PLC in the literature. In this review, Hord defines PLC as, "a professional community of learners in which the teachers in a school and it's administrators continuously seek and share learning, and act on their learning." (p. 1). DuFour et al. (2008) offer the following definition: "Educators committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve better results for the students they serve. Professional learning communities operate under the assumption that the key to improved learning for students is continuous, job-embedded learning for educators." (p. 14).

Stoll, Bolam, McMahon, Wallace, & Thomas (2006) summarizing their review of the literature conclude, "There is broad international consensus that [PLC] suggests a group of people sharing and critically interrogating their practice in an on-going, reflective, collaborative, inclusive, learner-oriented, growth-promoting way." (p. 223). A

more recent study of professional development models describes PLC as, “[Teachers] engaging in continuous dialog and examination of their practice and student performance to develop and enact more effective instructional practices. In ongoing opportunities for collegial work, teachers have an opportunity to learn about, try out and reflect upon new practices in their specific context, sharing their individual knowledge and expertise” (Wei et al., 2009, p. 9).

Professional learning community can be found at grade levels, within departments, within a whole school, or sometimes between teachers across schools (McLaughlin & Talbert, 2006; Stoll et al., 2006). Most of the research on PLC identified for this review studies school wide professional community. Some studies review schools with programs or initiatives that are actually labeled a “Professional Learning Community” (Supovitz, 2002; Wood, 2007), while other research studies the presence of PLC based on the presence of the key characteristics of PLC in schools, regardless of whether the school has formally declared to have a “Professional Learning Community.” This research looks at school-wide PLC based on the presence of key characteristics within the school.

While each of these definitions offers some unique elements, there is a clear and consistent understanding of PLC in two key areas. First, PLC approaches professional development as both a collaborative process and one in which the learning is clearly acted upon. Second, PLC has a clear focus on changing and improving teacher practice directly toward an end of improved student outcomes.

History and foundation of PLC.

There is no definitive point of origin for the concept of PLC. The literature points to a variety of sources from which PLC has emerged. This emergence came about as school reformers were attempting to address at least three challenges to school improvement.

1. *How to best utilize human capital – teachers in particular – to lead school improvement efforts.* Most researchers of PLC point to both more recent and historical school improvement efforts that focused on human capital in schools as the primary locus of change. Hord (1997) identifies efforts beginning in the 1980's that brought teacher workforce factors into discussions of school and teacher quality. Stoll et al.(2006) go back even further to notions of inquiry, reflection and school evaluation offered as early as Dewey in 1929 and including research through the 1970s and 80s.
2. *How to reform professional development to improve its impact on teaching and learning.* Another foundational concept of the PLC is the effort to transform professional development to better meet the needs of teachers and students. As research on and teacher experience with traditional professional development showed significant limitations, new forms of continuous professional development that was more teacher driven began to emerge (Lieberman & Miller, 2007; Stoll, et al., 2006).

These new forms of professional development centered on being job-embedded, collaborative, and more focused on student learning needs within the context of specific schools (Wei et al., 2009).

3. *How to incorporate lessons from other fields, business in particular, to improve schools.* Finally, the PLC model grew from the theory rooted in business research and development of the learning organization and more specifically the school as a learning organization (Thompson, Gregg, & Niska, 2004). Perhaps the most frequently cited modern source for describing the learning organization is Senge's seminal work *The Fifth Discipline* (1990). The learning organization theory has since been applied to schools as a concept for organizing teaching and learning through a lens of continuous improvement (Fullan, 1995; Senge, 1995).

These school reform challenges led to a more concerted effort to organize schools and school staff (particularly teaching staff) into communities of learning working together to address common learning goals and school objectives. The actual term "PLC" appears to have emerged from those working within the profession and those supporting schools and gained popularity in the teacher practice community in the mid-1990's (Stoll et al., 2006). The most frequently cited and perhaps seminal works on PLC have been authored by practitioners and researchers such as Hord (1997) and Dufour & Eaker (1998).

Characteristics of PLC.

If, as argued in this report, PLC does not exist simply because it has been named and can in fact exist even when unnamed, it begs the question, how does a school know if it has a true PLC? As with the definition of PLC, the specific characteristics of PLC vary somewhat across the literature but there are more common themes than conflicting ones. The literature outlines a wide array of characteristics, attributes, preconditions, supports, and measures for PLC. While the literature tends to blend characteristics of PLC with supports for PLC, this research report attempts to make a clear distinction between the two and examine their relationship. As such, they are presented here as two distinct domains: The characteristics of PLC and the school supports for PLC.

As with the definition of PLC, the literature identifies no definitive list of characteristics or functions that would indicate the existence or effectiveness of PLC in schools. Little (2000) points out that there is no simple checklist or template that will ever adequately guide the construction of professional learning communities. But the central idea of the model is the existence of an architecture to school organizations that helps shape teachers' attitudes toward new pedagogies (Little, 2000). This central idea has led to significant consensus in the literature on at least five core elements, though with some variety in their labels and descriptors. The list below describes these characteristics of PLC identified in the thorough review of literature for this report starting with those most commonly cited. The titles in this report have in some cases been modified based on overlapping ideas and a table follows each with the exact title given by each researcher.

- *Shared norms and values.* Members of a PLC embrace student learning as the core purpose of the organization and as the professional responsibility of those working and teaching in it. Through language, action, common beliefs and values, members demonstrate a shared understanding and shared commitment to goals centered on high levels of student learning. Through both formal and informal mechanisms members of a PLC define norms and values that address both how educators will work to improve schools and the moral purpose and collective responsibility that defines why the work is so important.

Table 1: *Characteristic of PLC: Shared Norms and Values*

Shared Norms and Values	
Researcher	Label
DuFour et al. (2008)	Shared Mission, Vision, Values, and Goals
Hord (1997, 2004)	Shared Values and Vision
Louis et al. (1996)	Shared Norms and Values
McLaughlin & Talbert (2006)	Shared Language, Vision, and Standards for Practice
Newmann & Wehlage (1995)	Clear shared purpose for all students' learning
Stoll et al. (2006)	Shared Values and Vision

According to a research analysis (Newmann, 2007) schools where teachers demonstrate a shared understanding of and commitment to an intellectual mission show enhanced student performance and less disparities in student achievement scores. This common mission is often organized around high expectations for all

students, academic press to encourage students to work hard, and different instructional approaches to meet student needs. (Ancess, 2003; Lee, Smith, Perry, & Smylie, 1999)

- *Reflective dialogue and collective inquiry.* Teachers engage in in-depth dialogue about teaching and learning that leads to a deeper understanding of the instructional process. This conversation and inquiry may focus on academic, curricular, and instructional concerns as well as issues of student development and progress. Reflective and collective dialogue fosters an honest assessment of student progress and builds shared knowledge among teachers about how to meet student needs. This practice includes a collective examination of students' work to build knowledge and improve practice and allows teachers to critique their individual and collective performance. Hord (1997) had an interpretation of the phenomena of reflective dialogue and collective inquiry identified as "Collective Creativity."

Table 2: *Characteristic of PLC: Reflective Dialogue and Collective Inquiry*

Reflective Dialogue and Collective Inquiry	
Researcher	Label
Bryk, Camburn, & Louis (1999)	Reflective Dialogue about Instructional Practices and Student Learning
DuFour et al. (2008)	Collective Inquiry into Best Practice and Current Reality
Hord (1997)	Collective Creativity
Louis, et al. (1996)	Reflective Dialogue
Stoll et al. (2006)	Reflective professional inquiry

- *Collective focus on student learning.* Fueled by the belief that all students can learn, PLC members have a mutual obligation and mutual accountability to student outcomes. Professional actions focus on choices that affect student opportunity to learn and that give maximum benefit to students. Resources, strategies, and activities that don't directly support student learning are challenged and eliminated if necessary (Louis et al., 1996; Newmann & Wehlage, 1995; Stoll et al., 2006)

Table 3: *Characteristic of PLC: Collective Focus on Student Learning*

Collective Focus on Student Learning	
Researcher	Label
DuFour et al. (2008)	Collaborative Culture with a focus on Student Learning
Hord (1997)	Collective Responsibility for Student Learning
Louis et al. (1996)	Collective Focus on Student Learning
Stoll et al. (2006)	Collective Responsibility

- *Collaboration.* A systemic process of teachers working together that moves beyond dialogue or superficial activity and aims to produce materials, ideas, and resources that improve instruction, curriculum, and assessment for students. This collaboration aims to analyze and impact professional practice in order to improve results for students, teachers, and schools (DuFour et al., 2008; Louis et al., 1996; Newmann & Wehlage, 1995; Stoll et al., 2006).

Table 4: *Characteristic of PLC: Collaboration*

Collaboration	
Researcher	Label
Bryk et al. (1999)	Peer Collaboration
DuFour et al. (2008)	Collaborative Culture with a focus on Student Learning
Louis et al. (1996)	Collaboration
McLaughlin & Talbert (2006)	Collegial Relationships
Newmann and Wehlage (1995)	Engage in collaborative activity to achieve the purpose

- De-privatization of practice.* Teachers move out of their individual classrooms to share, observe, and discuss each other's methods and philosophies (Hord, 1997). Formal and informal roles are developed with peer coaching relationships, team teaching, and structured observations among the strategies used to improve classroom practice and build collegial relationships. Teachers come to know each other's strengths and obtain expert advice from colleagues (Louis et al., 1996).

Table 5: *Characteristic of PLC: De-Privatization of Practice*

De-Privatization of Practice	
Researcher	Label
Bryk et al. (1999)	De-privatization of practice
Hord (1997)	Shared Personal Practice
Louis et al. (1996)	Deprivatized Practice
McLaughlin & Talbert (2006)	Collegial Relationships

The five characteristics of PLC outlined above represent a broad consensus across the research and literature. There are additional characteristics of PLC described by some researchers that are not repeated across the literature and thus haven't been included in the characteristics with broad consensus. Dufour et al. (2008) identified the following characteristics:

- *Action Orientation: Learn by Doing.* Commitment to action-orientated learning that seeks to apply knowledge directly and immediately in the actual contexts of schools and teacher practice.
- *A Results orientation* using ongoing assessment to determine impact and assessing success based on results not process.
- *Continuous improvement and learning.* A commitment to continuous improvement as evidenced by systemic processes of study, innovation and experimentation to improve student outcomes. It should be noted that while other research did not identify continuous improvement as a characteristic of PLC, the construct of continuous school improvement has been cited as both a foundation that could serve as a pre-condition to PLC (Lieberman & Miller, 2007; Smylie, 2009) and as a school condition which supports PLC, as will be described below (Newmann & Wehlage, 1995).

In their review, Stoll et al. (2006) describe one element of PLC as promoting group, as well as individual, learning. This concept is similar to the continuous improvement and learning idea described above with the added dimension of group learning as a necessary element. These researchers also identify mutual trust, respect,

and support among staff members. Issues of trust and respect, while not often cited as a key characteristic of PLC, have been identified as essential elements in building collaboration and cooperation which are necessary to sustain the work of PLC (Bolam, et al., 2005; Bryk & Schneider, 2003). Finally, Stoll et al. (2006) identified inclusive membership – meaning all staff in the school, and establishing networks and partnerships beyond the school and key characteristics of PLC.

The array of descriptors and labels defining PLC could lead to concluding that there is no clear and universal basis for identifying, building or sustaining PLC in schools. This could be a contributor to some expressed skepticism about the efficacy of the PLC model (DuFour, 2007). However, it should be noted that PLC represents the alignment and coordination of several key school improvement concepts each of which has a research body indicating its potential impact. Studying how these related ideas and actions could interact to benefit students and school staff will provide valuable insight in restructuring schools to improve student outcomes.

For the purposes of this study, PLC is defined and measured based on both the relevant research and analysis of data for this project (as outlined in Chapter 3). PLC is present in a school not necessarily if there is a defined program or process called PLC but if there are measurable school characteristics including: whether teachers are working together toward common learning objectives; whether teacher discussions or dialogue are focused toward improving learning; and whether teachers share practice by spending time in other teachers' classrooms.

The impact of school conditions on PLC.

Several researchers have examined how school structural conditions and resources can support and foster professional learning community in schools. This connection – that school conditions can either foster or inhibit PLC - is a key element of the theoretical rationale and research focus of this dissertation study.

Using a combined quantitative/qualitative design, Louis et al. (1996) sought to explain the between school variation in professional community as a function of school conditions, resources, and contextual features (teacher experience and gender). The researchers conducted a quantitative analysis of surveys from over 900 teachers in 24 schools and studied the relationship between professional community and the following school conditions:

- Structural conditions including school size, staffing complexity, scheduled planning time, and teacher empowerment;
- Human and social resources including supportive principal, high innovation, respect, feedback from colleagues and parents, and staff development;
- School cultural context including school level (elementary, middle, high) and gender diversity (% female).

Their research found that supportive leadership, the respect teachers received, the school's openness to innovation, and professional development explained much of the between school variance in the presence of PLC. Their analysis also suggested that elementary schools have stronger professional community than middle or high schools

while the size of the school itself had no statistical significance. Additional conditions such as scheduled planning time and more simplified staffing patterns were also statistically significant contributors to PLC. Other literature on PLC has identified schools conditions, which might foster professional community though Louis et al. is one of the few empirical studies found in this review of the literature and most closely resembles the structure and measures developed for this research dissertation.

Newmann & Wehlage's (1995) study of professional learning community and student achievement included case study analysis of school conditions and identified the quality of school leadership as a critical support for PLC. Leaders in these schools emphasize a clear mission for the school, hire staff that will teach toward the mission, and stimulate professional discussion among staff.

In addition, Newmann & Wehlage (1995) identified three key structural conditions supporting PLC. 1) interdependent work structure in which groups, rather than individuals, are seen as responsible for school and student outcomes; 2) small school size which makes it easier to build trust and shared purpose; and 3) school-based authority and teachers' influence for curriculum, school policies, hiring, and budget. More recent studies have questioned the necessity for small school size as a necessary component of professional learning community (Wei et al., 2009).

Bryk et al. (1999) used data from a large urban school district to test the impact of structural, human and social conditions in schools on the emergence of professional community. While the study looked only at elementary schools, it found that social trust among faculty members was the strongest facilitator of PLC. In addition, small school

size and principal supervision and leadership were positively related to professional community. A subsequent related study by Bryk et al. (2010) measured professional community as an element within a larger context of school improvement. Among its findings were that, “high quality professional development in the context of a supportive professional community and where teachers were oriented toward improvement appears powerfully related to gains in academic productivity.” (p. 113).

Kruse and Louis’ book on building strong school culture (2009) places professional community at the center of a school culture that also includes organizational learning and trust. The authors conclude that professional community “requires that teachers have a protected environment in which they can honestly and openly discuss their practice, and a place in which small failures are acceptable, and conversations focus on what teachers are doing to ensure that all students are learning” (p. 31).

Hord’s (1997) description of supportive conditions for PLC include 1) physical conditions, such as time, resources, and autonomy and 2) people capacities such as respect and openness to innovation. Building on Hord’s earlier work, Huffman & Hipp (2003) documented a five-year research effort to build a foundation for measuring, supporting and sustaining PLC in schools. Working in 12 schools, these researchers conducted case studies and developed a comprehensive Professional Learning Community Assessment to measure the presence of PLC in schools based on five PLC characteristics developed by Hord (1997). The researchers concluded that strong leadership is a major supporter of PLC. Supportive conditions that included trusting

relationships, adequate resources (time, money, and people), and communication systems were essential to implementing and sustaining PLC in the study schools.

The following list summarizes the supports for PLC identified in the review of literature.

Table 6: *Supports for Professional Learning Community*

Support for PLC	Researchers
Supportive leadership	Hord (1997 & 2004); Huffman & Hipp (2003); Newmann & Wehlage (1995).
Scheduled planning time	Louis, Marks, & Kruse (1996)
Focused Professional Development	Louis, Marks, & Kruse (1996); Sterbinsky et al. (2006)
Small School Size	Bryk et al. (1999); Newmann & Wehlage (1995)
Staffing Complexity	Bryk et al. (1999); Louis, Marks, & Kruse (1996)
Teacher Influence and Empowerment and Shared Authority	Louis et al. (1996); Newmann (2007); Newmann & Wehlage (1995); Vescio et al. (2008)
Openness to Innovation	Louis et al. (1996)
Respect	Louis et al. (1996)
Feedback on instructional performance	Louis et al. (1996)
Trust	Bryk et al. (1999)

Though there are multiple school conditions identified to support professional community, supportive leadership, professional development, and teacher empowerment are most often cited. The literature on the value of school leadership is considerable and

there is also a growing research base on the impact of school leadership on student achievement (Walters, Marzano, & McNulty, 2003; Witziers, Bosker, & Kruger, 2003). The literature on PLC frequently cites in importance of effective and supportive school leadership. A mixed methods study of six middle schools (Thompson et al., 2004) found that when principals focused on issues such as collaboration and shared vision, it increased teachers' sense of professional community. Prestine (1993) suggests that principals with the ability to share authority, facilitate the work of staff, and participate without dominating will foster PLC in their schools.

Wei et al. (2009) draws a contrast between formal professional development provided through structured events (such as courses, workshops, conference, and school visits) and the job-embedded and collaborative teacher learning that characterizes professional learning community. The authors conclude that both formal and job-embedded professional learning can contribute to changing teacher practice and enhancing student learning. They describe forms of professional development particularly effective for learning communities to include peer observation of practice, analyzing student work and data, and developing study groups.

Stoll et al. (2006) asserted that professional development opportunities which emphasize both developing knowledge and skills in teaching strategies and the professionalization of teachers' work are necessary to building professional community. In addition, professional development that is driven by the needs of teachers and focussed on student learning within the school, has a direct impact on changing teacher practice (Vescio et al., 2008). Finally, staff development that enhances technical skills consistent

with a school's mission for high quality learning helps build both individual and collective knowledge needed to foster the collaborative work of PLCs (Newmann & Wehlage, 1995).

Professional communities are more likely to thrive in schools with flexible governance arrangements, such as site-based management and school-based decision making that increases teachers' influence over school policy and practice, rather than bureaucratic centralization (Louis, Marks, & Kruse, 1996; Newmann & Wehlage, 1995; Sykes, 1990). Vescio et al. (2008) found evidence in their research review that the ability of teachers to make decisions regarding both the processes of their learning communities and aspects of school government contributes to the success of learning community and positively effects teacher practice.

The impact of PLC on teacher practice and student outcomes.

The theoretical rationale for PLC centers on the idea that effective professional learning community in schools will increase teacher capacity, change teacher practice and enhance student learning (DuFour et al., 2008; McLaughlin & Talbert, 2006).

Understanding how PLC works and demonstrating that it can ultimately improve student outcomes is essential if this model is to become a useful one for improving schools. Yet, as previously explained, most of the literature on PLC is theoretical or explanatory and there is an insufficient literature base providing clear evidence on the impact of PLC.

Fortunately, there have been a number of empirical studies and comprehensive reviews which provide a solid foundation of promising results on the impact of professional learning community. There are few empirical studies found in the literature to examine

the impact of PLC on both teacher practice and student achievement. The most extensive study identified for this review (Louis & Mark, 1998) examined the impact of PLC on both teacher practice and student learning. Given the unique nature of the this study, it is described in detail below.

Louis & Marks (1998) conducted a multiple methods study of 24 urban schools to assess the affect of professional learning communities. The study used survey data from teachers and students, classroom observational data, data from student assessments, samples of student work, and in-depth case studies. The study aimed to document the linkages between professional community, classroom organization for teaching and learning, and student performance. In particular, the research addressed the following questions: (1) to what extent does professional community influence the social and technical organization of the classroom? and, (2) what is the relative affect of school professional community and classroom social and technical organization on student acheivement? Technical organization is defined by authentic pedagogy and social organization by social support for achievement.

Researchers used the following components as the measure of a professional learning community: shared sense of purpose, a collective focus on student learning, collaborative activity, deprivatized practice, and reflective dialogue. The next level of analysis was social support for achievement and authenic pedagogy in the classroom. Authentic pedagogy was measured by combining teachers' scores on observed classroom instruction and assessment tasks. Support for achievement was measured by classroom observational data and student survey responses. The study used a measure of authentic

student achievement based on the performance dimensions of analysis, disciplinary concepts, and elaborated written communications. The authors argued that standardized tests are not a reliable measure of student learning and that the authentic achievement measure was a better way to assess students' higher order skills.

The study concluded that where schools achieve professional community, social support for achievement in the classroom is higher as is the quality of classroom pedagogy. Also, in schools with professional community, students achieved at high levels, though this finding was partly explained by the level of authentic pedagogy in classrooms within the school. While the authors point out that the nonrepresentative and small sample of schools limits the generalizability of their findings, they also note that the limited variation in the major variables may have understated the true extent of the findings. Notably, the study also found that middle and high schools were far less likely to develop professional communities, though a qualitative analysis of one high school with a strong presence of professional community suggests that there are ways to achieve professional community in those environments.

Impact on teacher practice.

Since the work of a PLC centers on how teachers' learn and interact, it would stand to reason that the most immediate and measureable impact of PLC would be on teacher practice. The research largely supports this assumption though most studies cite the need for more empirical evidence. Hord's (1997) review of literature concludes that professional learning communities have demonstrated the ability to change teacher practice and enhance student learning. Hord outlined benefits for teachers that included

reduced isolation, increased commitment to the mission and goals of the school, along with more satisfaction, higher morale and lower rates of absenteeism. Unfortunately, Hord offers little empirical data to support these conclusions and often cites research on one or more of the concepts related to PLC (such as collaboration) that are not studying the overall effects of PLC.

Vescio et al.'s (2008) review of 11 empirical studies on PLC found evidence of their impact on both teacher practice and school culture in four of those studies (noting that the other seven alluded to changes in teacher practice but with no documentation or detail). Among the findings were that teachers became more student-centered in their practice; developed a more strategic focus in their instruction; focused more on higher order thinking; and developed stronger, more instructional norms.

Seashore, Anderson, & Riedel (2003) examined the impact of professional community (among other measures) on how often and broadly a teacher reported integrating arts into his or her teaching. Using structural equation modeling, the results showed an indirect impact of professional community on arts integration with a primary impact on the levels of interdisciplinary teaming. Notably, the authors conclude that "Our analysis suggests that professional community has a role to play in changing classroom practice, but its effects are less than those suggested by some previous studies" (Seashore et al., 2003, page 12).

Impact on student outcomes.

The ultimate test of any school reform effort is its impact on student learning. Given this imperative, research on the relationship between PLC and student achievement

is particularly important though more challenging to conduct. Given that there are at least two mediating factors between PLC and achievement (increased teacher knowledge and changed teacher practice), estimating the effects of PLC is difficult and there are a limited number of studies that have attempted to make this connection.

In a literature review conducted by Vescio et al. (2008) only eight studies were identified that used empirical data to link PLC to student outcomes, though the results were encouraging. These authors concluded: “Although few in number, the collective results...offer an unequivocal answer to the question about whether the literature supports the assumption that student learning increases when teachers participate in PLCs. The answer is a resounding and encouraging yes.” (Vescio et al., 2008, p. 87). Findings for this review included that student achievement gains varied with the strength of the PLC and that a persistent focus on student learning and achievement by teachers in learning communities is a key to increased achievement. A literature review by Hord (1997) found similar results concluding that PLCs decreased drop-out rate; are associated with larger academic gains in math, science, history, and reading than in traditional schools; and that smaller achievement gaps between students from different backgrounds exist in schools with PLC.

Other studies offer additional evidence on the impact of PLCs. Newmann & Wehlage (1995) conducted a study of school restructuring that examined the affect of professional learning communities as a key component of restructuring. The theoretical frame of the study is that student learning is nested in authentic pedagogy, which is nested in school organizational capacity (of which professional learning community is a

key part), which is nested in external supports. This research examined data and evidence from four primary sources: the School Restructuring Survey (SRS), the National Educational Longitudinal Study of 1988 (NELS), the Study of Chicago School Reform, and the Longitudinal Study of School Restructuring.

Researchers concluded that the level of professional community in a school had significant affect on student achievement. As with Louis & Marks (1998), these researchers used measures of authentic student achievement from the same 24 schools participating in the SRS study. However, they also analyzed data from the NELS study of over 800 high schools which used more traditional measures of academic achievement such as state standardized tests. Both sets of data affirmed a connection between professional community and student achievement. For example, learning was greater in mathematics, science, reading, and history in schools that reported higher levels of collective responsibility – a key criterion of professional community. The findings also indicate that professional learning communities make academic gains more equitable among socioeconomic groups.

Supovitz (2002) conducted a study of team-based schooling that was implemented in the Cincinnati Public Schools. The fundamental elements of Cincinnati's team-based schooling – collaboration, shared decision-making and student-focused school culture – align with the concept of PLC (in fact, this study was often cited in the other PLC literature). The research used data from the Consortium for Public Research in Education's evaluation, which included an annual survey, interviews with educators and administrators, site-visits, program artifacts, and student test results. The research aimed

to answer the following questions: Did teaming influence the culture within which teams operate? Did teaming change teachers' instructional practice? Did teaming improve student learning, as measured by standardized test performance?

The results of this study found that team-based schooling had clear effects on school culture. Teachers in team-based schools scored higher in three of five measures of school culture than their peers in other schools. However, there was little evidence that teacher practice changed in team-based schools with the exception of small differences for teachers in middle and high schools. Significantly, only about a quarter of teams across the district were frequently practicing core dimensions of group practice. Also, there was no clear pattern of statistically significant difference in student achievement between team-based and non-team-based schools. However, a deeper analysis revealed that students on teams with higher use of group instructional practices performed better than did students on teams with low levels of these same practices. This supports evidence from other research that the quality and depth of the PLC is an important indicator of its potential impact.

Research Limitations and Challenges

There are significant limitations to the research on professional learning communities, as it relates to having a clear and universally accepted understanding of what defines PLC and what conditions foster PLC; how PLC affects teacher practice and school cultures; and ultimately whether PLC has a direct relationship to student outcomes. The strongest element of the research base seems to be in the theoretical framing. Professional learning communities builds on strong evidence of teacher effect,

high-quality professional development, school reform, and leadership. Bringing these elements together in the PLC provides a compelling case for improving teacher practice and impacting student learning. However, the evidence seems inconclusive that implementing formal (or even informal) PLCs in schools will significantly change teacher practice and ultimately improve student achievement. There is some evidence that the quality and depth of PLCs matters and this brings up challenging issues about educational policy and sustainability.

This review of literature reveals both a great deal of promise and support for PLCs in the academic and professional development community and substantial challenges in the research base. The evidence that PLCs excite and engage teachers is growing. The evidence that they are effective tools for improving student learning and closing academic achievement gaps is incomplete. Whether PLC is another reform fad with little real impact on improving schools or a valuable tool for helping teachers increase student learning is still an open question. Given the time, energy, and attention paid to the PLC agenda, this is an important question for educators and policymakers to answer. This research project will explore how the presence of PLCs relates to a range of school conditions and student learning and could contribute to helping both policy and research address this important issue.

Summary

A brief review of the literature on school improvement provides some evidence that schools can improve when models of systemic reform are implemented, though significant challenges exist. The literature also revealed that school improvement efforts

are inextricably tied to improving the quality of teachers and the practice of teaching. Literature on teacher effectiveness indicates a strong consensus that teacher and teaching quality significantly affects student achievement. However, there seems to be little consensus on whether certain teacher characteristics or credentials are indicators of quality related to improved student outcomes. Moreover, literature on professional development indicates that traditional forms of professional development (workshops and seminars of limited duration) are more regularly implemented in American schools but may not be effective in either changing teacher practice or improving student outcomes.

As indicated in the literature, PLC is a complex concept with numerous definitions and characterizations leading to challenges in implementing the concept with consistency and fidelity in schools. However, there were at least five characteristics of PLC identified consistently throughout the literature: shared norms and values; reflective dialogue and collective inquiry; collective focus on student learning; collaboration; and de-privatized practice. These characteristics help to define PLC as a collaborative form of professional learning in which the learning is clearly acted upon toward a shared goal of improved student outcomes.

Literature on school conditions that support PLC has identified numerous conditions, with supportive leadership, teacher empowerment, and professional development most commonly identified. Finally, while the research base is not large, the evidence on the results of implementing PLC in schools is promising. PLC has shown to improve teacher skill and knowledge and to improve student learning.

Chapter 3: Methodology

The theoretical rationale outlined in Chapter 1 describes the hypotheses that the existence of a PLC is the product of school efforts to improve by offering supportive school conditions and that the result of PLC will be improved student learning. If these hypotheses are correct then supportive school conditions will correlate with strong PLC. To test this hypothesis, questions were identified in the Keys for Effective Schools Survey (KEYS) that aligned to PLC themes described in the literature. These questions were used to conduct an exploratory factor analysis, which led to the creation of three key variables for measuring PLC in schools.

Following identification of the variables, two analyses related to PLC were designed and conducted. The primary analysis for this research uses multiple linear regressions to explore the relationship between school conditions and Professional Learning Community (PLC). A separate secondary analysis was conducted using logistic regression to explore the relationship between PLC and student achievement (see Appendix B). Using multiple linear regression models allow for the testing of a set of variables to assess their individual and combined contribution to an explanation of the variation in the dependent variable (Ho, O'Farrell, Hone, & You, 2006). Using logistic regression models allow for a similar test but are best used when the dependent variable is dichotomous (Ho et al., 2006).

Analytical Framework

Figure 2 depicts the analytic framework, Grouped on the left side of the figure are a set of factors differentiating schools: supportive leadership; frequent and focused

professional development; school size; school level; teacher experience; teacher stability; and teacher empowerment. These factors are structural or climate conditions that in theory may impede or facilitate professional learning community. Three additional student demographic factors are included as additional predictors: racial composition; English as a second language population; and special education population. These factors will serve as the predictor variables to PLC in this analysis.

The center of the framework is Professional Learning Community as defined by three distinct variables: Working Together Toward Shared and Ambitious Learning Goals (Working Together); Conversations Focused of Teaching and Learning (Conversations); and Public Practice. These are the variables of primary interest for this study and will serve as dependent variables to the school conditions grouped to the left in the framework. The same variables will then serve as predictor variables to measures of student achievement, which is identified at the right of the framework, in the secondary analysis of this study (see Appendix B).

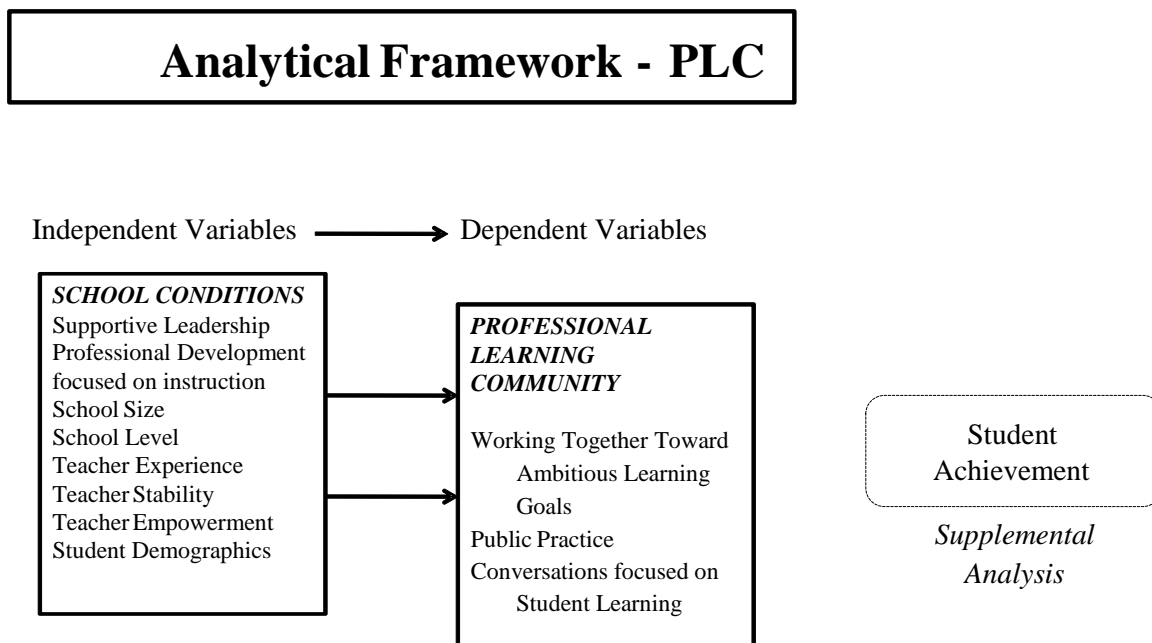


Figure 2

The Data: NEA KEYS Survey Database

Data for this research will come primarily from the Keys to Excellence in Your Schools (KEYS) database. This program, sponsored by the National Education Association, is an extensive self-administered survey of school staff and parents to identify the conditions in their school that research has shown influence teaching and learning (National Education Association, 2003). The KEYS survey process measures 42 indicators of school quality and provides schools with comprehensive feedback on their strengths and weaknesses within these indicators. The primary purpose of the KEYS

survey instrument is to give schools meaningful information and baseline data to develop and implement school reform and improvement initiatives.

The 42 indicators of school quality are grouped into six categories and schools participating in the survey receive data on these six categories. The categories are:

- Shared Understanding and Commitment to High Goals
- Open Communication and Collaborative Problem Solving
- Continuous Assessment for Teaching and Learning
- Personal and Professional Learning
- Resources to Support Teaching and Learning
- Curriculum and Instruction

School reports offer information about how the respondents rated the school on each category and each indicator within the category. These results are also compared to other schools based on the average score as well as the 90th percentile score of all schools in the KEYS database.

Over the course of about 15 years, over 70,000 respondents in over 1,800 schools have taken the survey. This comprehensive survey includes 206 total questions that include both demographic data about schools, teachers, and students as well as staff perception on a wide range of practices and concepts in the school. KEYS surveys all school staff in the building and requires that at least 80% respond to the survey before results can be generated. There are additional voluntary surveys of parents and community members, however, this research will analyze only surveys of school staff. In

addition to the staff survey, each school completes an administrative survey, usually completed by the school principal. This survey includes school demographic information, such as school size and student demographics. Data from both the KEYS Staff Survey and administrative survey will be used for this research.

The sub-set of data used for this research includes survey data from 1,239 schools that participated in the KEYS project between April 2001 and July 2010 (the actual number of schools in the study sample fluctuates from 1,026 to 1,048 once missing data are accounted for). In schools administering the KEYS survey on more than one occasion, only the most recent results are included. These 1,239 schools represent 66,227 individual staff surveys. Generally, schools self-selected participation in the KEYS survey based on their interest to pursue school improvement and on the encouragement and support of the local teachers association, which is the primary sponsor of KEYS. In some instances, entire school districts chose to participate in KEYS. Given the voluntary nature of this process, it cannot be determined that these schools are a representative sample of schools across the United States. Data from the KEYS Administrative Survey, however, does provide evidence of a broad diversity of participating schools that are in many ways similar to the overall population of schools in the US.

Schools from across the United States participated in the KEYS survey. Schools from 39 states conducted the survey with the largest numbers of schools coming from Illinois (179), Michigan (129), and Washington (118). Other states with at least 2 schools participating include Arkansas, Arizona, California, Connecticut, Georgia, Hawaii, Iowa, Idaho, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maryland,

Minnesota, Mississippi, Missouri, Mississippi, North Carolina, North Dakota, Nebraska, New Jersey, New Mexico, Nevada, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin and Wyoming. Data from the KEYS schools and comparative data from US schools are outlined in the tables 7, 8, and 9 below.

Table 7: *Comparison of KEYS and US Schools by school level*

School Level	KEYS Schools¹	All US Schools
Elementary	65.1%	62%
Middle or Junior High	19.7%	17%
Senior High	15.2%	21%

(U.S. Department of Education, 2011)

Table 8: *Comparison of KEYS and US Schools by geographic location*

Locale	KEYS SCHOOLS	Locale	All US Schools
Large City	26.4%	City	25.5%
Small City	20%		
Suburb of large city	27.7%	Suburb	33.2%
Town	10.3%	Town	9.5%
Rural area	14.8%	Rural	31.2%

(Hoffman, 2007)

¹ Schools identified as “Combination” or “Other” not included.

Table 9: *Profile of KEYS Schools by socio-economic status*

Socio-economic status of parents served by school	KEYS School
High Income	.9%
Upper Middle Income	6.5%
Middle Income	25.7%
Lower Middle Income	29.4%
Low Income	37.4%

Corresponding national data on income of parents could not be located for comparison. However, data does indicate that on average 50% of students in schools surveyed by KEYS receive free or reduced price lunch compared to a national average of 42% of students on free or reduced price lunch (Hoffman, 2007). These data indicate that other than a possible under-representation of rural schools, KEYS schools are similar to US schools in several demographic measures.

As the school is the unit of analysis for this study, all individual staff surveys have been aggregated to school wide average scores on each of the KEYS questions used for this analysis.

Defining and Creating PLC Variables

Creating the variables for PLC was a significant step in this study. The KEYS survey was not created with a measure for PLC and accurately identifying the presence of PLC through the KEYS survey was a necessary precondition to a successful study. The

first step in the process was a careful review of every one of the 204 KEYS questions and selecting all questions which may have a relationship to one of the five primary characteristics of PLC as outlined in the Literature Review for this report. The objective was to identify a set of variables that are valid on at least two levels. The variable must have strong face validity – that the questions can reasonably be associated with the PLC measure as defined in the Literature Review. The variables must have strong construct validity – that the questions are empirically connected to the same measure. The six Keys to Effective Schools measured by the KEYS survey have many parallels to PLC so there were many relevant questions to explore. The initial search identified 22 questions that align to one or more of the five characteristics of PLC and that have strong face validity. Table 10 outlines this initial set of questions.

Table 10: *Initial identification of KEYS questions corresponding to measures of PLC*

Indicator of Professional Learning Community	Corresponding KEYS Questions
<p>Shared norms and values</p> <p>(DuFour et al., 2008; Hord, 1997 & 2004; McLaughlin & Talbert, 2006; Newmann & Wehlage, 1995; Louis et al., 1996; Stoll et al., 2006)</p> <p>Reflective dialogue and Collective Inquiry</p> <p>(DuFour et al., 2008; Hord, 1997 & 2004; Louis, et al., 1996; Stoll et al., 2006)</p>	<ul style="list-style-type: none"> • School staff members have a shared understanding of school's main goals. • Teachers press all students to achieve academically. • Teachers go out of their way to give extra help to struggling students. • Teachers never give up on students who have hard time learning. • Teachers talk about instruction in the teachers' lounge, at faculty meeting, etc. • Frequent conversations with other school staff about what helps students learn best. • Receive useful feedback on performance from other colleagues. • Staff are continuously learning and seeking new ways to improve instruction. • Teachers at my school help each other solve students' learning problems.

<p>Collective focus on student learning</p> <p>(DuFour et al., 2008; Hord, 1997 & 2004; Louis, et al., 1996; Stoll et al., 2006)</p>	<ul style="list-style-type: none"> • School has well defined learning expectations for all students • School always focuses on what is best for student learning when making important decisions • Teachers take responsibility for helping ALL students learn, not just those in their classroom? • Teachers of different grades and/or subject areas work together to try to solve problems that affect student learning • Teachers assume most of the responsibility when students fail
<p>Collaboration</p> <p>(DuFour et al., 2008; Louis et al., 1996; McLaughlin & Talbert, 2006; Newmann & Wehlage, 1995)</p>	<ul style="list-style-type: none"> • School staff works together to identify problems with the implementation of the school curriculum • Teachers design instructional programs together • Teachers of different grades and/or subject areas work together to try to solve problems that affect student learning • Teachers meet with other colleagues for your scheduled planning period? • Professional development experiences have included opportunities to work productively with other staff in my school • Frequent participation in regularly scheduled collaboration with teachers or other colleagues.
<p>De-privatization of practice</p> <p>(Hord, 1997; Louis et al., 1996; McLaughlin & Talbert, 2006)</p>	<ul style="list-style-type: none"> • Frequent visits to other teachers' classrooms. • Other teachers observing your classroom. • Professional development experiences have included opportunities to work productively with other staff.

The next step in this process was to conduct an exploratory factor analysis of the questions that aligned to some aspect of PLC based on the Literature Review and face validity analysis. The large sample size in this database make factor analysis a reliable method of ensuring that the questions relate to the construct they are intended to measure (Field, 2005). Questions with significant missing values or which did not have sufficient correlation with any other variables (at least 0.5) were eliminated from the analysis

leaving 13 questions in the final factor analysis. All of these questions are based on an either four or five point Likert scale with responses varying depending on the type of question, including: strongly agree to strongly disagree; true to false; and regularly to never. All responses have been transformed in the data to a low to high scale of 1 to 4 or 1 to 5 on all questions.

Principal Component Analysis extraction method was used with factors identified based on eigenvalues of 1.0 or greater. Based on the theoretical grounds that the factors might correlate, a direct Oblimin with Kaiser Normalization rotation method was selected (Field, 2005). Figure 3 shows the Scree Plot of the analysis resulting in three distinct factors accounting for 81.5% of the variance in the model. The first factor included nine questions, had an eigenvalue of 7.5, and accounted for 57.7% of the variance. The second factor included two questions, had an eigenvalue of 1.7, and accounted for 13.4% of the variance. The third factor included two questions, had an eigenvalue of 1.4, and accounted for 10.5% of the variance. The next highest eigenvalue was .544. Table 11 outlines the results of the principal component analysis with factor loadings.

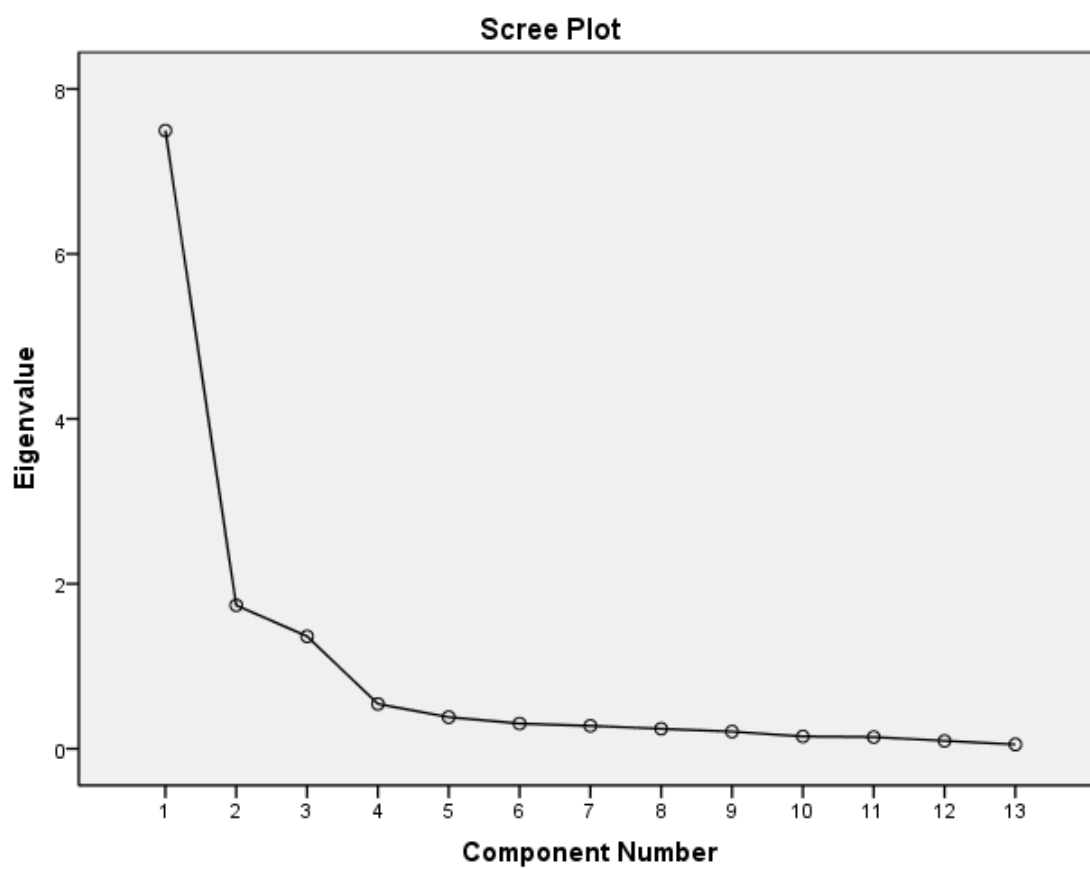


Figure 3

Scree plot of principal component analysis with oblimin rotation of PLC items.

Table 11: *Principal Component loading for analysis with Oblimin Rotation on Components of PLC*

	Component		
	Working Together	Conversations	Public Practice
School staff works together on school curriculum	.939		
Shared understanding of school's main goals	.925		
School always focuses on student learning when making important decisions	.901		
School has well defined learning expectations	.901		
Teachers use of student assessment results to measure the success of teaching practice	.848		
Teachers design instructional programs together	.842		
Teachers take responsibility for helping all students learn, not just those in their classroom	.841		
Teachers continuously learning and seeking new ways to improve instruction	.839		
Teachers of different grades and/or subject areas work together to try to solve problems	.812		
Frequent conversations with other school staff about teaching techniques		.983	
Frequent of conversations with other school staff about what helps students learn best		.978	
Frequent visits to other teachers' classrooms			.917
Teachers frequently observing your classroom			.907

Note. Only items with rotated principal component loadings greater than .50 are shown.

The next step was to compute the Cronbach's alpha internal consistency reliability coefficients for the three scores that resulted from the principal component analyses of PLC. The reliability coefficients were .96 for the nine-item variable labeled Working Together Toward Shared, Ambitious Learning Goals scale; .97 for the two-item variable labeled Conversations Focused on Teaching and Learning scale; and .80 for the

two-item variable labeled Public Practice scale. These reliability coefficients are greater than the conventional cutoff of .70 for adequate reliability.

The three variables created via this factor analysis were reviewed in light of their connection to the PLC constructs defined in the literature. Based on that review, the three variables were defined and labeled. The first factor, which is the most substantive factor with nine questions loaded in the factor analysis, was labeled “Working Together Toward Shared and Ambitious Learning Goals.” This variable aligns with three of the characteristics of PLC as defined in the literature: “Shared norms and values”, “Collective focus on student learning”, and “Collaboration.” The second variable was labeled Conversations Focused on Teaching and Learning. This variable aligns with the PLC characteristic “Reflective dialogue.” The third variable was labeled Public Practice, which aligns with the PLC characteristic “De-privatized practice.”

The first PLC variable, Working Together Toward Shared and Ambitious Learning Goals, is clearly the stronger measure both in terms of the number of questions loading on the factor and the relationship to three core elements of PLC. The other two variables, Conversations Focused on Teaching and Learning and Public Practice, are significantly weaker given that they are based on only two questions each. In addition, the variable Conversations Focused on Teaching and Learning may not capture all elements of “reflective dialogue” outlined in the literature, as the element of “reflection” is absent from this measure. Given these limitations, there will need to be caution in interpreting the findings based on these variables. However, these three variables taken together represent a statistically significant and research-supported measure of PLC in schools (Huffman & Hipp, 2003; Louis, et al. 1996). They are very common elements of

the definition of PLC as outlined in the Literature Review and represent statistically meaningful measures based on the factor outcomes and reliability scores.

Defining and Creating School Conditions Variables

Predictor variables for school conditions were identified or created in three categories. The first category was school climate conditions characterized by staff perceptions about the substance and quality of the school environment. The second category was school structural conditions characterized by staff responses to actual school characteristics (such as number of students in a school) derived from the KEYS Staff Survey and KEYS Administrative Survey. The third category was school demographic data measured by data derived from the KEYS Administrative Survey. Each school conditions variable used in this study was selected based on prior research and/or on a reasonable theoretical basis of a connection to PLC.

School climate variables.

As detailed in the Literature Review, numerous school factors have been identified as possible facilitators of PLC. Given the limits of the KEYS survey, not every school factor associated with PLC in the literature can be measured in this study. However, research has frequently cited schools factors relating to leadership and professional development as central drivers of PLC (Bryk et al., 1999; Louis, Marks, & Kruse, 1996; Newmann, 2007). To identify these factors, which have been designated as school climate variables in this study, an exploratory principal component analysis was conducted. Questions from the KEYS survey were analyzed that express opinion or judgment about the school on topics relating to school supports as identified in the

literature on PLC. A principal component analysis was performed on these school conditions items. Initially, 14 items were available for this analysis but five were removed due to significant missing values or a failure to load on a component with an eigenvalue greater than 1, leaving 11 items for the final analysis. It was anticipated that various aspects of school conditions would be uncorrelated with each other, and therefore a principal component analysis with Varimax rotation was performed (Field, 2005). All of these questions are based on an either four or five point Likert scale with responses varying depending on the type of question, including: strongly agree to strongly disagree; true to false; and regularly to never. All responses have been transformed in the database to a low to high scale of 1 to 4 or 1 to 5 on all questions.

Figure 4 shows the scree plot of the principal component extraction, and two clear components emerged with initial eigenvalues of 6.30 and 2.00, with the next largest eigenvalue being .64. The first two components explained 75.51% of the variance among the school conditions items. Table 12 shows the Varimax-rotated principal component loadings that were greater than .40 from this analysis. The first factor had high loadings for seven of the school conditions items accounting for 57.3% of the variance. Four items had high loadings on the second component accounting for 18.2% of the variance.

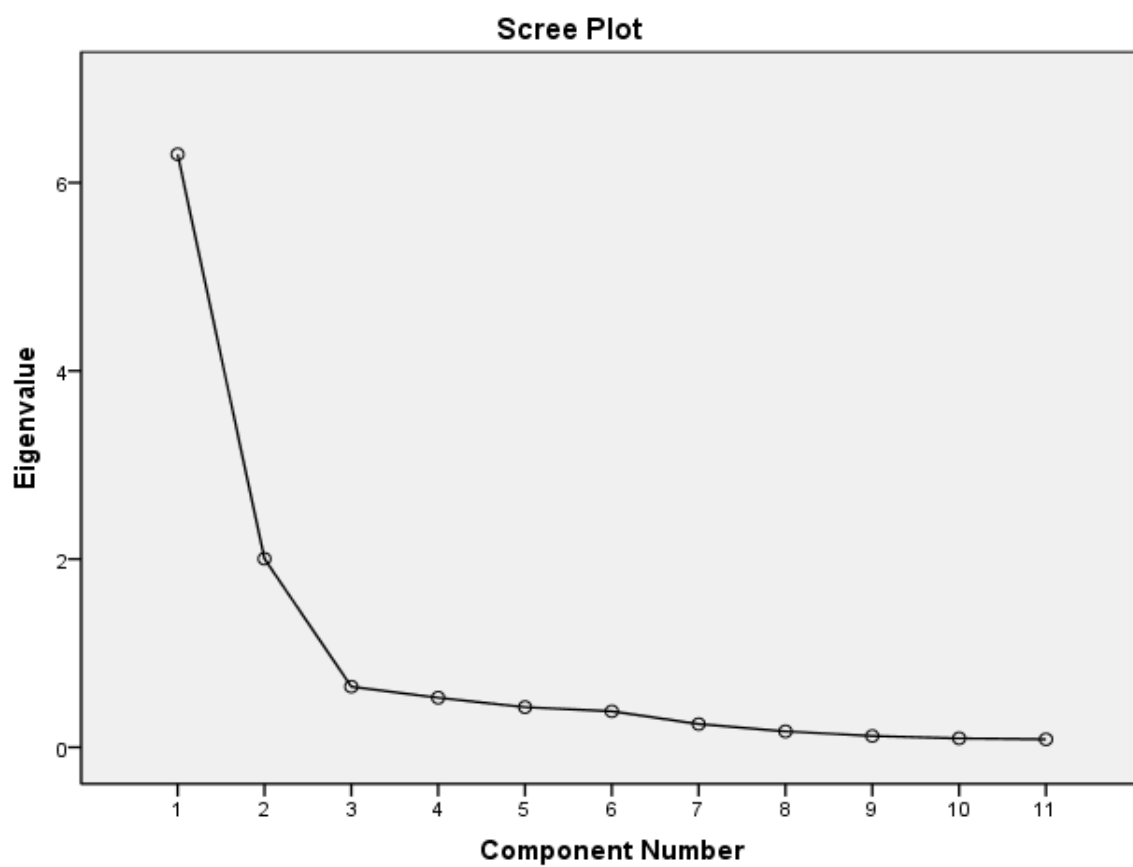


Figure 4

Scree plot of principal component analysis with Varimax rotation of school conditions items.

Table 12: *Principal Component Loadings for Exploratory Analysis With Varimax Rotation of School Conditions Items*

Item	Effectiveness and Supportiveness of Leadership	Frequency and Focus of Professional Development
Principal will make changes to improve the environment	.92	
Administrators work together with staff to solve problems	.91	
Principal talks with teachers about practice	.89	
Principals supports teachers with student discipline	.89	
Principal encourages teachers to try new ideas	.88	
Teachers are comfortable voicing concerns	.84	
Teachers receive useful feedback from principal	.65	
Frequently participate in professional development		.85
Teachers are prepared to implement new methods		.81
PD is connected to improvement plans		.79
Professional development includes opportunities to work with staff	.54	.66

Note. Only items with rotated principal component loadings greater than .50 are shown.

The two factors were interpreted based on both their common relationship and their connection to school conditions constructs. Based on that interpretation, the variables for the two factors were created and labeled. The first variable was labeled

“Effectiveness and Supportiveness of Leadership.” The second variable was labeled “Frequency and Focus of Professional Development.”

Cronbach’s alpha internal consistency reliability coefficients were then computed for the two scores that resulted from the principal component analyses on school conditions. The reliability coefficients were .95 for the seven-item Effectiveness and Supportiveness of Leadership scale and .83 for the four-item Frequency and Focus of Professional Development scale. These reliability coefficients are greater than the conventional cutoff of .70 for adequate reliability.

School structure variables.

These variables are derived as part of the school conditions measures based on the more direct measure of physical conditions in schools (such as number of students).

School Size. The size of the school could in theory influence the presence of PLC. Large schools with more complex bureaucracies could inhibit the ability of staff to collaborate and plan together which is central to the effective PLC. Several researchers have explored the connection between school size and PLC (Bryk et al., 1999; Louis et al., 1996; Newmann & Wehlage, 1995; Wei et al., 2009). As outlined in Chapter 5, results have been mixed. For this study school size was measured continuously as the number of students at each school.

School Level. As with school size, the complex structures of middle and high schools could make it more difficult to develop and maintain school wide PLC. These structures may better accommodate smaller PLC communities within school – a PLC structure not addressed in this study. Research has consistently concluded that elementary schools are more likely than middle and high schools to foster PLC (Louis et

al., 1996; Louis & Marks, 1998; Newmann & Wehlage, 1995). For this study, school level was measured as variable coded as 1 = elementary, 2 = middle or junior high, and 3 = senior high school.

Teacher Experience. Huffman & Hipp (2003) posit that teachers with more experience may be better prepared to collaborate with other colleagues and at least one empirical study supports this theory (Bryk et al., 1999). On the other hand, it could be that teachers with less experience are more willing to engage in the innovation and shared practice that is associated with PLC. Another important consideration for including teacher experience in this analysis is the large research base on the connection between experience and effectiveness which could make teacher experience a contributor to student learning. In this study, teacher experience was measured as a school wide average on a scale of 1 to 5 with each answer representing a range of years of experience from fewer to more (fewer than 2 years; 2 – 5 years; 6 – 10 years; 11 – 19 years; 20 or more years).

Teacher Stability. This variable is included because in theory, schools with high levels of teacher turnover would be less likely to build strong PLC. Bryk et al. (1999) found a modest negative relationship between teacher stability and PLC. For this study, teacher stability was measured continuously as the average number of years teachers were employed in their current school building.

Teacher Empowerment. This variable was included for analysis on the theory that PLCs are more likely to thrive in school with flexible governance that gives teachers voice and participation in school-based decision-making (Louis et al., 1996; Newmann, 2007; Vescio et al., 2008). For this study, Teacher Empowerment was measured using

eight items, each of which assessed the teachers self-rated level of influence in making school decisions. The items were based on a four point Likert scale ranging from no influence to a lot of influence and included eight questions exploring teacher influence in:

- setting standards for student behavior
- determining the curriculum
- determining books and other instructional materials
- determining how student progress is measured
- determining the content of professional development programs
- hiring new teachers and other personnel
- hiring a new principal
- deciding how discretionary funds should be used

An index of the standardized mean score on these eight items was used as the measure of Teacher Empowerment.

Student demographic variables.

Student demographic variables are included in the analysis as additional measures of school conditions. These demographic variables are included in the analysis of PLC and school conditions based on the theory that teachers' jobs may be more complex and challenging in schools with higher percentages of students with these demographic characteristics. This more complex and challenging job may influence the presence of PLC. Hoffman & Hipp (2003) argue that strong PLC is even more important in schools with high percentage of low-income and ethnically diverse students as a mechanism for closing achievement gaps and changing cultures of low expectation that exist in many

such schools. Few studies have used student demographics in analyzing the facilitating factors to PLC, however, Bryk et al. (1999) used a measure of neighborhood context which included the residential mobility, poverty, and illiteracy rates in neighborhoods surrounding study schools. The following student demographic variables were used for this study:

Student Race. Student race was operationalized as the Percentage of Non-White Students in the school.

Student Poverty. Student poverty was assessed as the percentage of students at each school who received a free or reduced-price lunch through the Title I program.

Percentage of ESL Students. ESL was operationalized as the percentage of students designated as English Language Learners in the school.

Percentage of Special Education Students. The SPED variable was operationalized as the Percentage of SPED Students in the school.

Analysis of Variables

Following the identification of variables as outlined above, each variable was assessed to assure a minimal amount of missing data and a normal distribution. Also, the relationship between each of the dependent variables with each of the predictor variables was assessed by calculating correlation coefficients and examining scatterplots to ensure that each variable pair is linearly related (see Table 13). Based on this analysis, three predictor variables were found to have no significant relationship to the dependent variable Working Together Toward Shared and Ambitious Learning Goals. These variables (Average Years of Experience, Percentage of Non-White Students, Percentage

of ESL Students) all were eliminated from the regression for that dependent variable. In addition, one predictor variable (Percentage of SPED Students) had no significant relationship to the dependent variable of Conversations Focused on Teaching and Learning and was eliminated from the regression for that dependent variable.

The next step involved assessing the relationship between each of the predictor variables by examining correlation coefficients to determine whether predictor variables were too highly correlated with one another. Based on this analysis, several variations were made:

- Average Years of Teaching Experience was highly correlated with average years of experience in the school building, the measure for Teacher Stability ($r = .645$). The variable for Teacher Stability was removed from the regression analysis because overall years of teaching experience have a stronger theoretical basis for influencing the presence of PLC.
- The Percentage of Non-White Students was highly correlated with the percentage of free and reduced price lunch students ($r = .697$). Given that free and reduced price lunch is a more indirect measure as a proxy for poverty, this was excluded from all regression analysis. Therefore, no measure of poverty was used in this analysis. The Percentage of Non-White Students was moderately correlated with the Percentage of ESL Students ($r = .503$) but this variable was not excluded from the analysis as these measure distinct though related phenomena and removal had no significant impact on the outcomes.

- School Size (number of students) and School Level (elementary, middle, or high) were highly correlated ($r = .539$). However, given that both phenomena have been measured in the PLC research, neither was eliminated from the regression equation. While elementary schools tend to have fewer students, they are also structurally different from middle and high schools and examining how that difference could impact PLC is relevant for study. Tests removing each from the equation found no significant impact on the model.
- Effectiveness and Supportiveness of Leadership and Teacher Empowerment were highly correlated ($r = .527$). However, given that both phenomena have been measured in the PLC research, neither was eliminated from the regression equation. Tests removing each from the equation found no significant impact on the model. Also, both variables had a statistically significant relationship to each of the three PLC dependent variables.

To further assess issues of multicollinearity, results of regression analysis were examined and no evidence of significant multicollinearity was found. Collinearity statistics indicated that Tolerance levels (ranging from .585 to .938) and Variance Inflation Factor (VIF) levels (ranging from 1.066 to 1.711) were well within acceptable range to conclude that there are no major problems with multicollinearity (see Appendix A for full results).

Table 13 shows the correlations and descriptive statistics for the study variables included in the regression analysis with Working Together Toward Shared and

Ambitious Learning Goals, Conversations Focused on Teaching and Learning and Public Practice as the dependent variables to the school conditions variables listed.

Table 13: *Correlational and Descriptive Statistics for Variables Included in Regression Analysis with Working Together Toward Shared Goals, Conversations Focused on Teaching and Learning and Public Practice as the Dependent Variable (N = 1,028)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Work Together	--	.364**	.306**	.762**	.307**	-.286**	-.420**	.009	.448**	-.037	-.111**	.002	.001
2. Conversations		--	.231**	.109**	.806**	-.106**	-.332**	-.089**	-.096**	.212**	-.021	.199**	.170**
3. Public Practice			--	.244**	.246**	-.066**	-.051	-.181**	.168**	.290**	.061*	.080**	.219**
4. Leadership				--	.001	-.217**	-.241**	-.004	.527**	-.102**	-.080**	-.044	-.073*
5. Prof. Dev.					--	-.042	-.186**	-.061*	-.142**	.299**	-.056	.228**	.230**
6. School Size						--	.539**	-.079**	-.142**	.010	-.089**	.041	-.175**
7. School level							--	-.033	.008	-.142**	.109**	-.226**	-.197**
8. Years of exp.								--	.044	-.224**	.028	-.216**	-.092**
9. Empowerment									--	-.372**	-.057	-.134**	-.354**
10. % of non-white										--	-.003	.503**	.697**
11. % of SPED											--	-.072*	.164**
12. % of ESL												--	.409**
13. % of free/red													--
<i>M</i>	.04	.05	.01	.02	.06	591.58	1.50	3.55	-.08	44.42	12.82	9.89	49.39
<i>SD</i>	.98	.97	.96	.99	.97	389.33	.74	.40	5.89	33.81	8.18	15.48	28.92

Note: * $p < .05$; ** $p < .01$

Data Analysis

The first phase of the statistical analyses for this study consisted of the identification and assessment of the internal validity of the PLC and school conditions items and the calculation of reliability coefficients for the resultant scores. Principal component analyses were performed for the items contained in the PLC and school conditions scales. The internal consistency reliability of the scores that resulted from the principal component analyses were also computed, and descriptive statistics were provided for all study variables to be included in the inferential statistical tests.

The second phase of this study was an inferential analysis consisting of multiple linear regression analyses to answer the research questions of this study. All inferential analyses were performed using two-tailed tests and an alpha level of .05. Several regression methods were examined, including the Enter and Stepwise methods. No method made a significant difference in the outcomes. Multiple regression using the Enter method was selected because this analytical model is based on theory and research that there could be a relationship between each of the dependent and predictor variables. In this method, each variable was independently entered into the regression equation on the theoretical basis of which predictor variable might have the most significant affect on the dependent variable. Variables hypothesized to have the least effect were entered first, while variables hypothesized to have the most effect were entered later. The theoretical basis was developed based both on previous research about school conditions and PLC and on the strength of correlation between the predictor and dependent variable.

The primary research question was: How do school conditions correlate with the presence of professional learning community in schools? The predictor variables for the

first research question are the structural conditions and student demographic variables (School Size, School Level, Teacher Experience, Teacher Empowerment, and the student demographics of race, ESL population, and special education population) and school conditions scales (Effectiveness and Supportiveness of Leadership and Frequency and Focus of Professional Development). Multiple linear regression analyses were performed with these variables as predictors of the three PLC scales (Working Together Toward Shared and Ambitious Learning Goals, Conversations Focused on Teaching and Learning and Public Practice).

Limitations and Challenges

One challenge is that the data used for this study was not gathered for research purposes and therefore will have significant limitations. The KEYS surveys were designed exclusively to provide diagnostic information to individual schools or groups of schools in a district to help them improve their school culture and climate. The large time span of survey administrations (a nine-year span between 2001 and 2010) could lead to questions about the comparability of between school data. Another challenge is that the available KEYS measures did not fully capture either all of the relevant PLC constructs or school conditions supporting PLC that have been identified in the literature. For example, elements of PLC in the literature but not tested in this study include continuous and cooperative learning and inclusive membership (McLaughlin & Talbert, 2006; Stoll et al., 2006). In addition school conditions such as trust, openness to innovation, and staffing complexity are identified in the literature but not analyzed in this research (Hord, 1997 and 2004; Louis et al., 1996). Finally the limitations of using only

quantitative regression analysis makes it hard to disentangle – both conceptually and empirically – many of the important concepts relating to PLC, school characteristics, and teacher professional development. This will make it difficult to make any casual inferences.

Summary

Preliminary analyses of the professional learning community items indicated that three components could be extracted. These three components were Working Together Towards Shared and Ambitious Learning Goals, Conversations Focused on Teaching and Learning, and Public Practice. Preliminary analysis of the school conditions items indicated that two components could be extracted. The two school conditions components were Effectiveness and Supportiveness of Leadership and Frequency and Focus of Professional Development scale. These scales demonstrated adequate internal consistency reliability and were used as the measures of PLC and school conditions in all subsequent analyses.

Chapter 4: Findings

This chapter presents the results from the analyses performed for this study. Results from preliminary factor analyses, reliability analyses, and descriptive statistics were presented in the Methodology chapter of this report. The results from the multiple linear regression analyses performed to answer the research questions of this study are presented next, and the chapter ends with a summary of the key findings from this study.

School Conditions and Professional Learning Community

The primary research question of this study was: How do school conditions correlate with the presence of professional learning community? To answer this research question, three multiple regression analyses were performed. The dependent variables in the three regression analyses were Working Together Toward Shared and Ambitious Learning Goals, Conversations Focused on Teaching and Learning and Public Practice. The predictor variables were the two school conditions scales (Effectiveness and Supportiveness of Leadership and Frequency and Focus of Professional Development) and the school conditions variables (School Size, School Level, Teacher Experience, Teacher Empowerment, and the student demographics of race, ESL population, and special education population). Multiple regression analyses were performed.

Predictor variables for this analysis were entered into the multiple regression as follows:

- Student demographics: Percentage of SPED Students, Percentage of ESL Students and Percentage of Non-White Students.
- School structural conditions: School Size, School Level, and Teacher Experience.

- School climate conditions: Teacher Empowerment, Frequency and Focus of Professional Development, and Effectiveness and Supportiveness of Leadership.

Predictor variables were entered in a multiple linear regression model (using the Enter method with one variable per block) from least relevant to most relevant based on the research and theory on school conditions and PLC.

Student characteristics were entered first as there is little research about student demographics and PLC, though there is a theoretical basis for their inclusion as outlined in the methodology section of this report. School structural conditions of Teacher Experience, School Size and School Level were entered next as there is a research base for these conditions impacting PLC. However, these structural conditions are less malleable than climate conditions and thus not deemed as the most relevant variables. School climate conditions were entered last (in the order of Teacher Empowerment, Frequency and Focus of Professional Development, and Effectiveness and Supportiveness of Leadership) as these have the most comprehensive research base as outlined in the Literature Review of this report. In addition, these three climate conditions can more readily be impacted in schools as thus have been deemed as the most relevant variables.

Table 14 shows the results from the multiple linear regression analysis with Working Together Toward Shared and Ambitious Learning Goals (Working Together) as the dependent variable. As noted in the Methodology, only predictor variables with a statistically significant relationship to Working Together were included. In the first step, Percentage of SPED Students was entered but found to have no significant relationship with the dependent variable. In the second step, School Size was entered but no

significant relationship between School Size and this dependent variable. School Level (elementary, middle/junior, or high school) was entered in the next step ($\beta = -.20, p < .001$) with a ΔR^2 coefficient of .075. Thus, School Level explained 7.5% of the variance in Working Together scores, with middle/junior and high schools having lower levels of Working Together than elementary schools.

Table 14: *Multiple Regression Analysis Predicting Working Together Toward Shared and Ambitious Learning Goals (N = 1,048)*

Predictor Variables	B	Standard Error	ΔR^2	β
Step 1				
Percentage of SPED Students	-.003	.002	.022	-.024
Step 2				
School Size	-5.08	.000	.104	-.020
Step 3				
School Level (elementary, middle or high)	-.263	.028	.075**	-.199
Step 4				
Teacher Empowerment	.023	.003	.160**	.140
Step 5				
Frequency and Focus of Professional Development	.297	.017	.084**	.294
Step 6				
Effectiveness and Supportiveness of Leadership	.626	.020	.268**	.632
Total R^2			.71**	

Note: For the model, $F(6,1041) = 431.142, p < .001$; ** $p < .001$

Teacher Empowerment was entered in the next step ($\beta = .14, p < .001$) with a ΔR^2 coefficient of .16. Thus, an additional 16% of the variance in Working Together scores was explained by Teacher Empowerment, with Teacher Empowerment associated with higher Working Together scores. Frequency and Focus of Professional Development was entered in the fifth step ($\beta = .294, p < .001$) with a ΔR^2 .08. Therefore, the Frequency and Focus of Professional Development explained 8% of the variance in

Working Together scores, with more frequent and focused professional development associated with higher Working Together scores. Effectiveness and Supportiveness of Leadership was entered in the sixth and final step ($\beta = .632, p < .001$) resulting in a ΔR^2 coefficient of .268. Therefore, the Effectiveness and Supportiveness of Leadership explained 27% of the variance in Working Together scores with more effective and supportive leadership strongly associated with staff Working Together Toward Shared and Ambitious Learning Goals.

The final model with these six predictor variables explained 71% of the variance in Working Together scores which was statistically significant ($p < .001$). Effectiveness and Supportiveness of Leadership had the largest impact on Working Together, followed by Teacher Empowerment and Frequency and Focus of Professional Development. In each case, higher scores on the predictor variable were associated with higher Working Together scores. In addition, higher Working Together scores were found at elementary schools more than at middle or high schools.

The results from the multiple regression analysis with Conversations Focused on Teaching and Learning (Conversations) as the dependent variable are shown in Table 15. In the first step, the Percentage of ESL Students was entered, however, the Percentage of ESL Students has no statistically significant relationship with Conversations Focused on Teaching and Learning. In the second step, the Percentage of Non-White Students were entered ($\beta = -.087, p < .001$), with a ΔR^2 value of .014. This indicated that the Percentage of Non-White Students accounts for 1% of the variance in Conversations scores, with higher percentages of non-white students moderately associated with lower levels of Conversations Focused on Teaching and Learning

In the third step, School Size was entered ($\beta = .042, p < .05$), with a ΔR^2 value of .019, indicating that School Size accounts for 2% of the variance in Conversations Focused on Teaching and Learning with a very modest relationship between larger School Size and higher scores in this dependent variable. School Level (elementary, middle, or high) was entered next ($\beta = -.21, p < .001$), with a ΔR^2 value of .074, indicating the explanation of an additional 7% of the variance in Conversations. Elementary schools were associated with higher Conversations scores than middle/junior or high schools.

Table 15: *Multiple Regression Analysis Predicting Conversations Focused on Teaching and Learning* (N = 1,036)

Predictor Variables	B	Standard Error	ΔR^2	β
Step 1				
Percentage of ESL Students	.000	.001	.040	.003
Step 2				
Percentage of Non-White Students	-.002	.001	.014**	-.087
Step 3				
School Size	.000	.000	.019*	.042
Step 4				
School Level (elementary, middle or high)	-.272	.029	.074**	-.207
Step 5				
Teacher Experience	-.136	.046	<.01*	-.054
Step 6				
Teacher Empowerment	-.008	.004	<.01*	-.047
Step 7				
Frequency and Focus of Professional Development	.780	.018	.537**	.781
Step 8				
Effectiveness and Supportiveness of Leadership	.082	.021	<.01**	.085
Total R^2			.69**	

Note: For the model, $F(8, 1027) = 288.454, p < .001$; ** $p < .001$; * $p < .05$

Average years of teaching experience was entered in the fifth step ($\beta = -.054, p < .05$), with an ΔR^2 value of $<.01$, indicating that Teacher Experience accounts for less than 1% of the variance in Conversations Focused on Teaching and Learning and has a very modest negative relationship to this dependent variable. Teacher Empowerment was entered in step six ($\beta = -.05, p < .05$), with a ΔR^2 value of $<.01$. Therefore, less than 1% of the variance was explained, and schools having higher Teacher Empowerment have a very modest relationship to lower Conversations scores. In the seventh step, Frequency and Focus of Professional Development was entered ($\beta = .78, p < .001$) with a ΔR^2 value of .54. This indicated that 54% of the variance in Conversations was explained by Frequency and Focus of Professional Development, with more frequent and focused professional development strongly associated with higher scores in Conversations. In the eighth and final step, scores on the Effectiveness and Supportiveness of Leadership scale were entered ($\beta = .085, p < .001$), with a ΔR^2 value of $<.01$. This indicated less than 1% of the variance was explained with schools having higher Effectiveness and Supportiveness of Leadership scores also tending to have higher Conversations scores.

The final model with these eight predictor variables explained 69% of the variance in Conversations scores, which was statistically significant ($p < .001$). The most significant predictor of Conversations Focused on Teaching and Learning was Frequency and Focus of Professional Development with a high and positive relationship. Effectiveness and Supportiveness of Leadership was also positively related to Conversations. Higher scores on Conversations were also moderately associated to Elementary schools and have a small though statistically significant negative relationship

to Teacher Empowerment, Teacher Experience, and the Percentage of Non-White Students.

The results from the multiple regression analysis with Public Practice as the dependent variable are shown in Table 16. In the first step, the Percentage of ESL Students was entered ($\beta = -.132, p < .001$), with a ΔR^2 value of $<.01$. This indicated that less than 1% of the variance in Public Practice was explained by the percentage of ESL, with higher percentages of ESL associated with lower levels of Public Practice. In the second step, the Percentage of SPED Students was entered ($\beta = .065, p < .05$), with a ΔR^2 value of $<.01$, indicating that less than 1% of the variance in the dependent variable is explained and that there is a very modest relationship between the Percentage of SPED Students and Public Practice. The Percentage of Non-White Students was entered third, ($\beta = .393, p < .001$), with a ΔR^2 value of .083, indicating that an additional 9% of the variance in Public Practice is explained by this predictor variable. Higher percentages of non-white students has a statistically significant relationship to higher scores in Public Practice.

In steps four and five, School Size and School Level were entered, each explaining less than 1% of the variance in Public Practice and neither having a statistically significant relationship to this dependent variable. In the sixth step, the average years of teacher experience was entered ($\beta = -.096, p < .001$), with a ΔR^2 value of .013, indicating an additional 1% of explained variance in Public Practice. Schools tend to have lower scores on Public Practice when there are a higher percentage experienced teachers. Teacher Empowerment was entered next ($\beta = .265, p < .001$), with a ΔR^2 value of .093, indicating the explanation of an additional 9% of the variance in

Public practice. High levels of Teacher Empowerment were associated with higher Public Practice scores. In the eighth step, Frequency and Focus of Professional Development was entered ($\beta = .227, p < .001$), with a ΔR^2 value of .045, indicating that an additional 4% of the variance was explained and that high scores in professional development are associated with higher scores for Public Practice.

Table 16: *Multiple Regression Analysis Predicting Public Practice (N = 1,026)*

Predictor Variables	B	Standard Error	ΔR^2	β
Step 1				
Percentage of ESL Students	-.008	.002	<.01***	-.132
Step 2				
Percentage of SPED Students	.008	.003	<.01*	.065
Step 3				
Percentage of Non-White Students	.011	.001	.083**	.393
Step 4				
School Size	2.48	.000	<.01	.010
Step 5				
School Level (elementary, middle or high)	.051	.046	<.01	.040
Step 6				
Teacher Experience	-.238	.070	.013***	-.096
Step 7				
Teacher Empowerment	.043	.006	.093**	.265
Step 8				
Frequency and Focus of Professional Development	.223	.028	.045**	.227
Step 9				
Effectiveness and Supportiveness of Leadership	.160	.032	.018**	.166
Total R^2			.26**	

Note: For the model, $F(9, 1016) = 40.449, p < .001$; ** $p < .001$; * $p < .05$; *** $p = .001$

In the ninth and final step, Effectiveness and Supportiveness of Leadership was entered ($\beta = .166, p < .001$), with a ΔR^2 value of .018, indicating an additional 2% of

variance explained and modest positive relationship between effective leadership and Public Practice.

The final model with these nine predictor variables explained 26% of the variance in Public Practice scores, which was statistically significant ($p < .001$). However, this model fails to identify most of the factors explaining the variance in Public Practice. The factors in this model most predicting Public Practice were Teacher Empowerment, Frequency and Focus of Professional Development, Effectiveness and Supportiveness of Leadership, and Teacher Experience. The Percentage of Non-White Students is positively associated with Public Practice while the Percentage of ESL Students is negatively associated with Public Practice.

Summary

The primary research question of this study was: How do school conditions correlate with the presence of professional learning community in schools? Separate analyses were performed for each of the three measures of PLC. Working Together Toward Shared and Ambitious Learning Goals is the strongest factor in the analysis, with nine questions loading on the factor. Both measures of school climate conditions (Effectiveness and Supportiveness of Leadership and Frequency and Focus of Professional Development) were statistically significant, indicating that schools with more effective and supportive leadership and more frequent and focused professional development tended to have higher Working Together scores. Teacher Empowerment was also positively related to Working Together and elementary schools were more likely to have higher Working Together scores than middle or high schools. Neither School

Size nor average years of teaching experience had a statistically significant relationship to Working Together.

In the analysis of Conversations Focused on Teaching and Learning scores, Frequency and Focus of Professional Development was very strongly associated with higher Conversations scores. Effectiveness and Supportiveness of Leadership had a modest relationship to Conversations while both Teacher Experience and Teacher Empowerment had a modest negative relationship to Conversations. In addition, higher percentages of non-white students is associated with lower scores on Conversations Focused on Teaching and Learning.

Finally, in the analysis of Public Practice, Frequency and Focus of Professional Development, Effectiveness and Supportiveness of Leadership, and the Percentage of Non-White Students were all statistically significant positive predictors, while Teacher Experience and the Percentage of ESL Students were negative predictors to Public Practice. The model accounted for only 26% of the variance between schools indicating that the model did not identify the most significant predictors of Public Practice. Neither School Size nor School Level had a statistically significant relationship to Public Practice. These results are discussed in the next chapter.

Chapter 5: Discussion

Summary of Problem Statement

Despite the commonly held belief that public schools should ensure that every child learn, schools are not organized to advance student learning, particularly to meet learning goals that call for all students learning to high standards. In addition, current processes for enhancing teacher skill, knowledge, and effectiveness have seldom yielded sufficient evidence of a positive impact on student learning. One very common policy response to increasing student learning outcomes and improving teaching quality has been to focus solely on improving teacher effectiveness by measuring, assessing, improving, rewarding, and/or punishing *individual* teachers with little emphasis paid to improving *teaching* effectiveness via teams and professional learning communities.

Improving the skills, knowledge, and practice of teachers is an essential element to school reform and educational improvement. The growing movement of creating professional learning community in school is a promising approach to addressing this challenge, yet the field has insufficient evidence about the impact of this model or necessary support for its growth and development. Could these models be part of larger systems efforts to improve education or are they destined to be added to the long list of fads or phases that have little long-term impact on the practice of teaching or educational experiences of students?

The current popularity of PLC in schools (particularly among professional development advocates) combined with the relatively weak evidence of their impact make this research a timely and possibly important contribution to the field. The nature

of the data used and the analysis of that data lead to significant limitations, specifically related to making any causal inferences about PLCs impact on student learning. Yet, given the limited research on this topic, the evidence offered in this study about the potential relationship between PLC and student learning is promising, though inconclusive.

Summary of Purpose and Research Questions

The purpose of this study was to explore the presence, strength, and value of professional learning community in schools by examining their relationship to a variety of school conditions. If PLCs are to become valuable and effective mechanisms for improving schools, then more information about how to support their development and examine their impact is needed. Examining these relationships should provide valuable information about the efficacy of PLC in schools and help determine the conditions and school structures that foster and support strong PLC. To address this purpose, the following research questions were addressed:

How do school conditions correlate with the presence of professional learning community in schools? Which school conditions have the strongest relationship to the presence of professional learning community in schools?

A supplemental research question of this study is:

How does the presence of a professional learning community in schools correlate with measures of student achievement?

Summary of Methodology

One unique element of this research project is the use of the NEA KEYS database, a survey designed for schools to measure indicators of quality. The KEYS survey has rarely been used for research purposes and was not designed to measure PLC in schools. In order to measure PLC, the researcher conducted an exploratory factor analysis of KEYS questions that align to some aspect of PLC based on the literature. This analysis identified three distinct factors accounting for 73.35% of the variance. The first and strongest factor identified was “Working Together Toward Shared and Ambitious Learning Goals”. Nine questions loaded onto this factor and it is the primary PLC variable for this study. This variable aligned to at least three of the characteristics of PLC identified in the literature: Shared norms and values, Collective focus on student learning, and Collaboration. The second and third factors are “Conversations Focused on Teaching and Learning” and “Public Practice”. While only two questions loaded on each of these variables, they also align directly to characteristics of PLC as defined in the literature: Reflective Dialogue and De-privatized practice. Each of these PLC variables were measured independently in order to most effectively assess their relationship to school conditions.

Ten school conditions variables were identified for analysis, including three school climate variables, three school structural variables, and four student demographic variables. Two of the primary measures of school conditions were identified by conducting an exploratory factor analysis consisting of questions of opinion or judgment of school staff about leadership, professional development, and support. This analysis resulted in two strong school conditions factors: Effectiveness and Supportiveness of

Leadership and Frequency and Focus of Professional Development. Additional measures were School Size, School Level, Teacher Experience, and Teacher Empowerment.

A multiple linear regression model was used in order to test the relationship between school conditions and three measures of PLC. This model generated data on the relationship between the group of variables correlated with PLC and the relationship between individual school condition variables and PLC measures. A multiple regression method was used to better isolate the group of school condition variables with a statistically significant relationship to PLC measures.

Summary of Findings

How do school conditions correlate with the presence of professional learning community in schools? The research found a strong and consistent correlation between the three measures of PLC and several school conditions, most notably Effectiveness and Supportiveness of Leadership and Frequency and Focus of Professional Development. These two predictor variables had a strong and consistent relationship to all three PLC dependent variables.

Teacher characteristics were found to have a modest but statistically significant relationship to the PLC measures. Teacher Empowerment had a modest positive relationship to Working Together Toward Shared Goals and Public Practice. Interestingly, schools with more experienced teachers tended to have lower measures of Conversations Focused on Teaching and Learning and Public Practice. The size of the school, as measured by the number of students, had a modest relationship to Conversations Focused on Teaching and Learning but no other statistically significant relationship to other PLC variables. On the other hand, the findings show a very

consistent relationship between School Level and two of the three PLC measures indicating that PLC is far more likely to have a strong presence in elementary schools than in middle or high schools.

PLC Variable #1: Working Together Toward Shared and Ambitious Learning

Goals: The school conditions related to this PLC measure account for 71% of the between school variance in Working Together Toward Shared and Ambitious Learning Goals ($\Delta R^2 = .711$). Schools with Effectiveness and Supportiveness of School Leadership are significantly more likely to have staff working collaboratively toward shared learning goals ($\beta = .632, p < .001$). Frequency and Focus of Professional Development is also related to higher levels of staff working collaboratively toward shared goals ($\beta = .294, p < .001$). In addition, if teachers are empowered to make decisions they are likely to have modestly higher sense of collaboration ($\beta = .140, p < .001$). Elementary schools are moderately more likely to have staff working collaboratively toward shared and ambitious learning goals ($\beta = -.199, p < .001$).

PLC Variable #2: Conversations Focused on Teaching and Learning: The school conditions related to this PLC measure account for 69% of the between school variance in Conversations Focused on Teaching and Learning ($\Delta R^2 = .690$). Schools with frequent and focused professional development are far more likely to have staff engaged in Conversations Focused on Teaching and Learning ($\beta = .781, p < .001$). Effectiveness and Supportiveness of Leadership has a small but statistically significant relationship to Conversations Focused on Teaching and Learning ($\beta = .085, p < .001$). Elementary schools are somewhat more likely to have staff engaged in Conversations Focused on Teaching and Learning ($\beta = -.207, p < .001$). Interestingly, schools with higher

percentage of experienced teachers are slightly less likely to be highly engaged in Conversations Focused on Teaching and Learning ($\beta = -.054, p < .05$). The data indicate that Teacher Empowerment is modestly negatively associated with dialogue ($\beta = -.047, p = .02$).

PLC Variable #3: Public Practice: The school conditions related to the PLC measure account of 26% of the between school variance in Public Practice ($\Delta R^2 = .257$). This means that most of what accounts for the variance in Public Practice is not measured by the school conditions used in this model. While the school conditions measured here may not be the primary drivers for public teaching practice, they do have a statistically significant relationship to it. Teacher Empowerment ($\beta = .265, p < .001$), Frequency and Focus of Professional Development ($\beta = .227, p < .001$), Effectiveness and Supportiveness of School Leadership ($\beta = .166, p < .001$), and Percentage of Non-White Students ($\beta = .393, p < .001$), each have a statistically significant though modest relationship to Public Practice. Interestingly, average years of teacher experience has a small but statistically significant negative relationship to Public Practice ($\beta = -.096, p = .001$), indicating that schools with less experienced teachers score higher on Public Practice. This relationship is consistent with research on the changing culture of teaching that newer teachers may be more ready to accept (Wei et al., 2009). Unlike the other two PLC factors, there is no relationship between School Level and Public Practice.

Which school conditions have the strongest relationship to the presence of professional learning community in schools? The findings from this study show a strong and consistent relationship between the school conditions of leadership and professional development and all three measures of PLC. Teacher Empowerment was found to have a

positive relationship on two of the three measures of PLC. No other variable that would be considered within the locus of control of a school was found to have a consistently strong relationship to PLC. Two of the three PLC variables are more likely to have a strong presence in elementary schools than in middle or high schools. Table 17 below summarizes school conditions relationship with PLC.

Table 17: *Summary of School Conditions Relationship to PLC*

	<i>Working Together toward shared goals</i>		<i>Conversations focused on student learning</i>		<i>Public Practice</i>	
	β	Sig.	β	Sig.	β	Sig.
Effectiveness and Supportiveness of Leadership	.632	.000	.085	.000	.166	.000
Frequency and Focus of Professional Development	.294	.000	.781	.000	.227	.000
Teacher Empowerment	.140	.000	-.047	.036	.265	.000
Teacher Experience	--	--	-.054	.003	-.096	.001
School Level	-.199	.000	-.207	.000	--	--

Implications

The overall finding of this research are mixed in that there are both very promising results and some results which provide insufficient direction for understanding or growing PLC in schools. One hypothesis for this research is that school conditions can be identified, and altered if necessary, to promote the growth of PLC in schools. While there are many school conditions associated with PLC in other research than what could be measured by this research, the two school conditions of effective leadership and

focused professional development that clearly rose to the top are also those most commonly identified in other research. In fact, the connections were so strong and consistent that it could be argued that effective leadership and focused professional development are necessary pre-conditions for strong professional learning community to exist in a school. In addition, the extent to which teachers feel empowered was also consistently related to the presence of PLC in schools.

Another implication centers on how to identify the presence of learning community in school. The first and strongest measure of PLC (based on the factor loadings) is Working Together Toward Shared and Ambitious Learning Goals. This single factor accounts for at least three critical elements of PLC as describe in the Literature Review for the study. It is also the factor that had the consistently strong relationship to the two school conditions outlined above as well as a statistically strong relationship to student achievement (as outlined in Appendix B).

Contributions to research.

The results of this study, which found correlation between several school conditions and the presence of PLC is consistent with other research on this issue. Case study research by Newmann and Wehlage (1995), Thompson et al. (2004), and Hord (2004) identify effective school leadership as key to supporting and sustaining PLC. Attributes of leadership included emphasizing a clear intellectual mission (Newmann & Wehlage, 1995) and encouraging collaboration by providing time and resources (Morrissey & Cowan, 2004). One of few empirical studies to examine the relationship between school conditions and PLC (Louis, Marks, & Kruse, 1996) concluded – as did

this study – that both leadership and professional development have an impact on PLC. The connection between formal professional development opportunities and building PLC was also made in the literature review by Stoll et al. (2006).

In this study, the size of the school, as measured by the number of students, had no statistically significant relationship to PLC. This finding runs counter to some research on PLC (Newmann & Wehlage, 1995; Bryk et al., 1999) though other research supports findings of little relationship (Louis, Marks, & Kruse, 1996). On the other hand, the findings are consistent with other research showing a strong relationship between school level and PLC indicating that PLC is far more likely to have a strong presence in elementary schools than in middle or high schools (Hord, 1997; Louis, Marks, & Kruse, 1996; Louis & Marks, 1998; Newmann & Wehlage, 1995).

This study is in some ways similar to other studies on PLC in design and focus, most closely resembling Louis, Marks, & Kruse (1996) and Bryk et al. (1999). At the same time, there are some unique contributions this study could make to the research discourse on PLC. Most significantly, the scale of this study is significant. The NEA KEYS database is a rich source of information and this study started with a base of over 1,250 schools and 70,000 individual survey respondents. No other study of PLC comes even close to this magnitude. Even when accounting for missing values the minimum N for any model analyzed was 1,035 schools. This study also makes a contribution to the empirical base of research on the impact of PLC on student achievement. This study's mixed finding on the relationship to student achievement but promising connection to certain elements of PLC – namely Working Together Toward Shared and Ambitious Goals – indicates that PLC is a complex measure that needs further study and analysis.

Recommendations

Further research.

In this study and others, it has been argued the professional learning community can exist in a school based on how staff interact and perceive the environment rather than on whether a school has formally designated itself to have a “PLC” (designated below as “organic” PLC and “formal” PLC for clarity). On the other hand, more and more schools and teachers are calling themselves a PLC and there is insufficient research on how formal PLCs work. For example, all of the empirical data for this study looked at “organic” PLC while most study of “formal” PLC is case study based. Research is needed that would include true experimental longitudinal studies of PLC formally implemented in schools with evaluation of fidelity of implementation, impact on teacher practice, and impact on student outcomes.

The limitations of the KEYS database prevented to exploration of other school conditions identified as related to PLC. For example, only one study (Louis, Marks, & Kruse, 1996) found for this research has looked at school conditions such as respect, staffing patterns, feedback on instruction, and openness to innovation. A lot more information is needed about the tangible and actionable schools conditions that can foster the collaboration, dialogue, and shared focus that defines meaningful PLC. For example, this study found no real connection between the presence of PLC and teacher stability or the experience level of teachers in schools. Could it be that PLC could be fostered – or inhibited – regardless of the teacher characteristics? Given that high-needs schools are

more likely to have significant turnover and less experienced teachers, answering this question could have significant implications for schools.

Policy.

One significant policy implication from this research is the connection between PLC and certain forms of professional development. Providing meaningful, high quality professional development for teachers has been a policy and practice conundrum for a long time. Professional development is a considerable cost for states and school districts (particularly when including related personnel costs) and policymakers have struggled around defining the standards, content, time, and resources needed. Recent policy reports have called for professional development to be redesigned in ways to be more job-embedded and that foster PLC. For example, Learning Forward, a leading professional development organization, identified “Learning Communities” as one of seven categories of their newly revised professional development standards (Learning Forward, 2011).

At the same time, policy around improving the quality of teaching has focused on everything but reforming professional development. Policy on teacher preparation, licensure, and evaluation seem more focused on identifying effective teachers than on improving the effectiveness of those already in the classroom. Issues of professional growth are beginning to emerge in the policy discussions about teacher evaluation but are still primarily focused on improving the skills of individual teachers based on their individual evaluation results. Learning in professional community requires a policy approach that expands beyond individual accountability to include collective work and collective accountability for quality practice and quality results. Crafting teacher learning

and accountability policy that incorporates PLC is not an easy task, however, this study and others cited within it provide evidence that a focus on improving school leadership and the quality of professional development could be key levers in building and sustaining PLC.

Conclusion

Professional Learning Community is a powerful but complex phenomenon that has the potential to be a valuable tool for school improvement and advancing student learning. This research has supported and advanced other research in the understanding of PLC. In particular, this research suggests that there are school conditions that are under the control of local schools to change that can facilitate the growth and development of PLC. Also, this research has identified a potentially valuable methodology for identifying and measuring PLC in schools. The KEYS instrument, or some variation of it, could help schools to both identify the strength of PLC in the school building and to understand how to create the conditions that better support teacher collaboration and other forms of PLC. The value of PLC remains promising but clearly is not a proven tool of school reform. The question which was a title of a 2007 journal article by DuFour still remains unanswered. Professional Learning Communities: A Bandwagon, an Idea Worth Considering, or Our Best Hope for High Levels of Learning?

Appendix A: Additional Tables and Figures

- A-1: Model Summary for multiple linear regression for Working Together Toward Shared and Ambitious Learning Goals
- A-2: ANOVA for multiple linear regression for Working Together Toward Shared and Ambitious Learning Goals
- A-3: Coefficients for multiple linear regression for Working Together Toward Shared and Ambitious Learning Goals
- A-4: Model Summary for multiple linear regression for Conversations Focused on Teaching and Learning
- A-5: ANOVA for multiple linear regression for Conversations Focused on Teaching and Learning
- A-6: Coefficients for multiple linear regression for Conversations Focused on Teaching and Learning
- A-7: Model Summary for multiple linear regression for Public Practice
- A-8: ANOVA for multiple linear regression for Public Practice
- A-9: Coefficients for multiple linear regression for Public Practice

Table A-1: *Model Summary for multiple linear regression - Working Together Toward Shared and Ambitious Learning Goals***Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.147 ^a	.022	.021	.97018083	.022	23.003	1	1046	.000
2	.354 ^b	.126	.124	.91754580	.104	124.450	1	1045	.000
3	.448 ^c	.201	.198	.87776203	.075	97.874	1	1044	.000
4	.600 ^d	.360	.358	.78554384	.160	260.507	1	1043	.000
5	.667 ^e	.445	.442	.73233211	.084	158.077	1	1042	.000
6	.844 ^f	.713	.711	.52664417	.268	973.881	1	1041	.000

a. Predictors: (Constant), % of SPED students

b. Predictors: (Constant), % of SPED students, School size - # of students

c. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High

d. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment

e. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment, Frequent and Focused Professional Development

f. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

Table A-2: *ANOVA for multiple linear regression - Working Together Toward Shared and Ambitious Learning Goals*

ANOVA ^g						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.652	1	21.652	23.003	.000 ^a
	Residual	984.548	1046	.941		
	Total	1006.200	1047			
2	Regression	126.425	2	63.212	75.084	.000 ^b
	Residual	879.775	1045	.842		
	Total	1006.200	1047			
3	Regression	201.833	3	67.278	87.321	.000 ^c
	Residual	804.367	1044	.770		
	Total	1006.200	1047			
4	Regression	362.587	4	90.647	146.896	.000 ^d
	Residual	643.614	1043	.617		
	Total	1006.200	1047			
5	Regression	447.365	5	89.473	166.831	.000 ^e
	Residual	558.835	1042	.536		
	Total	1006.200	1047			
6	Regression	717.475	6	119.579	431.142	.000 ^f
	Residual	288.726	1041	.277		
	Total	1006.200	1047			

a. Predictors: (Constant), % of SPED students

b. Predictors: (Constant), % of SPED students, School size - # of students

c. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High

d. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment

e. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment, Frequent and Focused Professional Development

f. Predictors: (Constant), % of SPED students, School size - # of students, School Level - elementary, Middle/Jr, High, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

g. Dependent Variable: Collaboration toward shared, ambitious learning goals

Table A-3: *Coefficients for multiple linear regression - Working Together Toward Shared and Ambitious Learning Goals***Coefficients^a**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.270	.058	4.677	.000					
	% of SPED students	-.019	.004	-.147	.000	-.147	-.147	-.147	1.000	1.000
2	(Constant)	.807	.073	11.085	.000					
	% of SPED students	-.022	.004	-.172	.000	-.147	-.181	-.172	.994	1.006
	School size - # of students	-.001	.000	-.324	.000	-.310	-.326	-.323	.994	1.006
3	(Constant)	1.101	.076	14.537	.000					
	% of SPED students	-.015	.004	-.120	.000	-.147	-.130	-.117	.959	1.043
	School size - # of students	.000	.000	-.142	.000	-.310	-.130	-.118	.690	1.449
	School Level - elementary, Middle/Jr, High	-.439	.044	-.331	.000	-.421	-.293	-.274	.685	1.459
4	(Constant)	.973	.068	14.258	.000					
	% of SPED students	-.007	.003	-.054	.035	-.147	-.065	-.052	.934	1.070
	School size - # of students	.000	.000	-.051	.095	-.310	-.052	-.041	.666	1.501
	School Level - elementary, Middle/Jr, High	-.514	.040	-.388	.000	-.421	-.370	-.319	.676	1.479
	Teacher Empowerment	.069	.004	.410	.000	.423	.447	.400	.950	1.053
5	(Constant)	.840	.064	13.037	.000					

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
% of SPED students	-.006	.003	-.046	-1.936	.053	-.147	-.060	-.045	.934	1.071
School size - # of students	.000	.000	-.057	-2.002	.046	-.310	-.062	-.046	.666	1.501
School Level - elementary, Middle/Jr, High	-.438	.038	-.330	-11.604	.000	-.421	-.338	-.268	.658	1.519
Teacher Empowerment	.077	.004	.459	19.122	.000	.423	.510	.441	.925	1.081
Frequent and Focused Professional Development	.302	.024	.300	12.573	.000	.291	.363	.290	.938	1.066
6 (Constant)	.468	.048		9.784	.000					
% of SPED students	-.003	.002	-.024	-1.412	.158	-.147	-.044	-.023	.932	1.073
School size - # of students	-5.085E-5	.000	-.020	-.978	.329	-.310	-.030	-.016	.664	1.506
School Level - elementary, Middle/Jr, High	-.263	.028	-.199	-9.508	.000	-.421	-.283	-.158	.632	1.583
Teacher Empowerment	.023	.003	.140	6.987	.000	.423	.212	.116	.685	1.460
Frequent and Focused Professional Development	.297	.017	.294	17.157	.000	.291	.470	.285	.938	1.066
Effective and Supportive Leadership	.626	.020	.632	31.207	.000	.751	.695	.518	.672	1.488

a. Dependent Variable: Collaboration toward shared, ambitious learning goals

Table A-4: *Model Summary for multiple linear regression for Conversations Focused on Teaching and Learning*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.199 ^a	.040	.039	.94810119	.040	42.651	1	1034	.000
2	.231 ^b	.054	.052	.94165226	.014	15.211	1	1033	.000
3	.269 ^c	.072	.070	.93263071	.019	21.082	1	1032	.000
4	.383 ^d	.147	.143	.89504367	.074	89.497	1	1031	.000
5	.385 ^e	.148	.144	.89479287	.001	1.578	1	1030	.209
6	.387 ^f	.150	.145	.89413576	.002	2.514	1	1029	.113
7	.829 ^g	.687	.685	.54259939	.537	1766.240	1	1028	.000
8	.832 ^h	.692	.690	.53872633	.005	15.834	1	1027	.000

a. Predictors: (Constant), % of ESL students

b. Predictors: (Constant), % of ESL students, % of non-white students

c. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students

d. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School Level - elementary, Middle/Jr, High

e. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School Level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper

f. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School Level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment

g. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School Level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development

h. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School Level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

Table A-5: *ANOVA for multiple linear regression - Conversations Focused on Teaching and Learning*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.339	1	38.339	42.651	.000 ^a
	Residual	929.458	1034	.899		
	Total	967.797	1035			
2	Regression	51.827	2	25.913	29.224	.000 ^b
	Residual	915.970	1033	.887		
	Total	967.797	1035			
3	Regression	70.163	3	23.388	26.889	.000 ^c
	Residual	897.634	1032	.870		
	Total	967.797	1035			
4	Regression	141.860	4	35.465	44.270	.000 ^d
	Residual	825.937	1031	.801		
	Total	967.797	1035			
5	Regression	143.123	5	28.625	35.752	.000 ^e
	Residual	824.674	1030	.801		
	Total	967.797	1035			
6	Regression	145.133	6	24.189	30.256	.000 ^f
	Residual	822.664	1029	.799		
	Total	967.797	1035			
7	Regression	665.139	7	95.020	322.742	.000 ^g
	Residual	302.658	1028	.294		
	Total	967.797	1035			
8	Regression	669.735	8	83.717	288.454	.000 ^h
	Residual	298.062	1027	.290		
	Total	967.797	1035			

a. Predictors: (Constant), % of ESL students

b. Predictors: (Constant), % of ESL students, % of non-white students

c. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students

d. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High

e. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper

f. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment

g. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development

h. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

i. Dependent Variable: Dialogue focused on teaching and learning

Table A-6: *Coefficients for multiple linear regression - Conversations Focused on Teaching and Learning*

		Coefficients ^a									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.071	.035		-2.034	.042					
	% of ESL students	.012	.002	.199	6.531	.000	.199	.199	.199	1.000	1.000
2	(Constant)	-.202	.048		-4.185	.000					
	% of ESL students	.008	.002	.128	3.634	.000	.199	.112	.110	.736	1.359
	% of non-white students	.004	.001	.138	3.900	.000	.204	.120	.118	.736	1.359
3	(Constant)	.004	.065		.054	.957					
	% of ESL students	.008	.002	.134	3.842	.000	.199	.119	.115	.735	1.361
	% of non-white students	.004	.001	.136	3.884	.000	.204	.120	.116	.736	1.360
	School size - # of students	.000	.000	-.138	-4.591	.000	-.131	-.141	-.138	.998	1.002
4	(Constant)	.452	.079		5.738	.000					
	% of ESL students	.003	.002	.055	1.585	.113	.199	.049	.046	.691	1.447
	% of non-white students	.004	.001	.124	3.680	.000	.204	.114	.106	.734	1.362
	School size - # of students	.000	.000	.050	1.433	.152	-.131	.045	.041	.677	1.478
	School level - elementary, Middle/Jr, High	-.446	.047	-.340	-9.460	.000	-.344	-.283	-.272	.640	1.562
5	(Constant)	.807	.294		2.748	.006					
	% of ESL students	.003	.002	.049	1.405	.160	.199	.044	.040	.679	1.473
	% of non-white students	.003	.001	.117	3.452	.001	.204	.107	.099	.718	1.393
	School size - # of students	.000	.000	.048	1.385	.166	-.131	.043	.040	.676	1.480
	School level - elementary, Middle/Jr, High	-.449	.047	-.343	-9.521	.000	-.344	-.284	-.274	.638	1.567
	Sc Aver Yrs of Exper	-.095	.075	-.038	-1.256	.209	-.069	-.039	-.036	.919	1.088
6	(Constant)	.874	.297		2.949	.003					
	% of ESL students	.003	.002	.054	1.533	.126	.199	.048	.044	.674	1.483
	% of non-white students	.003	.001	.095	2.610	.009	.204	.081	.075	.617	1.620
	School size - # of students	9.920E-5	.000	.040	1.121	.263	-.131	.035	.032	.659	1.517

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
	School level - elementary, Middle/Jr, High	-.446	.047	-.340	-9.445	.000	-.344	-.282	-.271	.637	1.570
	Sc Aver Yrs of Exper	-.104	.076	-.042	-1.382	.167	-.069	-.043	-.040	.913	1.096
	Teacher Empowerment	-.008	.005	-.050	-1.586	.113	-.101	-.049	-.046	.826	1.211
7	(Constant)	.997	.180		5.541	.000					
	% of ESL students	.000	.001	-.004	-.179	.858	.199	-.006	-.003	.671	1.489
	% of non-white students	-.002	.001	-.077	-3.391	.001	.204	-.105	-.059	.597	1.675
	School size - # of students	9.810E-5	.000	.039	1.827	.068	-.131	.057	.032	.659	1.517
	School level - elementary, Middle/Jr, High	-.297	.029	-.226	-10.284	.000	-.344	-.305	-.179	.627	1.594
	Sc Aver Yrs of Exper	-.142	.046	-.057	-3.103	.002	-.069	-.096	-.054	.912	1.096
	Teacher Empowerment	.000	.003	-.001	-.051	.959	-.101	-.002	-.001	.823	1.215
	Frequent and Focused Professional Development	.780	.019	.781	42.027	.000	.802	.795	.733	.880	1.136
8	(Constant)	.937	.179		5.227	.000					
	% of ESL students	.000	.001	.003	.161	.872	.199	.005	.003	.667	1.500
	% of non-white students	-.002	.001	-.087	-3.846	.000	.204	-.119	-.067	.589	1.697
	School size - # of students	.000	.000	.042	1.990	.047	-.131	.062	.034	.658	1.519
	School level - elementary, Middle/Jr, High	-.272	.029	-.207	-9.257	.000	-.344	-.278	-.160	.598	1.672
	Sc Aver Yrs of Exper	-.136	.046	-.054	-2.975	.003	-.069	-.092	-.052	.911	1.098
	Teacher Empowerment	-.008	.004	-.047	-2.104	.036	-.101	-.066	-.036	.602	1.661
	Frequent and Focused Professional Development	.780	.018	.781	42.337	.000	.802	.797	.733	.880	1.136
	Effective and Supportive Leadership	.082	.021	.085	3.979	.000	.093	.123	.069	.663	1.507

a. Dependent Variable: Dialogue focused on teaching and learning

Table A-7: *Model Summary for multiple linear regression for Public Practice***Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.199 ^a	.040	.039	.94810119	.040	42.651	1	1034	.000
2	.231 ^b	.054	.052	.94165226	.014	15.211	1	1033	.000
3	.269 ^c	.072	.070	.93263071	.019	21.082	1	1032	.000
4	.383 ^d	.147	.143	.89504367	.074	89.497	1	1031	.000
5	.385 ^e	.148	.144	.89479287	.001	1.578	1	1030	.209
6	.387 ^f	.150	.145	.89413576	.002	2.514	1	1029	.113
7	.829 ^g	.687	.685	.54259939	.537	1766.240	1	1028	.000
8	.832 ^h	.692	.690	.53872633	.005	15.834	1	1027	.000

a. Predictors: (Constant), % of ESL students

b. Predictors: (Constant), % of ESL students, % of non-white students

c. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students

d. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High

e. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper

f. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment

g. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development

h. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

Table A-8: ANOVA for multiple linear regression for Public Practice

ANOVA ⁱ						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.339	1	38.339	42.651	.000 ^a
	Residual	929.458	1034	.899		
	Total	967.797	1035			
2	Regression	51.827	2	25.913	29.224	.000 ^b
	Residual	915.970	1033	.887		
	Total	967.797	1035			
3	Regression	70.163	3	23.388	26.889	.000 ^c
	Residual	897.634	1032	.870		
	Total	967.797	1035			
4	Regression	141.860	4	35.465	44.270	.000 ^d
	Residual	825.937	1031	.801		
	Total	967.797	1035			
5	Regression	143.123	5	28.625	35.752	.000 ^e
	Residual	824.674	1030	.801		
	Total	967.797	1035			
6	Regression	145.133	6	24.189	30.256	.000 ^f
	Residual	822.664	1029	.799		
	Total	967.797	1035			
7	Regression	665.139	7	95.020	322.742	.000 ^g
	Residual	302.658	1028	.294		
	Total	967.797	1035			
8	Regression	669.735	8	83.717	288.454	.000 ^h
	Residual	298.062	1027	.290		
	Total	967.797	1035			

a. Predictors: (Constant), % of ESL students

b. Predictors: (Constant), % of ESL students, % of non-white students

c. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students

d. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High

e. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper

f. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment

g. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development

h. Predictors: (Constant), % of ESL students, % of non-white students, School size - # of students, School level - elementary, Middle/Jr, High, Sc Aver Yrs of Exper, Teacher Empowerment, Frequent and Focused Professional Development, Effective and Supportive Leadership

i. Dependent Variable: Dialogue focused on teaching and learning

Table A-9: *Coefficients for multiple linear regression for Public Practice*

Coefficients ^a											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.071	.035		-2.034	.042					
	% of ESL students	.012	.002	.199	6.531	.000	.199	.199	.199	1.000	1.000
2	(Constant)	-.202	.048		-4.185	.000					
	% of ESL students	.008	.002	.128	3.634	.000	.199	.112	.110	.736	1.359
	% of non-white students	.004	.001	.138	3.900	.000	.204	.120	.118	.736	1.359
3	(Constant)	.004	.065		.054	.957					
	% of ESL students	.008	.002	.134	3.842	.000	.199	.119	.115	.735	1.361
	% of non-white students	.004	.001	.136	3.884	.000	.204	.120	.116	.736	1.360
	School size - # of students	.000	.000	-.138	-4.591	.000	-.131	-.141	-.138	.998	1.002
4	(Constant)	.452	.079		5.738	.000					
	% of ESL students	.003	.002	.055	1.585	.113	.199	.049	.046	.691	1.447
	% of non-white students	.004	.001	.124	3.680	.000	.204	.114	.106	.734	1.362
	School size - # of students	.000	.000	.050	1.433	.152	-.131	.045	.041	.677	1.478
	School level - elementary, Middle/Jr, High	-.446	.047	-.340	-9.460	.000	-.344	-.283	-.272	.640	1.562
5	(Constant)	.807	.294		2.748	.006					
	% of ESL students	.003	.002	.049	1.405	.160	.199	.044	.040	.679	1.473
	% of non-white students	.003	.001	.117	3.452	.001	.204	.107	.099	.718	1.393
	School size - # of students	.000	.000	.048	1.385	.166	-.131	.043	.040	.676	1.480
	School level - elementary, Middle/Jr, High	-.449	.047	-.343	-9.521	.000	-.344	-.284	-.274	.638	1.567
	Sc Aver Yrs of Exper	-.095	.075	-.038	-1.256	.209	-.069	-.039	-.036	.919	1.088
6	(Constant)	.874	.297		2.949	.003					
	% of ESL students	.003	.002	.054	1.533	.126	.199	.048	.044	.674	1.483
	% of non-white students	.003	.001	.095	2.610	.009	.204	.081	.075	.617	1.620
	School size - # of students	9.920E-5	.000	.040	1.121	.263	-.131	.035	.032	.659	1.517

Coefficients^a

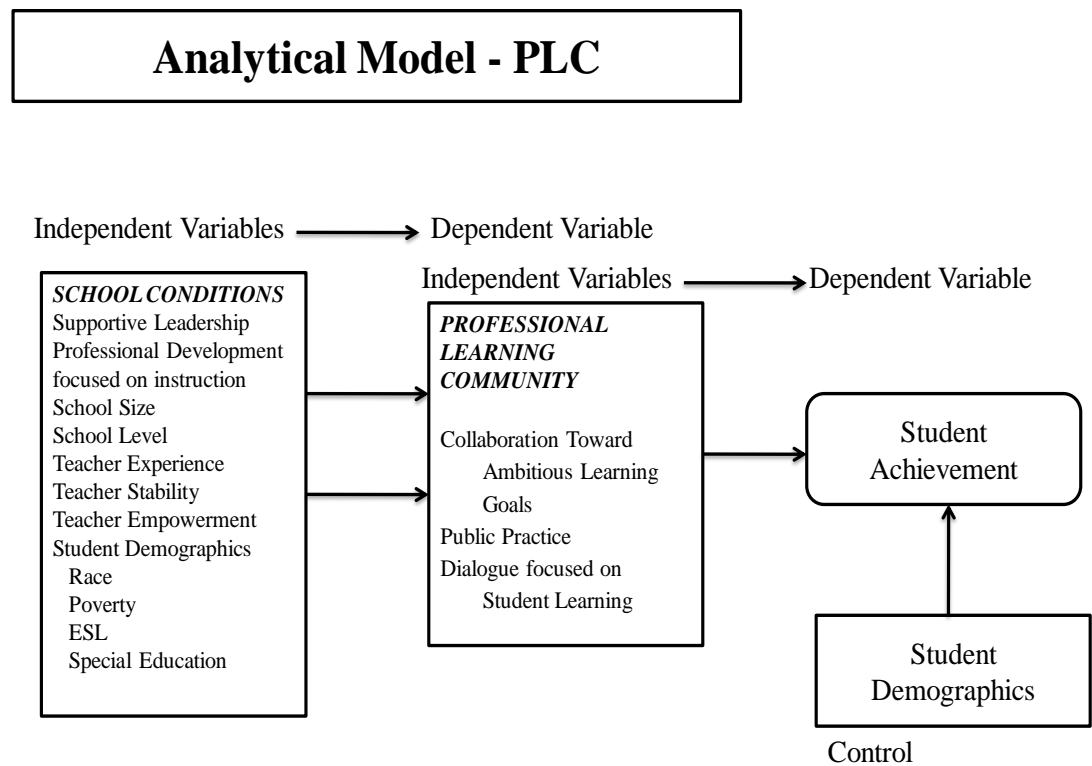
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
	School level - elementary, Middle/Jr, High	-.446	.047	-.340	-9.445	.000	-.344	-.282	-.271	.637	1.570
	Sc Aver Yrs of Exper	-.104	.076	-.042	-1.382	.167	-.069	-.043	-.040	.913	1.096
	Teacher Empowerment	-.008	.005	-.050	-1.586	.113	-.101	-.049	-.046	.826	1.211
7	(Constant)	.997	.180		5.541	.000					
	% of ESL students	.000	.001	-.004	-.179	.858	.199	-.006	-.003	.671	1.489
	% of non-white students	-.002	.001	-.077	-3.391	.001	.204	-.105	-.059	.597	1.675
	School size - # of students	9.810E-5	.000	.039	1.827	.068	-.131	.057	.032	.659	1.517
	School level - elementary, Middle/Jr, High	-.297	.029	-.226	-10.284	.000	-.344	-.305	-.179	.627	1.594
	Sc Aver Yrs of Exper	-.142	.046	-.057	-3.103	.002	-.069	-.096	-.054	.912	1.096
	Teacher Empowerment	.000	.003	-.001	-.051	.959	-.101	-.002	-.001	.823	1.215
	Frequent and Focused Professional Development	.780	.019	.781	42.027	.000	.802	.795	.733	.880	1.136
8	(Constant)	.937	.179		5.227	.000					
	% of ESL students	.000	.001	.003	.161	.872	.199	.005	.003	.667	1.500
	% of non-white students	-.002	.001	-.087	-3.846	.000	.204	-.119	-.067	.589	1.697
	School size - # of students	.000	.000	.042	1.990	.047	-.131	.062	.034	.658	1.519
	School level - elementary, Middle/Jr, High	-.272	.029	-.207	-9.257	.000	-.344	-.278	-.160	.598	1.672
	Sc Aver Yrs of Exper	-.136	.046	-.054	-2.975	.003	-.069	-.092	-.052	.911	1.098
	Teacher Empowerment	-.008	.004	-.047	-2.104	.036	-.101	-.066	-.036	.602	1.661
	Frequent and Focused Professional Development	.780	.018	.781	42.337	.000	.802	.797	.733	.880	1.136
	Effective and Supportive Leadership	.082	.021	.085	3.979	.000	.093	.123	.069	.663	1.507

a. Dependent Variable: Dialogue focused on teaching and learning

Appendix B: Supplemental Research on Student Achievement

Introduction

The purpose of this supplemental investigation is to explore the presence, strength, and value of professional learning community in schools by examining the relationship of PLC to student achievement. This analysis will use data from the Keys to Effective Schools (KEYS) program offered by the National Education Association and the same PLC variables created for the primary study. Including student achievement in the analysis, expands the original Analytical Framework as follows:



Student demographic control variables are used in the analysis of student achievement because it is widely accepted in research and practice communities that schools with higher percentages of low-income, ethnically diverse, and/or special education students tend to perform less well than other schools.

The supplemental research question was: How does the presence of a professional learning community in schools correlate with measures of student achievement? A logistic regression analysis was performed with a dichotomous outcome variable coded 0 if the school was not a high-performing school and 1 if the school was a high performing school. Four control variables were used: the Percentage of Non-White Students, the Percentage of SPED Students, the Percentage of ESL Students, and the percentage of students receiving a free or reduced-price lunch. The three main predictor variables were the three measures of PLC with Working Together Toward Shared, Ambitious Learning Goals identified as the strongest variable explaining most of the variance.

Defining and Creating the Student Achievement Variable

Given the size, geographic distribution, and time span of the KEYS school database, gathering and analyzing actual school performance data was beyond the scope of this research project. Instead, the measure of student achievement used in this study is based on teachers' response to items in the KEYS survey about the academic performance of their students. Using teacher response rather than actual data could likely make these finding less reliable, thus this analysis was included as an appendix to the main study.

The KEYS Survey question used for this study is: *On average, what is the performance level of all students in your TARGET CLASS?* The target class is defined in the survey as the class where a teacher spends the most time instructional time or the first class taught if there are multiple classes of equal time. The question has a five point scale of the following responses: primarily low achieving; primarily average to low achieving; primarily average achieving; primarily average to high achieving; and primarily high achieving. While most questions in the KEYS survey are answered by all staff members in the school, student performance questions are among those answered only by classroom teachers.

One option for using this data was to use the aggregated school average response, as is done with most other questions in this study. However, in this case using the school average could mask important differences between schools. For example a school with mostly average achieving classroom and a school with an even distribution of high achieving and low achieving classrooms would have a similar school average. To mitigate this, a dichotomous variable of school performance was created where “1” indicates a high performing school and “0” indicates a school that is not high performing.

The dichotomous school performance variable was created in two stages using the database of individual staff respondents. First, two school level variables were created that aggregated individual responses based on (a) the percentage of teachers categorizing their classrooms as either primarily high achieving or primarily average to high achieving; and (b) the percentage of teachers categorizing their classrooms as either primarily low achieving or primarily average to low achieving. While primarily average achieving was the most frequent response (32.5% of teachers identified their class as

primarily average achieving), using this answer would have added no statistical value to identifying high performing schools and thus was not included. Second, schools were identified as high performing when they were (a) in the top quartile based on the percentage of high performing classrooms *and* (b) in the bottom quartile based on the percentage of low performing classrooms. This process created school that could be identified as high performing relative to other schools in the KEYS database. Table B-1 provides a summary of the student achievement variable.

Table B-1: *Summary of High Performing Schools Variable*

Minimum % of high performing classrooms in the top quartile	Maximum % of low performing classrooms in the bottom quartile	Percentage of schools identified as high performing
50%	17%	19.5%

PLC and Student Achievement

The supplemental research question of this study was: How does the presence of professional learning community in schools correlate with measures of student achievement? In order to answer this research question, a logistic regression analysis was performed. In this analysis, the dependent variable was dichotomous indicating that the school was high performing (coded as 1) or not (coded as 0). Overall, 19.5% of the schools qualified as high-performing. The Percentage of Non-White Students, the percentage of students receiving a free or reduced price lunch, the Percentage of SPED Students, and the Percentage of ESL Students were used as control variables, with Working Together Toward Shared and Ambitious Learning Goals, Conversations Focused on Teaching and Learning, and Public Practice as the predictor variables.

Table B-2 shows the results from this analysis. Overall, the seven predictor variables were statistically significant in explaining student achievement, $\chi^2(6) = 360.44$, $p < .001$. Individually, five of the seven variables were statistically significant, including two of the three PLC variables. Working Together Toward Shared and Ambitious Learning Goals, the strongest PLC variable was predictive of student achievement ($\text{Exp}(B) = 1.49$, $p = .001$). This indicates that schools with high scores on Working Together are significantly more likely to be high performing. Conversations Focused on Teaching and Learning (Conversations) was negatively predictive of student achievement ($\text{Exp}(B) = .699$, $p = .001$). This indicates that schools with high scores on Conversations are less likely to be high performing.

Three of the four student demographic variables were also predictive of student achievement. The Percentage of Non-White Students ($\text{Exp}(B) = .97$, $p < .001$), the Percentage of SPED Students ($\text{Exp}(B) = .94$, $p = .001$), and the percentage of students receiving a free or reduced price lunch ($\text{Exp}(B) = .95$, $p < .001$) each had a statistically significant negative relationship to student achievement. This indicates that schools with higher percentages of non-white students, SPED students, or students on free and reduced lunch have a lower likelihood of being high performing. The Public Practice scale of PLC had no significant relationship to student achievement or the likelihood of a school being high performing.

Table B-2: *Logistic Regression Analysis Predicting Student Achievement from Working Together Toward Shared and Ambitious Learning Goals, Conversations Focused on Teaching and Learning, Public Practice, and Student Demographic Variables (N = 1,059)*

Predictor	<i>B</i>	<i>SEB</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>)
Working Together Toward Shared, Ambitious Learning Goals	.397	.121	10.73	1	.001	1.49
Conversations Focused on Teaching and Learning	-.358	.103	11.99	1	.001	.70
Public Practice	-.071	.112	.40	1	.525	.931
Percentage of Non-White Students	-.026	.005	23.16	1	<.001	.97
Percentage of SPED Students	-.058	.017	11.44	1	.001	.944
Percentage of ESL Students	.017	.017	.961	1	.327	1.01
Percentage of free/reduced lunch	-.046	.006	67.11	1	<.001	.955
Constant	1.77	.268	43.61	1	<.001	5.86

Summary

This study found a significant positive relationship between the strongest variable of PLC – Working Together Toward Shared and Ambitious Goals – and student achievement ($\beta = .397$, $p < .005$). This significant finding is somewhat tempered by an almost equally negative relationship between the PLC variable Conversations Focused on Teaching and Learning and student achievement ($\beta = -.358$, $p < .005$) and no significant relationships between the PLC variable of Public Practice and student achievement.

These findings were the result of a logistic regression model based on the creation of a

dichotomous variable for high achieving schools. To further test these relationships a second analysis using linear regression based on the School Level average score for classroom achievement was conducted. The results were similar with Working Together Toward Shared and Ambitious Learning Goals positively associated with student achievement ($\beta = .052$, $p < .005$) and Conversations Focused on Teaching and Learning negatively associated with student achievement ($\beta = -.038$, $p < .005$). It should be noted again that the measure for variable 1 (Working Together Toward Shared and Ambitious Learning Goals) is considerably stronger than the other variables and the positive finding associated with it may have more significance than the findings from the other variables.

Appendix C: Implications for the National Education Association

One supplemental purpose of this research was in service to the National Education Association (NEA) and its KEYS for Effective Schools project. In particular, NEA allowed for the use of its expansive research database in hopes of learning more about how the KEYS survey instrument can grow as a tool to help schools improve. The KEYS surveys have been administered in schools for twenty years with more than 1,800 survey administrations including over 200 schools that have taken the survey on more than one occasion in order to assess growth over time. NEA has made a considerable investment in the KEYS process and seeks to ensure that the instrument remains useful and relevant to schools and to NEA affiliates. The following memo will be presented to NEA based on the finding from this research:

Memorandum

To: Bouy Te, Director, QSPR

Jacques Nacson, Senior Researcher, QSPR

From: Segun Eubanks

Shyrelle Eubanks

Re: KEYS Research Project

Date: January 25, 2012

As you know, we have recently concluded two studies using the KEYS data as part of our doctoral program at the University of Maryland, College Park. Thanks to your generous support, we successfully completed doctoral dissertations on the following topics:

The Power of Professional Community: Examining the Relationship between School Conditions and the Presence of Professional Learning Community

Advancing a Culture of High Expectations: Academic Press and School Conditions

The full text of each study has been sent to you under separate cover. Each study used the KEYS survey questions to create a measure of Academic Press and Professional Learning Community (PLC) and to correlate these measures with key school structural and climate conditions. Our finding showed promising indications that supportive school conditions – such as effective leadership and focused professional development – are strongly associated with both Professional Learning Community and strong Academic Press in schools.

Summary of Findings for Professional Learning Community

Through an assessment of KEYS questions and a factor analysis process, three measures of Professional Learning Community were extracted from the KEYS survey, which coincide with existing research on PLC. These three measures were: Working Together Toward Shared and Ambitious Learning Goals; Conversations Focused on Teaching and Learning; and Public Practice. Defining these measures of PLC was an important element of this research and could prove useful to the KEYS program.

The research found a strong and consistent correlation between the three measures of PLC and several school conditions, most notably effective and supportive leadership and frequent and focused professional development. Teacher characteristics were found to have a modest but statistically significant relationship to the PLC measures. Teacher

Empowerment had a modest positive relationship to Working Together toward shared goals and Public Practice. Interestingly, schools with more experienced teachers tended to have lower measures of Conversations Focused on Teaching and Learning and Public Practice. The size of the school, as measured by the number of students, had a modest relationship to Conversations Focused on Teaching and Learning but no other statistically significant relationship to other PLC variables. On the other hand, the findings show a very consistent relationship between School Level and two of the three PLC measures indicating that PLC is far more likely to have a strong presence in elementary schools than in middle or high schools.

Summary of Findings for Academic Press

Through an assessment of KEYS questions and a factor analysis process, two measures of Academic Press were extracted from the KEYS survey, which coincide with existing research. These two measures were: School Academic Ethos and Teacher Press.

Defining these measures of Academic Press was an important element of this research and could prove useful to the KEYS program.

The research identified Effective and Supportive Leadership and Frequent and Focused Professional Development as the most significant predictors of School Academic Ethos and Teacher Press. School Size and School Level has a significant relationship to both School Academic Ethos and Teacher Press. Specifically, smaller schools and elementary schools associated with higher levels of School Academic Ethos and Teacher Press than larger schools and middle or high schools. The Percentage of ESL Students has a

significant negative relationship to Teacher Press only, with lower percentages of ESL students associated to higher levels of Teacher press.

Recommendations

As promised, we have also considered how this research could benefit the NEA KEYS initiative and offer the following recommendations.

- Use this research to create a measure of professional learning community and academic press that could be part of the KEYS School Report. Giving schools an assessment of the presence of PLC and/or academic press and of the school conditions needed to foster it could provide direct information that schools could act upon and measure progress. While the current KEYS indicators are very useful, many educators are very familiar with the concept of PLC and academic press (high academic expectations) so these measures could be more accessible to the users. There may be other measures KEYS could create as well such as those being developed by the other student-researchers currently analyzing KEYS data.
- Use KEYS and the outcomes of the research to provide more tools for intervention and program development. KEYS in its current form serves primarily as a diagnostic tool and is very effective at helping schools determine their strengths and weaknesses. However, developing training and resources on how to build professional community or how to develop shared understanding and commitment would add significant value to the KEYS program.

- Make the KEYS database more widely available to independent researchers. Hopefully, this study and the others currently in process will spurn interest in the broader research community. The KEYS database could become a rich source for research just as many other datasets, such as the Tennessee STAR study or the School Restructuring Survey.
- Conduct a time series study using KEYS schools that have taken the survey on more than one occasion. A mixed-methods study that analyzes data from the survey and conducts case studies from targeted schools would provide valuable information about interventions to help schools work toward continuous improvement and student growth.

We once again thank you for your support and assistance in the research. We are happy to meet with you and your team at any point to further review both the research and our recommendations.

Appendix D: KEYS Administrative Survey

KEYS School Data

The following information about your school is needed to help interpret the data from the questionnaire that will be administered to your school's education employees.

How many students are enrolled in this school?

What is the size of the school's staff?

How many people provide direct instruction to students (e.g. teachers, paraprofessional, counselor, psychologist, tutor) ? *We will use this number to calculate the number of expected responses.*

What is the average class size in this school?

Which of the following best describes the level of your school?

- ☒ Elementary
- ☐ Middle school
- ☐ Junior high school
- ☐ Senior high school
- ☐ Combination: (specify)
- ☐ Other: (specify)

Which of the following best describes the community in which your school is located?

- ☐ Large city
- ☒ Suburb of a large city
- ☐ Small city
- ☐ Town
- ☐ Rural area

What is the racial/ethnic composition of the student body of your school?
(Please be sure that your estimated percentages add up to 100% and that you round the percentages to whole numbers.)

American Indian/Alaska Native

Asian/Pacific Islander

Black/African American

Caucasian (not of Hispanic origin)

Hispanic/Latino

Other: Specify other minority:

In the past 12 months, has this school administered any standardized tests, such as the Stanford 9, Metropolitan Achievement Tests, Iowa Test of Basic Skills, California Achievement Tests, or any other norm-referenced standardized test?

**If yes, what was the name of the test, and was there an edition or form number of the test?
If more than one test was administered in the past 12 months, please answer about the most recently administered.**

Name of test

Edition/Form

When was it administered?

When were the results made available to the school?

Referring to the standardized test named above, what was the average score for the highest grade level at this school? (For example, if the school includes grades 9-12, please report the average score for 12th graders.)

What was the average score for minority students in the highest grade level at this school? (Minority refers to all racial/ethnic categories other than Caucasian and not of Hispanic origin.)

On average, what is the performance level of *all* students in your school?

- ☐ Primarily high achieving
- ☐ Primarily average to high achieving
- ☒ Primarily average achieving
- ☐ Primarily average to low achieving

☐ Primarily low achieving

On average, what is the performance level of *racial and ethnic minority* students in your school?

☐ Primarily high achieving

☐ Primarily average to high achieving

☒ Primarily average achieving

☐ Primarily average to low achieving

☐ Primarily low achieving

What percentage of students in this school receive special education instruction?

What percentage of students in this school are enrolled in an English as a Second Language program?

What percentage of students in this school are eligible for a free or reduced price lunch?

How would you characterize the socio-economic status of most of the parents of the students served by this school?

☐ High income

☐ Upper middle income

☐ Middle income

☒ Lower middle income

☐ Low income

During the past year, what external organizations (e.g., social service agencies, police, churches/synagogues/mosques, youth organizations, universities, etc.) have you had contact about school-related matters? Please list these organizations by name. In the first column, indicate whether the organization is in the immediate neighborhood of the school. In the second column, indicate the frequency of your contact with each organization. In the third column, mark the three organizations that are most important to your school's improvement.

If you are not actively involved with any external organization, please check here. ☐

Is this
organization in
the immediate
school

How frequent was your contact
with each organization?

Mark the
THREE
most
important to

	neighborhood?					your schools improvement	
Please write the name of the organizations:	Yes	No	Almost daily	Weekly	Once a month	Less often	3 Most Important
Sheriff's Office-DARE	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
University of GA Extension Ser	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
Kennesaw University	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
Boy/Girl Scouts	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
Mercer University	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
DFACS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
Piedmont College and University	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>

Is there site-based decision making in your school?

☐ Yes ☐ No

Appendix E: KEYS Staff Survey

Question number	Question text
q1	Based on your own experience or impressions, please indicate how accurately each of the following describes your school:
q1a	My school has clear goals that provide a sense of direction and purpose for our daily efforts.
q1b	My school has well-defined learning expectations for all students.
q1c	My school has high standards for student achievement.
q1d	My school has high standards for teaching.
q1e	My school always focuses on what is best for student learning when making important decisions.
q1f	My school has a school day that is organized to maximize instructional time.
q1g	My school has clear policies in place to provide a learning environment that is safe from crime and violence.
q2	Based on your own experience or impressions, please indicate how accurately each of the following statements describes the situation in your school:
q2a	The district office administration shows a strong commitment to the continuous improvement of teaching and learning in my school.
q2b	The district office administration believes that all students in my school can meet high standards.
q2c	Our principal will make changes, when necessary, to improve the environment for teaching and learning.
q2d	Our principal talks with teachers frequently about their instructional practices.
q2e	Our principal encourages teachers to try new ideas to improve the curriculum and instruction.
q2f	Our principal holds teachers and other school employees accountable for their performance.
q2g	Our principal supports teachers and other school employees with student discipline.
q2h	School staff members have a shared understanding of what the school's main goals should be.
q2i	Teachers assume most of the responsibility when students fail.
q2j	School specialists in health, media, special education, Title I, psychology, and social work show a strong commitment to the continuous improvement of teaching and learning.
q3	Based on your own experience or impressions, how many TEACHERS in your school do each of the following?
q3a	Set high standards for themselves
q3b	Set high standards for students
q3c	Implement state or district curriculum standards
q3d	Implement state or district student assessment and performance standards
q3e	Take responsibility for helping ALL students learn, not just those in their classroom
q3f	Help maintain discipline in the entire school, not just in their classroom
q4	Based on your own experience or impressions, please indicate how accurately each statement describes the situation in your school:
q4a	School staff use data about school problems to make decisions about school improvement.
q4b	School staff work together to identify problems with the implementation of the school curriculum.
q4c	The curriculum includes attention to the development of students' social skills and citizenship.

- q4d The curriculum includes problem solving and critical thinking as valued components.
- q4e Teachers use students' personal interests and goals to help develop the curriculum.
- q4f Students are made to feel that their personal experiences and interests are valued in the learning experience.
- q4g School staff, students, and parents work together to solve problems that affect student learning.
- q4h I am comfortable voicing my concerns to school administrators.
- q5 Based on your own experience or impressions, please indicate how accurately each statement describes your school's ADMINISTRATORS:
- q5a School administrators use knowledge about child/adolescent development to create effective learning environments.
- q5b School administrators are prepared to deal with individual student differences.
- q5c School administrators work together with the district office and school board to try to solve problems that affect student learning.
- q5d School administrators work together with teachers and other school employees to try to solve problems.
- q6 Based on your own experiences or impressions, please indicate how accurately each statement describes your school's TEACHERS
- q6a Teachers talk about instruction in the teachers' lounge, at faculty meetings, etc.
- q6b Teachers often use faculty meetings for problem solving.
- q6c Teachers design instructional programs together.
- q6d Teachers try to coordinate their teaching with instruction at other grade levels and/or subject areas.
- q6e Teachers have strong knowledge of their subject-matter areas.
- q6f Teachers are prepared to deal with individual student differences.
- q6g Teachers of THE SAME grade and/or subject area work together to try to solve problems that affect student learning.
- q6h Teachers of DIFFERENT grades and/or subject areas work together to try to solve problems that affect student learning.
- q6i Teachers work together with other school staff to try to solve problems that affect student learning.
- q7 Based on your own experience or impressions, how much influence do TEACHERS have over your school's decisions in each of the following areas?
- q7a Setting standards for student behavior
- q7b Determining the curriculum
- q7c Determining books and other instructional materials used in classrooms
- q7d Determining how students' progress is measured
- q7e Determining the content of professional development programs
- q7f Hiring new teachers and other professional personnel
- q7g Hiring a new principal
- q7h Deciding how discretionary school funds should be used
- q8 Based on your own experience or impressions, how much influence do each of the following groups have over your school's decisions about HOW TO ACHIEVE SCHOOL IMPROVEMENT GOALS?

- q8a School staff other than teachers
- q8b Parents and students
- q8c Business and community representatives
- q8d District office administration
- q9 Based on your own experience or impressions, please indicate how accurately each statement related to PARENTS describes the situation in your school:
- q9a My school regularly communicates with parents about how they can help their children learn. My school encourages feedback about the curriculum and instructional methods from parents and the community.
- q9b School staff work hard to build trusting relationships with parents.
- q9c Teachers work closely with parents to meet students' needs.
- q9e Teachers try hard to understand parents' problems and concerns about their children.
- q9f Parents and teachers work together to promote school-wide improvement.
- q10 How often have YOU had conversations with other school staff about each of the following during the past 12 months?
- q10a What helps students learn best
- q10b Teaching techniques
- q10c Concerns about your school's safety
- q10d Development of new curriculum or changes in the curriculum
- q10e Implementing district or state curriculum standards
- q10f Implementing district or state student assessment and performance standards
- q11 Based on your own experience or impressions, please indicate how accurately each statement describes EDUCATIONAL PROGRAMS in your school:
- q11a Once we start a new program we follow-up to make sure that it is working.
- q11b We have so many different programs in my school that I can't keep track of them all.
- q11c Many special programs come and go at my school.
- q11d You can see real continuity from one program to another.
- q11e The quality of all educational programs is assessed on a regular basis.
- q11f Standards of program evaluation are clear and well specified.
- q12 How frequently are the following STUDENT ASSESSMENT techniques used in your school?
- q12a Standardized tests
- q12b Teacher-made tests
- q12c Students' demonstration of their work
- q12d Exhibition of students' work
- q12e Student self-assessment
- q12f Standards-based assessments
- q13 How frequently does your school use STUDENT ASSESSMENT RESULTS for each of the following purposes:
- q13a To modify the curriculum to address student needs
- q13b To develop new programs or instructional strategies to address student needs
- q13c To find out about the performance of specific subgroups of students
- q13d To measure changes over time in the performance of individual students or subgroups
- q13e To measure success of teaching strategies

- Based on your own experience or impressions, please indicate how accurately each statement about STUDENT ASSESSMENT describes the situation in your school:
- q14 Teachers have the resources they need to interpret assessment results.
- q14a The district closely monitors my school's results on external assessments.
- q14b Failure to meet state or district standards on assessments has direct consequences for school administrators.
- q14c Failure to meet state or district standards on assessments has direct consequences for teachers.
- q14d Failure to meet state or district standards on assessments has direct consequences for students.
- q14e Please click on the item that best describes your CURRENT position at your school:
- q15 I am responsible for providing direct instruction to students on a regularly scheduled basis.
- q15 I am a school employee who does not provide direct instruction to students.
- q15 I am not a school employee.
- QUESTIONS 16-37 ARE TO BE ANSWERED BY THOSE WHO PROVIDE DIRECT INSTRUCTION TO STUDENTS ONLY. Do you participate in a regularly scheduled planning period with others who provide direct instruction to students?
- q16 How long is your typical regularly scheduled planning period with teachers or other colleagues?
- q17 How often do you meet with teachers or other colleagues for your scheduled planning period?
- q18 During the past 12 months, how often did you participate in the following activities related to teaching?
- q19 Regularly scheduled collaboration with teachers or other colleagues, excluding meetings held for administrative purposes.
- q19a Being mentored by a teacher or other colleague in a formal relationship.
- q19b Mentoring a teacher or other colleague in a formal relationship.
- q19c How well prepared do you feel to do the following in your classroom?
- q20 Implement new methods of teaching.
- q20a Implement state or district curriculum standards.
- q20b Implement state or district assessment standards.
- q20c Use student performance assessment techniques.
- q20d Address the needs of students from diverse cultural backgrounds.
- q20e Address the needs of students with limited English proficiency.
- q20f Address the needs of students with mild learning disabilities.
- q20g Address the needs of students with severe learning disabilities.
- q20h Integrate new technology into classroom instruction.
- q20i During the past 12 months, how often did you:
- q21 Receive useful feedback on your performance from other colleagues?
- q21a Receive useful feedback on your performance from your principal?
- q21b Visit other teachers' classrooms?
- q21c Have other teachers observe your classroom?
- q21d Have the principal observe your classroom?
- QUESTIONS 22-37 ASK FOR INFORMATION ABOUT YOUR TEACHING IN A SPECIFIC CLASS, THE CLASS IN WHICH YOU SPEND MOST OF YOUR INSTRUCTIONAL DAY, OR, IF YOU TEACH
- q22

- MULTIPLE CLASSES OF EQUAL LENGTH, THE FIRST CLASS OF THE WEEK THAT YOU MEET TO TEACH. THIS IS REFER
- q22 Art, music, drama, performance
 - q22 Computers/technology
 - q22 English
 - q22 English-as-a-second-language
 - q22 Foreign language
 - q22 Language Arts
 - q22 Mathematics
 - q22 Reading
 - q22 Science
 - q22 Social studies, history, government
 - q22 Speech, communication
 - q22 Vocational, business, technology
 - q22 Writing
 - q22 Mixed subjects
 - q22 Other subject
 - q22other Other subject SPECIFY:
 - q23 Is your TARGET CLASS a regular or special education class?
 - q24 In what language is your TARGET CLASS taught?
 - q25 Do you have formal training in the target subject you teach, or NO formal training?
 - q26 What is the grade level of students in your TARGET CLASS? (PLEASE MARK ONE CATEGORY ONLY)
 - q27 How many students do you have in your TARGET CLASS?
 - q27 Fewer than 15
 - q28 About what proportion of students in your TARGET CLASS are on task almost all the time?
 - q29 About how often do you use each of the following instructional strategies in your TARGET CLASS?
 - q29a Assign students projects of at least one week's duration.
 - q29b Have students explain their reasoning.
 - q29c Relate subject matter to students' experience and interests.
 - q29d Have students use library resources.
 - q29e Lecture to the class for more than half a period.
 - q29f Mix brief talks (presentations) with question, answer, and discussion segments.
 - q29g Have students work in cooperative groups.
 - q29h Provide individualized instruction.
 - q29i Have students brainstorm ideas for written work.
 - q29j Have students brainstorm and debate ideas for more than half a period.
 - q29k Use peer tutoring.
 - q29l Have students produce products such as maps, charts, models, videos, audio, plays, posters, and drawings.
 - q29m Provide individual students with detailed written or verbal feedback on their performance.

- Consider the lessons you have taught or provided assistance for in your TARGET CLASS this year. For about what percent of those lessons would the following statements be true?
- q30 The lessons were focused on studying a topic in depth, rather than covering basic facts, concepts, or procedures.
- q30a The lessons had students explaining to you or to their classmates how the topic relates to their personal experiences or to a problem in the contemporary world.
- q30b The lessons required students to organize, interpret, evaluate, and use information to produce a piece of original work.
- q30c Using the following scale, please indicate how much importance you place on each of the following in assessing student's academic progress in your TARGET CLASS:
- q31 The students' ability to provide correct answers or representations of content.
- q31a The students' ability to ask probing questions about subject matter and/or demonstrate reasoning.
- q31b The students' ability to use proper conventions, formats, and procedures (e.g., grammar, outline format, spelling, computation steps, etc.)
- q31c The students' ability to present work that is neat, organized, and carefully checked.
- q31d Please indicate how accurately each statement describes your views about the students in your TARGET CLASS:
- q32 Many of my students are not capable of learning the concepts and materials I am teaching to them.
- q32a By trying different teaching methods, I can significantly affect my students' achievement level.
- q32b If I try hard, even my most difficult or unmotivated students can learn and achieve.
- q32c For the students in your TARGET CLASS, how many of their parents:
- q33 Attend parent-teacher conferences when teachers requested them?
- q33a Help raise funds for the school?
- q33b Volunteer to help in the classroom?
- q33c Attend school-wide special events?
- q33d Contact school staff about their child by telephone?
- q33e Provide a home environment supportive to learning?
- q33f What is the racial or ethnic composition of the student body of your TARGET CLASS? (Please be sure that your estimated percentages add up to 100%.)
- q34 American Indian/Alaska native
- q34a Asian/Pacific Islander
- q34b Black/African American
- q34c Caucasian (not of Hispanic origin)
- q34d Hispanic/Latino
- q34e Other racial or ethnic group SPECIFY:
- q34f On average, what is the performance level of students in your TARGET CLASS?
- q35 On average, what is the performance level of racial and ethnic minority students in your TARGET CLASS?
- q36 On average, what is the performance level of <I>Caucasian, not of Hispanic origin, students in your TARGET CLASS?
- q37 During the past 12 months, how often did you:
- q38 Participate in workshops or courses sponsored by your DISTRICT (excluding required in-
- q38a

- services)?
- q38b Participate in professional development activities organized by your SCHOOL?
- q38c Participate in a network with others outside your school?
- q38d Participate in professional development activities sponsored by an educational employees' union or association?
- q38e Discuss curriculum and instruction matters with an outside professional group or organization?
- q39 Based on your own experience or impressions, please indicate how accurately each statement describes the situation in your school:
- q39a Opportunities for school staff to learn or develop decision-making skills are available through my school or school district.
- q39b Opportunities for school staff to learn or develop problem-solving skills are available through my school or school district.
- q39c My school provides opportunities to school employees other than teachers to learn new skills or techniques.
- q39d Most of my school's professional development programs deal with issues specific to the needs and concerns of the school's students and staff.
- q39e School administrators and teachers work together to identify professional development needs.
- q39f School administrators and teachers work together to plan and deliver professional development experiences.
- q39g School administrators encourage participants to share what they have learned from professional development activities.
- q39h Teachers and other school staff in my school are continuously learning and seeking new ideas to improve instruction.
- Please indicate how accurately each statement describes your own PROFESSIONAL DEVELOPMENT EXPERIENCES over the past 12 months:
- q40 Have been sustained and coherently focused, rather than short-term and unrelated.
- q40a Included enough time to think carefully about, try, and evaluate new ideas.
- q40b Have been closely connected to my school's improvement plan.
- q40c Included opportunities to work productively with other staff in my school.
- q40d Included action research, teacher research, other forms of school or classroom-based inquiry.
- q40e Have improved my understanding of curriculum standards.
- q40f Have improved my understanding of student performance standards.
- q40g PLEASE ANSWER THE FOLLOWING ITEMS ONLY IF YOU PROVIDE DIRECT INSTRUCTION TO STUDENTS.
- q40ginstr Addressed the needs of the students in my classroom.
- q40h Helped me understand my students better.
- q40i Deepened my understanding of subject matter.
- q40j Led me to make changes in my teaching.
- q40k Helped me align my teaching with district or state standards.
- q40l Considering both quantity and quality, please rate the adequacy of the following resources in meeting your school's goals for student learning:
- q41 Planning time for teachers
- q41a Space for classroom activities
- q41b

q41c	Space for special instructional activities
q41d	A learning environment which is safe from crime and violence
q41e	Library services
q41f	Textbooks
q41g	Workbooks
q41h	Computers for student use
q41i	Computer software for student use
q41j	Computers for teacher use
q41k	Computer software for teacher use
q41l	Copy machines for staff use
q41m	Psychological/social work services for students
q41n	Custodial services
q41o	Academic/career guidance for students
q41p	Health related services for students
q41q	Extracurricular activities
q42	Which of the following best describes your CURRENT position at your school?
q42	Teacher, including regular education, Title I, special education, reading and resource room teachers
q42	Teaching specialist (e.g. music, art, physical education)
q42	Resource specialist (e.g. psychologist, counselor, social worker, librarian, speech or language pathologist, nurse, occupational or physical therapist)
q42	Education support personnel
q42	School administrator
q42	Central Office Administrator
q42	Parent
q42	Student
q42	School Board Member
q42	Community leader
q42	Business representative
q42	Other position
q42other	Other position SPECIFY:
q43	Are you classified as full-time or part-time?
q44	How long have you been assigned to your present school building?
q44instr	FOR FULL TIME SCHOOL EMPLOYEES ONLY: Including this year, how many years of full-time experience have you completed as an education employee?
q45	Total years of education experience
q45a	Total years in present school building
q45b	Total years in present school system
q45c	What is the HIGHEST education degree you hold? (Do not report honorary degrees)
q46	Which ONE of the following best describes your racial or ethnic background? (PLEASE MARK ONE CATEGORY ONLY)
q47	

q47	American Indian/Alaska native
q47	Asian/Pacific Islander
q47	Black/African American
q47	Caucasian (not of Hispanic origin)
q47	Hispanic/ Latino
q47	Other racial or ethnic background
q47other	Other: SPECIFY
q48	What is your sex?
q50	Are you currently a member of the NEA (National Education Association?)
q49	Are you certified by the National Board for Professional Teaching Standards?

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