ABSTRACT

A Study of Professional Learning Communities and Science Achievement in Large High
Schools

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The purpose of this study was to compare the science achievement and high
school completion rates of students in a large high school implementing professional
learning community concepts and practices with two large high schools not participating
in professional learning community concepts and practices. The primary methodology
employed was a causal-comparative quantitative study. Information regarding student
achievement and professional learning community concepts and practices was collected.
The data collected included: archived 2008 and 2009 Texas Academic Knowledge and
Skills (TAKS) test scores obtained from Confidential Student Rosters provided by the
Texas Education Agency, archived high school completion rate data obtained online from
the Texas Education Agency's Academic Excellence Indicator System for 2008 and
2009; and survey responses from science teachers, administrators, science instructional
facilitators and science department heads.

The following conclusions were derived based on the data analysis in this study:

1. Professional learning community concepts and practices identified by DuFour et al. (2006) were being implemented in large high schools with 2,000 or more students with and without a formal implementation plan.

2. Large high schools with 2,000 or more students with identified professional learning community implementation plans have a higher level of implementation of concepts and practices identified by DuFour et al.

3. Professional learning community concepts and practices positively affect science student achievement in large high schools with 2,000 or more students.

4. The implementation of professional learning communities in large high schools with 2,000 or more students does not appear to have an impact on students' Commended performance on the science Texas Assessment of Knowledge and Skills (TAKS).

5. The high school completion rate for *all students* is higher for large high schools with 2,000 or more students implementing a formal professional learning communities plan than it is for large high schools not implementing a formal professional learning communities plan.

A Study of Professional Learning Communities and Science Achievement in Large High
Schools

by

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A Dissertation

Approved by the Department of Curriculum and Instruction

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Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Doctor of Education

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ACKNOWLEDGMENTS

I would like to thank my family for being supportive and patient as I persevered through this study. My husband, Keith, showed great patience when I crawled out of bed early in the morning to write and was always willing to help me on the weekends when I asked him to take our daughter, Kale, and "go do something" so I could have uninterrupted time to work. He never complained when the house was neglected or a meal wasn't prepared. Without you, this would not have been possible. I am also thankful for a precious young daughter who understood that this was important to her mother and frequently reminded me that *our* goal was that I finish before she was out of elementary school. She accepted that I couldn't stop and play a game with her since I needed to be on the computer doing "my homework." Her favorite line became, "Mom, when you finish your dissertation, can we . . . ?" I am also thankful to my sister, Donna Ward, who unselfishly helped me by having my daughter over for a few hours so I could have uninterrupted work time or picking her up from childcare or school and getting her to her after school activities during times when I needed help. I especially want to thank my mother, Roberta Turner, for adopting me when I was in the fourth grade. Without her, I am not sure where I would have ended up in life. She taught me the value of learning and inspired me to become an educator.

My deepest appreciation goes to my dear friend, Vivian Baker, who has been a great role model to me and inspired me to complete this study. She has always been there to listen to my ideas and provide input. She freely offered her guidance and support as I steadily moved forward in my work. Having worked with her for almost 10 years, I

became a much better educator. This written product would have been much more difficult had I not had the opportunity to work so closely with Vivian. Her positive influence in my life and her steady friendship has contributed to both my personal and professional success.

I would like to acknowledge and express my deepest appreciation to Dr. Betty Conaway, my committee chair, for her guidance, support, and encouragement. She gently pushed me to keep working and wisely redirected me when I tried to get ahead of myself. I am grateful to Dr. Larry Browning and Dr. Tony Talbert for serving as committee members and for their wonderful support and input. It has been an honor and privilege to work with such a knowledgeable dissertation committee. Dr. Browning validated the quality of my work and gently asked questions that pushed me to improve my work. I am especially thankful to Dr. Talbert for his incredible enthusiasm for research and the unique instructional strategies that he used to facilitate my understanding of the research process.

CHAPTER ONE

Introduction to the Study

Comprehensive high school reform has recently been the primary focus of many groups including educators, businesses, and community leaders. Performance indicators and data suggest a major problem with the American education system. According to the Association for Career and Technical Education (2006), approximately 71% of students are earning a high school diploma and approximately 34% are prepared for postsecondary education, based on satisfactory completion of required courses for college enrollment and demonstration of basic academic skills. These disturbing statistics have caused immense concern at the national level. High dropout rates, low academic achievement of many high school students, and the large number of high school graduates who are required to take remedial classes in college have triggered Bill Gates and other philanthropists to pour millions of dollars into restructuring efforts to change America's high schools. The focus is on increasing students' success in rigorous coursework so that they are prepared to enter college.

In his speech to the National Education Summit on High Schools, Bill Gates (2005) relayed his concerns regarding America's high schools not preparing students for college. He stated, "The poor performance of our high schools in preparing students for college is a major reason why the United States has now dropped from first to fifth in the percentage of young adults with a degree" (p. 1). He contends that America is falling behind in the international competition to have the biggest and best supply of knowledge workers. Gates advocates that high schools be built on the *new three R's*:

- The first R is Rigor — making sure all students are given a challenging curriculum that prepares them for college or work;

- The second R is Relevance — making sure kids have courses and projects that clearly relate to their lives and goals;

- The third R is Relationships — making sure kids have a number of adults who know them, look out for them, and push them to achieve.

Very closely connected to the comprehensive high school reform movement and Bill Gates' ideas concerning rigor is the emphasis on improving math and science achievement. Once again, these academic fields are in the national spotlight. Efforts to improve student achievement in these areas are driven by the relationship of math and science to American global competitiveness, workforce preparation, and development of an educated citizenry (National Science Foundation, 2006). While mathematics scores for fourth and eighth grade students on the National Assessment of Educational Progress (NAEP) increased from 1996 to 2000 with many demographic subgroups registering higher achievement, average science scores did not change. At grade 12, average science scores have declined. Subgroup results in science were also generally flat between 1996 and 2000. Only 18% of 12th graders scored at the proficient level on the NAEP.

Because of the emphasis on rigor and improvement in mathematics and science, the Texas State Board of Education, in 2006, enacted policy requiring its current eighth grade students to complete four years of math and science at the high school level. Additionally, students are required to pass state assessments in math, science, social studies, and English language arts in order to graduate from high school. These assessments, the Texas Assessment of Knowledge and Skills (TAKS), are rigorous and

have become an obstacle for many students to overcome in order to graduate from high school and have contributed to the overall dropout rate. According to the State's 2009 school report card, the Academic Excellence Indicator System (AEIS), 82% of Texas students met passing standards on the 2009 mathematics assessment and only 78% of students met the passing standard on the science assessment. Passing rates are even lower for African American, and economically disadvantaged students. African American students passed the mathematics assessment at a rate of 71% while 78% of Hispanic and 76% of economically disadvantaged students met standard. In science, only 66% of African American and 70% of Hispanic students passed the state assessment. Sixty-eight percent of economically disadvantaged students met standard. Many of those students who failed the state assessments had earned enough credits to graduate from high school, but did not receive a diploma because they were unsuccessful at passing the TAKS in math and science. These students are now considered dropouts.

Also included in the AEIS for the first time in 2008-2009 is the Completion Rate. According to the *2009 Accountability Manual* produced by the Texas Education Agency's Department of Assessment, Accountability, and Data Quality Division of Performance Reporting, in order to be counted as a "completer" under the State's standard accountability procedures, a student must have received a high school diploma with his/her class (or earlier) or have re-enrolled in the fall of 2008 as a continuing student (Texas Education Agency, 2009b). The 2009 Completion Rate is a longitudinal rate that shows the percentage of students who first attended grade nine in the 2004-2005 school year and completed or are continuing their education four years later. Known as the 2004-2005 cohort, these students were tracked over the four years using data provided

to the Texas Education Agency (TEA) by districts and data available in the statewide

General Educational Development (GED) database. These data show that in Texas, 88%

of all students completed school on time with their peers. This number is reduced for

African American, Hispanic, and Economically Disadvantaged subgroups. African

American students had a completion rate of 82.8% while Hispanic students completed

high school at an 84.1% rate. The percentage of economically disadvantaged students

who were able to complete high school in four years is even lower. Only 82.7% were able

to do so.

According to Schlechty (2006), "If student performance in America's public

schools is to be improved in significant ways, school leaders must transform their

organizations from bureaucracies into learning organizations" (p. 62). Bureaucracies and

learning organizations have distinct differences. These differences are what ultimately

make the difference in terms of a school's capacity to embrace the types of innovations

that are required for schools to be able to continually improve. Because the world has

become more interconnected and business is more complex and dynamic, Senge (2006)

argues that it is no longer appropriate for one person to be the learner and strategist for

the entire organization. He believes that the organizations that will truly excel in the

future will be the organizations that discover how to tap people's commitment and

capacity to learn at all levels in an organization.

Learning organizations have many characteristics. First, they are characterized by

disciplined dialogue and conversations that are informed by values and data that drive the

system. Second, they use evaluations for the purpose of providing data to discipline

conversations and to check on progress toward shared goals. Additionally, learning

organizations reward those who develop or acquire new knowledge and those who develop new knowledge and use the acquired knowledge to contribute to the common good. Finally, consensus and engagement are of great importance to the learning organization.

Many contemporary scholars, authors, and practitioners advocate the use of professional learning communities (PLCs) as a means to transforming America's high schools into learning organizations. DuFour, DuFour, Eaker, and Karhanek (2004) contend that "Educators in PLCs embrace the notion that the fundamental purpose of school is learning, not teaching" (p. 2).

Professional learning communities are composed of collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all (DuFour, DuFour, Eaker, & Many, 2006). While focusing on a common vision of what the school must look like for students to become successful, both students and adults become involved in learning. Job-embedded learning becomes a part of the school's routine and practices and three critical questions are the focus: What is it we want all students to learn? How will we know when each student has acquired the essential knowledge and skills? What happens in our school when a student does not learn?

Purpose of the Study

The purpose of this study is to compare the science achievement and high school completion rates of students in a large high school implementing professional learning community concepts and practices with two large high schools not participating in professional learning community concepts and practices.

Statement of the Problem

It is unknown as to what extent professional learning community concepts and practices are being implemented in the science department of large high schools in Texas. Furthermore, it is unknown as to whether or not the implementation of professional learning communities has an impact on science achievement and high school completion rates in large high schools. Understanding the extent to which professional learning communities exist and the impact on science achievement will help administrators and instructional leaders of large high schools as they implement similar professional development models in their own schools. Science departments of large high schools need to be examined to determine if the implementation of professional learning communities can assist schools in producing students who are capable of learning and applying science concepts.

Research Questions

While recent literature documents the study of individual schools and their success with professional learning communities by DuFour, DuFour, and Eaker (2005) and others, little is known about the role that professional learning communities play in increasing student achievement in science for students attending very large high schools. This study investigated whether the implementation of professional learning community concepts and practices implemented in a science department of a large high school promotes learning and achievement in science. Therefore, data analysis answered the following overarching research question:

1. Does the implementation of professional learning community concepts and practices in a science department of a large high school promote learning and achievement in science?

The following sub-questions further examined the role of professional learning communities in the learning and achievement of science for students attending large high schools.

1. What professional learning community concepts and practices are being implemented in large high schools?

2. At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?

3. Are professional learning community concepts and practices being implemented in schools that do not have a formal plan for professional learning communities?

4. Which professional learning community concepts and practices are being fully implemented in large high schools?

5. Which professional learning community concepts and practices are not being implemented in large high schools?

6. Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

7. Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

8. Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

9. Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Significance of the Problem

Providing an instructional system that increases the percentage of students who receive a high school diploma is critical to the future success of students. According to DuFour, DuFour, and Eaker (2005),

> The institutions in which contemporary educators work were built upon the premise that the ability to achieve high levels of learning was reserved for the elite, and that schools served students best by sorting and selecting students based on their ability to learn and their likely occupations. (p. 13)

The authors contended that the purpose of schools has evolved from one of sorting and selecting to ensuring that all students are taught. They argued that the Professional Learning Communities (PLC) concept is one which can make a difference if traditional assumptions about schooling can be changed.

Collins (as cited in DuFour et al., 2005) explained that high-performing organizations simplified the work that guided everyone in the organization into a basic principle or concept. According to DuFour et al., "In a PLC, the unifying principle asserts

that we have not fulfilled our fundamental purpose until all students have learned at high levels" (p. 15). Educators who become focused on this purpose begin to work together to answer these questions:

- What is it we want all students to learn?

- How will we know when each student has mastered the essential learning?

- How will we respond when a student experiences initial difficulty in learning?

- How will we deepen the learning for all students who have already mastered essential knowledge and skills?

The intended outcomes of this study, its findings, and recommendations is to identify the existence of a professional learning community in the science department of a large high school and to compare archived quantitative student achievement data in order to validate PLC concepts and practices as a way to increase student achievement in science. The findings will be useful to other large high schools who are interested in increasing student achievement in science and implementing specific PLC concepts and practices.

Methodology

The methodology to be employed is a quantitative causal-comparative approach. The researcher determined that student achievement in science for schools using professional learning community concepts and practices is different than those schools not using professional learning community concepts and practices. Student achievement data for 10th and 11th graders were collected from three large high schools in Texas. Quantitative data were retrieved through archival data of students' science scores on the 10th and 11th grade scores of the Texas Essential Knowledge and Skills (TAKS) for

2007-2008 and 2008-2009. High school completion rate data for the years 2007-2008 and 2008-2009 were also collected. Student achievement data from a school implementing professional learning community concepts and practices as well as student achievement data from two large high schools similar in demographics who are not implementing professional learning community concepts and practices were collected.

The science scores of Schools A, B, and C were analyzed using a simple, one-way analysis of variance (ANOVA). According to Gay, Mills, and Airasian (2006), "ANOVA is a parametric test of significance used to determine whether a significant difference exists between two or more means at a selected probability level" (p. 359). The authors explained that ANOVA is the appropriate analysis technique for a causal-comparative study involving three groups.

Quantitative descriptive research in the form of a survey was conducted and provided the researcher with information concerning the level of implementation of learning community concepts and practices in each school. DuFour, DuFour, Eaker, and Many's (2006) Professional Learning Community Continuum was used to describe the level of implementation of PLC concepts. The continuum was entered into a web-based survey software program, *SurveyMonkey* and was administered to teachers in the science department of a large high school known as School A. It was also administered to a campus administrator, science department head, and other key instructional leader at Schools B and C. Results on each of seven PLC concepts was evaluated using a four-point continuum designed to measure the level of implementation. Each practice was rated as either being in the *pre-initiation* stage, *initiation* stage, *developing* stage or *sustaining* change. The researcher averaged the results of participants' responses on

questions in each of the seven concept areas and reported the information in Chapter Four.

Participants

School A, a public school operating under the control of an independent school district located in Central Texas, was selected as the site of this research. For the purpose of this study, large high schools are defined as having an enrollment of over 2,000 students in grades 9-12. School A is a large high school and was rated *Recognized* by the Texas Education Agency for 2009. It has an enrollment of 2,379 students in 9th through 12th grades. Most recent district demographics indicated a student population that is becoming more diverse, as reflected in the increasing numbers of low-income and minority students. The enrollment of School A for 2008-2009 was 6.4% African American, 26.6% Hispanic, 64.9% White, and 3.1% limited English proficient. The Hispanic student population is the fastest growing student population and has increased from 14.3% in 1999 to 26.6% in 2009. More than 31% of School A's student population qualifies for the federal free or reduced-price meal program.

The science department of School A has been engaged in professional learning practices for five years. Implementation began as a professional development effort to increase student achievement. The science department offers general, Pre-Advanced Placement, and Advanced Placement courses in Anatomy and Physiology, Biology, Environmental Science, Chemistry, Integrated Physics and Chemistry (IPC), and Physics. The department consists of 19 teachers and one full-time instructional facilitator.

The two schools selected for comparison, School B and School C, are also large high schools in Texas. Each has an enrollment of over 2,000 students. Administrators

from each of these schools reported to the researcher that the science departments have not engaged in a study of or implemented professional learning community concepts or practices. Both schools are rated as *Academically Acceptable* by the Texas Education Agency for 2009. Even though School A is rated as *Recognized* and Schools B and C are rated as being *Academically Acceptable*, the three schools can still be compared because school ratings are not based entirely on science achievement. A large number of factors determine a school's rating in Texas. Student achievement factors include achievement in English language arts, math, science, and social studies. Other factors include the high school completion rate. A school's success in a single content area is not reflected in the rating. In addition, assessment scores can be analyzed based on the proficiency level of the students rather than simply on passing rates. Both comparison schools have been identified by the Texas Education Agency (2008) as being a part of the *Campus Comparison Group* for School A as a part of the State's accountability system. According to the Glossary of the Academic Excellence Indicator System (AEIS) for 2007-2008,

> Each campus is assigned to a unique comparison group of 40 other public schools (from anywhere in the state), that closely matches that campus on six characteristics. Comparison groups are provided so that schools can compare their performance to that of other schools with whom they are demographically similar. (p. 7)

Demographic characteristics used to determine the campus comparison groups included the following:

- the percentage of African American students enrolled

- the percentage of Hispanic students enrolled

- the percentage of White students enrolled

- the percentage of economically disadvantaged students enrolled

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- the percentage of limited English proficient students enrolled

- the percent of mobile students as determined from cumulative attendance data

Schools were grouped by type (elementary, middle, secondary, or multi-level). Then the group was determined on the basis of the most predominant features at the target school. For example, School A has an enrollment of 64.9% White, 31.3% economically disadvantaged, 26.6% Hispanic, 16.0% mobile, 6.4% African American, and 3.1% limited English proficient. The following steps are followed to identify the comparison group.

Step 1 — 100 secondary campuses having percentages closest to 64.9% White students are identified,

Step 2 — 10 schools from the initial group of 100 are eliminated on the basis of being the most distant from the value of 31.3% economically disadvantaged students,

Step 3 — 10 of the remaining 90 schools that are the most distant from the 26.6% Hispanic students are eliminated,

Step 4 — 10 of the remaining 80 schools that are most distant from 16.0% mobile students are eliminated,

Step 5 — 10 of the remaining 70 schools are the most distant from 6.4% African American students are eliminated,

Step 6 — 10 of the remaining 60 schools that are the most distant from 3.1% limited English proficient students are eliminated, and

Step 7 — 10 of the remaining 50 schools that are the most distant from the least predominant characteristics among the four student groups evaluated in the

accountability system: African American, Hispanic, White, and economically

disadvantaged.

The final comparison group size is 40. This methodology creates a unique comparison for

every campus in the State of Texas. Demographic data of Schools A, B, and C from the

Texas Education Agency's Academic Excellence Indicator System for the school year

2008-2009 are shown in Tables 1, 2, and 3.

Table 1

Demographic Data – School A – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
64.9%	31.3%	26.6%	16.0%	6.4%	3.2%

Table 2

Demographic Data – School B – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
67.7%	29.9%	26.5%	16.8%	4.2%	3.8%

Table 3

Demographic Data – School C – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
64.5%	25.0%	19.9%	17.3%	12.7%	4.9%

Definition of Terms

For the purpose of clarity and specificity, the following terms are provided so that the reader clearly understands each term as it applies to this study.

1. *Academic Excellence Indicator System* (AEIS) – The Texas accountability system that reports campus, district, and State testing data annually.

2. *Capacity-building* – As defined by Fullan (cited in DuFour et al., 2006), developing the collective ability - the dispositions, knowledge, skills, motivation, and resources - to act together to bring about positive change.

3. *Classroom Walkthroughs* – A four-minute classroom observation that consists of a quick collection of data on the use of instructional strategies, implementation of the curriculum, and level of student engagement.

4. *Collaboration* – As defined by DuFour et al. (2006), a systematic process in which people work together, interdependently, to analyze and impact professional practice in order to improve individual and collective results. In a PLC, collaboration focuses on the critical questions of learning: What is it we want each student to learn? How will we know when each student has learned it? How will we respond when a student experiences difficulty in learning? How will we enrich and extend the learning for students who are proficient?

5. *Completion Rate* – As defined in the Texas Education Agency (2009a) *Accountability Manual*, the percentage of students who first started the ninth grade in one year and have completed or are continuing their education four years later. Students are tracked over four years using data reported to TEA by districts and data available in the Texas statewide General Educational Development (GED) database.

6. *Large High School* – For the purpose of this study, a large high school is one with an enrollment of 2,000 or more students in grades 9-12.

7. *Learning Organization* – Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set and free, and where people are continually learning how to learn together (Senge, 1990).

8. *Professional Learning Community* – As defined by DuFour, DuFour, Eaker, and Many (2006), collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all.

9. *Scale Score* – As defined by NCS Pearson, a scaled score is a conversion of a student's raw score on a test or a version of the test to a common scale that allows for a numerical comparison between students (Pearson Educational Measurement Group, 2010). Because most major testing programs use multiple versions of a test, the scale is used to control slight variations from one version of a test to the next.

10. *Sustainability* – As defined by *Wikipedia* (2010), sustainability is the capacity to endure (2009).

11. *Systems Thinking* – A conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make full patterns clearer, and to help us see how to change them effectively (Senge, 1990).

Limitations and Assumptions of the Study

Limitations and assumptions of this study include the following:

1. The study was limited to one large Texas high school implementing PLC concepts and practices in a unique geographic region.

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2. The study only examined the perceptions of science teachers regarding the level of implementation of PLC concepts and practices at School A. As such, the study did not examine the perceptions of students, parents, or administrators.

3. The study was limited to only one department within a large high school.

4. The study was limited to those concepts of PLCs identified by DuFour, DuFour, Eaker, and Many (2006).

5. It was assumed that the teachers from School A gave an accurate rating for each PLC concept.

6. It was assumed that the campus administrator, science department head, and other key instructional leader from Schools B and C gave an accurate rating for each PLC concept.

7. The survey included all science teachers in the department. Teachers new to the department have only participated as a part of the PLC for one school year.

8. It was assumed that the comparison of TAKS scores indicated the impact of PLC concepts and practices on student achievement in science and high school completion rates.

9. It was assumed that science achievement was higher in schools where PLC concepts and practices are being implemented.

10. It was assumed that the two comparison schools are not implementing PLC concepts and practices.

11. It was assumed that the two comparison schools are similar in demographics and size.

12. The study was limited by researcher bias. The researcher is an administrator in the District of the high school implementing the PLC concepts and practices; however, the researcher believes that she was able to interpret the data objectively.

13. The study was limited by the data collected. The data collected may not be the best way to evaluate the effectiveness of a PLC.

14. It was assumed that all completion rate data were accurately and honestly reported to the Texas Education Agency. There appears to be one loophole in the State's data collection system. Students whose parents withdraw them to home school are not considered in a school's cohort. Texas schools must maintain proper documentation that a student withdrew to home school. The Texas Education does not actually verify that students are being taught while coded as home schooled.

Summary

Chapter One defined the problem of this study and the research approach. A great concern regarding the attainment of the high school diploma has been the focus of much attention in recent years. Schools wanting to ensure that all students learn at high levels and achieve a high school diploma have turned their focus to professional learning communities as a model of staff development which focuses on learning for all and boasts increased student achievement. This study compared the science achievement and high school completion rates of students in a large high school implementing professional

learning communities with two large high schools not participating in professional learning communities

This dissertation is organized into five chapters. In Chapter One, the problem and research approach were introduced. Chapter Two provides an overview of the literature related to professional learning communities. It includes a review of change theory as an integral part of organizational improvement.

Chapter Three describes the methodology used for the study. Discussion of the instrumentation used and data analysis are included.

Chapter Four presents an analysis of the data. The key concepts and practices of PLCs are the focus of the analysis of the survey data. The impact of PLC concepts and practices are considered in relation to student achievement data and high school completion rates.

Chapter Five concludes the study with a response to the central research questions. The researcher draws conclusions, makes recommendations, and outlines the implications of the study.

CHAPTER TWO

Review of the Literature

Educational Reform and Change

Evans (1996) stated, "Perhaps no American institution has been reformed more often, with less apparent effect than the school" (p. xi). Reformers and policy makers have been trying to change the structure of public schools and the instruction within the schools for decades. Despite ambitious efforts and repeated attempts at reform, schools have not experienced significant change. *A Nation at Risk* attempted to expose the shortcomings of the public education system and began efforts to reform and improve America's public schools (U.S. Department of Education, 1983). According to the report:

> Our society and its educational institutions seem to have lost sight of the basic purposes of schooling, and of the high expectations and disciplined effort needed to attain them. This report, the result of 18 months of study, seeks to generate reform of our educational system in fundamental ways and to renew the Nation's commitment to schools and colleges of high quality throughout the length and breadth of our land. (p. 5)

Although it has been over two decades since Ronald Reagan's National Commission on Education Excellence in Education released *A Nation at Risk*, school reform efforts have continued to be on the front burner of American policy making efforts (U.S. Department of Education, 1983). According to Hall and Hord (2006), the major dilemma with these kinds of change efforts is that they are being demanded by sources in the environment. They noted that organizations have not had the autonomy to consider, plan, and launch their own change initiatives over the last several decades. This is due to change agendas being driven by state and federal initiatives, policymakers, and mandates. The most recent reform effort is the *No Child Left Behind Act* (NCLB) of 2001

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(The White House, 2002). The implementation of the federal system brought forth yet another attempt at changing America's schools. This highly controversial federal legislation signed by President George W. Bush on January 8, 2002, created a new kind of reform in the structure of an accountability system that rates schools on student achievement and imposes penalties for schools that do not meet achievement benchmarks each year. In his Executive Summary of the legislation, President George W. Bush stated,

> Our high school seniors trail students in Cyprus and South Africa on international math tests. And nearly a third of our college freshmen find they must take a remedial course before they are able to even begin regular college level courses. (p. 3)

For this reason, the educational reforms set forth in NCLB require that states establish proficiency levels for schools to attain each year in order to meet Adequately Yearly Progress (AYP). Schools not meeting AYP are publicly identified as being in need of improvement. In Texas, these schools are identified as being in "School Improvement" and face sanctions that may include school closure.

Currently, a large number of high schools in Texas are identified as not meeting AYP in one or more areas. The Texas Education Agency (2009c) recently reported that 353 campuses did not meet AYP. Of those schools not meeting AYP, 257 are Title I campuses that will be subject to "School Improvement" requirements during the 2009-2010 school year because they have missed AYP in the same area for more than two years. With the implementation of the federal *No Child Left Behind* accountability system, more schools are struggling to meet annual benchmarks for AYP, particularly in math and science, and many are looking for a solution that will yield immediate results.

NCLB calls for immediate results from schools. The high expectations set forth in the policy have forced schools to look for quick fixes to long existing problems. As a

result of implementing many quick fix solutions, schools are finding that they are falling even further behind the expectations set forth in NCLB. After several years of implementation, even this drastic reform has been unsuccessful at changing the traditional practices of schooling. Schools have essentially remained unchanged and have failed to meet the benchmarks for Adequate Yearly Progress established in NCLB. The failure of the policy can be linked to its call for immediate change. More often than not, change implemented as a knee jerk response to NCLB sanctions has been ineffective. Hall and Hord (2006) asserted that because change is a process, it will take time for people to become skilled and competent in the use of new ways. This goes against the work of policymakers who are seeking quick results. They stated, "Unfortunately, too many policymakers at all levels refuse to accept the principle that change is a process, not an event, and continue to insist that their changes be implemented before their next election, which is typically within two years" (p. 5). Evans (1996) contended that these kinds of changes, or quick fixes, consist of first-order changes that seek to improve the efficiency or effectiveness of what we are already doing (p. 5).

Marzano and Waters (2009) asserted that change can be classified as first-order or second-order according to several distinctions. One major distinction is whether or not a proposed change fits within existing paradigms or lies outside of existing paradigms. They stated,

> Attaining and monitoring high levels of achievement in every classroom flies in the face of the current mode of operations for most U.S. districts. While many schools have taken on this challenge of enhancing student achievement, few districts have ventured into this level of accountability. (p. 106)

This, coupled with the urgency to meet increased benchmarks for AYP, may explain why schools often opt for first-order changes rather than second-order changes.

Marzano, Waters, and McNulty (2005) explained, "First-order change is incremental. It can be thought of as the next most obvious step to take in a school or a district" (p. 66). Evans (1996) and Marzano et al. (2005) contended that first-order kinds of changes are ineffective and offered that what is needed is second-order change. Watzlawick, Weakland, and Fisch (as cited in Evans, 1996) explained that "Second-order changes are systemic in nature and aim to modify the very way an organization is put together, altering its assumptions, goals, structures and norms" (p. 5). Marzano et al. stated, "Second-order change is anything but incremental. It involves dramatic departures from the expected, both in defining a given problem and in finding a solution" (p. 66). Furthermore, the authors explained, "Deep change alters the system in fundamental ways, offering a dramatic shift in direction and requiring new ways of thinking and acting" (p. 66).

Fullan, Cultress, and Kilcher (2005) contended that reform policies fail because they lack change knowledge. According to Fullan et al., change knowledge is "understanding and insight about the processes of change and the key drivers that make for successful change in practice. The presence of change knowledge does not guarantee success, but its absence ensures failure" (p. 54). He argues that policy makers do not want to be *slowed down* by the understanding of change. He believes that they ironically have been slowed down by failed implementation. Fullan lists eight drivers to create effective and lasting change:

1. Engaging people's moral purposes— about improving society through improving educational systems and thus the learning of all citizens.

2. Building capacity— involves policies, strategies, resources, and actions designed to increase people's collective power to move the system forward.

3. Understanding the change process— establishing the condition for continuous improvement in order to persist and overcome inevitable barriers to reform.

4. Developing cultures for learning— a set of strategies designed for people to learn from each other and become collectively committed to improvement.

5. Developing cultures of evaluation— produces data on an ongoing basis that enables groups to use information for actions planning as well as for external accounting.

6. Focusing on leadership for change— seeking leaders who represent innovativeness— the capacity to develop leadership in others on an ongoing basis.

7. Fostering coherence making— involves alignment, connecting the dots, being clear about how the big picture fits together.

8. Cultivating trilevel development— focusing on all three levels of the system (individual, school district) and their interrelationships.

Examining the kinds of change implemented by reformers in the past helps researchers to understand why traditional methods of change have not been successful and schools have remained static. Evans (1996) explained that the traditional approach to change is based in Winslow Taylor's scientific management model (p. 6). This model was initiated as a way to improve industrial performance and had three assumptions:

stability, rationality, and structure. Organizations were thought to have been stable and predictable in such a way that planning could be objective and linear. Major focuses of change were seen through functions, tasks, roles, and rules. This created a system of change that became top-down. Mandates, requirements, and policies were implemented to ensure that staff followed the new plan. In Education, this kind of rational-structural model exists today in the form of curriculum standards and professional development aimed at correcting teacher deficiencies. Evans argued that this kind of change model over emphasizes linearity, rationality, and formal structure while ignoring human psychology and the process of change. He stated, "For truly practical, effective approaches to school improvement to develop, the rational-structural paradigm must give way. In its place we need a conceptual framework that acknowledges the real world of people, institutions, and change" (p. 9-10). Pink (2005) agreed. He argued that because the world is changing, a new way of thinking and a new approach is needed. He suggested that change will require new aptitudes which are *high concept* and *high touch*. He stated,

> We are moving from an economy and a society built on the logical, linear, computerlike capabilities of the Information Age to an economy and society built on the inventive, empathic, big-picture capabilities of what's rising in its place, the Conceptual Age. (p. 2-3)

Implementing a new kind of change model requires understanding what change means to the people who must implement it. Evans (1996) contended that the very nature of change encourages resistance. He stated, ". . . it provokes loss, challenges competence, creates confusion, and causes conflict" (p. 21). According to the author, significant change causes loss. Reeves (2009) agreed. He stated, "Change means loss; loss means abandonment" (p. 9). Deutschman (as cited in Reeves) noted that, "while humans

rationally associate change as a vital part of life, we nevertheless crave continuity and consistency" (p. 9). This is validated by Marris (as cited in Evans) who asserted that the meaningfulness of life depends on predictability. Therefore, we become bereaved by an actual or potential loss whether caused by death or a "discrediting of familiar assumptions" (p. 28). We are also bereaved if the things that we hold to be true are devalued. This causes us to avoid and resist change. This kind of opposition to change is not new to education. Reeves argued, "Opposition to change is embedded deep in the human psyche" (p. 9). Because change can lead to devastating personal loss, opposition can mount. For this reason, Deutschman (as cited in Reeves) declared, "The odds against change—even when change is literally a matter of life and death—are a staggering nine to one" (p. 9).

Evans (1996) explained that it is important to understand the construction of meaning, its dependence on continuity, and its vulnerability to change. First, meaning grows more fixed over time. Events in our lives are incorporated into our structure and make it more difficult to consider new truths or change the way that we do things. Next, our investments in what we believe are personal and have great emotional significance. We hold tight to those emotional connections and have a difficult time accepting rational explanations. Therefore, we must find changes meaningful in order to accept them. Third, structure is formed in the context of relationships. This makes it more difficult for us to change. Finally, people sometimes cling to existing structures, even when negative. All of these conditions, when challenged, create loss for individuals. Creating change will require dealing with these psychological issues.

In addition to creating loss, Bolman and Deal (as cited in Evans, 1996) asserted that there are three other closely related ramifications of change that present problems. They stated, ". . . change challenges competence, creates confusion, and causes conflict" (p. 32). A person's competence is threatened when the job that they know is altered. For a period of time, an employee may be unsuccessful at implementing a new skill. When the employee becomes unable to perform their job successfully, they feel inadequate and insecure, especially if they have performed the job in a particular way for an extended period of time and believed that they were good at it. In addition to feeling incompetent, change can cause confusion for employees within an organization. Employees who have relied heavily on the predictability of an organization's structure become confused and distressed when the organization is restructured. They experience a period of uncertainty. Finally, conflict is created. Evans stated, "Change almost always generates friction, both between individuals and between groups, because it invariably produces winners and losers, especially at first" (p. 35). Employees begin to jockey for positions of power within the new system and ultimately some may be able to learn a new skill easier than others. All of these factors during a time of change can lead to increased tension and diminished cooperation.

Marzano and Waters (2009) explained that one key to managing the process of second-order change and helping individuals manage personal transitions is for leaders to respond in the same manner that they would following the loss of loved ones. The authors advocated for organizing and scheduling events that honor the past. Bridges (as cited in Marzano & Waters) calls these events *ceremonial endings*. He asserted that acknowledging that something has ended allows people to move past mourning to a

neutral zone. He explained, "The neutral zone is a period of time when people are letting go of the past, accepting what has ended and what has started, assimilating new knowledge and skills, and building confidence in themselves and the future" (p. 112). In order to shorten the period of time spent in the neutral zone, Bridges identified four new *Ps* to a new beginning:

- *Purpose*— People need to know why the organizational change(s) associated with their personal loss is necessary.
- *Picture*— People need a picture, image, or vision of the future will be like as a result of the change(s) associated with their loss.
- *Plan*— People need to know the plans for implementing change(s) associated with their loss.
- *Part*— People need to know what part they can and will be asked to play in the future. (p. 112)

He asserted that transitioning is a normal part of the change process. He stated,

> Knowing that an organization is changing even when the intended change is for all of the right reasons does not save people from personal transitions. Seeing the purpose, picture, plan and part of the initiative can help people through their personal transition in less time, with less stress, and with greater productivity. (p. 113)

An organization's culture can also help to explain why change is difficult. Edgar Schein (as cited in Evans, 1996) defined organizational culture as ". . . the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define in a basic 'taken-for-granted' fashion an organization's view of itself and its environment" (p. 41). These assumptions and beliefs become so much a part of the organization's practices that new members are automatically taught to believe and practice in the same way. Culture, according to Evans, consists of three levels that are characterized by their depth and structure. The first level of culture consists of *artifacts and creation*. It is the physical and social environment of the organization. It provides an understanding of the culture from an observable perspective, but can be

deceiving in and of itself. The second level of culture is *values*. People within an

organization tend to develop similar values which affect decisions and behaviors. Some

of these values are easily expressed by an organization's members, but others exist

subconsciously. The final level of culture is *basic assumptions*. According to the author,

"These are fundamental, underlying shared convictions that guide behavior and shape the

way group members perceive, think, and feel" (p. 43). These assumptions are at the

deepest level of an organization's culture. In fact, they are synonymous with the culture

and provide the basis for the attitudes, actions, and artifacts of an organization's culture.

All of these provide an understanding of why institutions seek continuity and resist

change.

Evans (1996) contended that a school's culture can change, but it is more difficult

and time consuming than most people imagine. He argued that there is no hope for rapid

culture change in schools. He stated, "Most educational leaders have been victimized,

just as managers in the private sector have been, by the promise of a quick fix" (p. 49).

Most change that seeks to transform a culture does not really get to the cultural aspects

needed to produce the change, even when it professes to do so. Vaill (as cited in Evans)

asserted, "Real culture change is systemic change at a deep psychological level involving

attitudes, actions, and artifacts that have developed over substantial periods of time"

(p. 49). Schools typically engage in changes that are superficial and do not address the

psychological aspects that lead to real change.

In order to initiate any significant change, it is necessary to convince the people

within the organization that the change is necessary and to preserve their psychological

safety throughout the change. People need to understand the need to change and begin

with what Schein (as cited in Evans, 1996) believed to be one of the most complex and artful of human endeavors, "unfreezing." This is the first step to real change. According to the author, "Unfreezing is a matter of lessening one kind of anxiety, the fear of trying, but first mobilizing another kind of anxiety, the fear of not trying" (p. 56). This requires that people become unsatisfied with the present state of affairs in such a way that they want to change. Sometimes this will require a confrontation to raise people's guilt by pointing out that their performance violates a shared ideal. This can be effective if a person's psychological safety is protected. Evans stated, "Confrontation about the need for change must avoid humiliation, ad hominem attacks, blanket condemnations, and demands that people admit they were wrong" (p. 58). The author asserted that two messages must be conveyed to those who are being asked to change. First, they must understand the seriousness of any inaction. Next, they must understand that the change agent values them and will support them throughout the change. Reeves (2009) contended that the essential message that leaders should convey during a time of change is "You are so valuable and worthy, our mission is so vital, and the future lives of our students are so precious, that we have a joint responsibility to one another to be the best that we can be" (p. 11).

While "unfreezing" can start the change process, it truly is just a first step. The next step involves helping those who are implementing change to move from loss to commitment so that they can truly embrace the new innovation. According to Evans (1996), continuity, time, and personal contact are needed. He stated, "People must be helped to link the new with the old, to see the future not as disconnected from the past but as related to it" (p. 60). The phase that is needed for people to adapt and make meaning

can involve an extensive period of time. During this period, it is important for the leader

to maintain personal contact with those who are being asked to change. The author stated,

"Those who are being asked to adapt respond better when they have regular attention

from, and access to, those who are responsible for it" (p. 61). This helps them to learn the

new skills and to lessen their grief as relationships of the past are severed or altered.

While continuity, time for grief, and personal contact do not always come easy for those

initiating change, they are necessary to gain commitment. Reeves (2009) stated, "Change

leaders know that they do not change organizations without changing individual

behavior, and they will not change individual behavior without affirming the people

behind the behavior" (p. 10).

At the same time that leaders are working to build commitment, they should also

be providing an opportunity for employees to build new competence while changing their

basic assumptions. New competence comes in the form of training that is coherent,

personal, and continuous. Coherent training, according to Evans (1996), refers to the

design and the sequencing of training content. He stated, "Sessions must be relevant to

the innovation and unfold in a logical way that provides teachers with both an overview

of the larger goals and a walk-through of the specific objectives and methods for meeting

them" (p. 64). Personal means that the training must meet the current knowledge,

practice, and desired needs of the teachers. The more that people are asked to change, the

more necessary it becomes to individualize training. Furthermore, training must be

continuous so that teachers have time to integrate the new skills into their routines. Evans

explained that "these three factors of training work best when teachers have the

opportunities to consider, discuss, argue about, and work through changes in their assumptions" (p. 65).

Gaining commitment for an innovation depends on the kind of change that is proposed. Evans (1996) explained that "the change process is influenced by the particular nature of the change" (p. 75). He outlined four basic characteristics of a change program: focus and clarity, scope and complexity, desirability, and feasibility. First, change will be unlikely to succeed without being focused and clear. Participants must understand why the change is being pursued, what it consists of, and how it will be implemented. They must also understand the relationship of the initiative and its importance to other projects that are occurring at the same time. Leaders can help gain commitment by focusing on a few priorities rather than overloading teachers with multiple initiatives. Furthermore, leaders should consider the complexity of any new change. Evans contended that recent changes are much more difficult than in the past. These changes require teachers to be problem solvers who do more than absorb and accumulate knowledge. In addition, change should be desirable. That is, teachers should be dissatisfied with the status quo in such a way that they find the change relevant. Once teachers see a need for change, the new program must be feasible so that they believe that they can achieve it. These four characteristics are important to the success of any new program and will help teachers build new competences.

In addition to focus on the individuals who will implement a new change program, leaders should consider the capacity of the organization itself. Evans (1996) stated, "A school's institutional readiness—its organizational capacity to adopt and

implement an innovation—is crucial to its success in innovating" (p. 119). He identified

six contexts that shape the setting of an organization:

- Occupational framework—the structure of the profession and its influences on

  the school—the nature of the work, the norms of practitioners, their social

  status and prevailing outlook.

- Politics—the trust, consensus, and autonomy the school enjoys and its ability

  to maintain informed, supportive constituencies.

- History—the school's previous experience with innovation.

- Stress—the level of demand on the school vis-à-vis its organizational

  strengths

- Finances—the school's wherewithal to underwrite reform.

- Culture—the supportiveness of the school's underlying ethos and shared

  mission.

Each of these contexts is critical to the success of reform and a school's ability to change.

Without considering the capacity of the organization in each of these areas, restructuring

becomes more difficult.

Leadership in the Change Process

Due to the inherent difficulties in school improvement, leadership becomes a

critical consideration. Hall and Hord (2006) explained that while many advocates for

bottom-up change believe that the best ideas of how to accomplish change come from the

bottom, long-term change does not occur without the support of leaders at the top of the

organization. They stated, "If administrators do not engage in ongoing active support if is

more likely that the change effort will die" (p. 11). Warren Bennis (as cited in Evans,

1996) stated, "Good leadership can be felt all through an organization. It gives pace and energy to the work and empowers the workforce" (p. 146). He explained that organizations that are well-led provide an environment where people feel that they are making a significant contribution and their work has meaning. Furthermore, they are a part of a team that values mastery and competence. All of these signs point to strong leadership. The problem is that it is difficult to capture exactly what a leader does to produce this kind of environment.

A meta-analysis conducted by Marzano, Waters, and McNulty (2005) reviewed studies conducted spanning 35 years of school leadership from 1978 to 2001. Sixty-nine studies involving 2,802 schools and 1.4 million students. From their review of the studies, the researchers developed and administered a survey to 650 building principals. Using a factor analysis, they determined which leader behaviors had the most impact on student achievement. They found 21 behaviors or "responsibilities" that had the greatest impact on student achievement. These responsibilities include:

1. Affirmation – Recognizes and celebrates accomplishments and acknowledges failures.
2. Change Agent – Is willing to challenge the status quo.
3. Contingent Rewards – Recognizes and rewards individual accomplishments.
4. Communication – Establishes strong lines of communication with and among teachers and students.
5. Culture – Fosters shared beliefs and a sense of community and cooperation.
6. Discipline – Protects teachers from issues and influences that would detract from their teaching time or focus.
7. Flexibility – Adapts his or her leadership behavior to the needs of the current situation and is comfortable with dissent.
8. Focus – Establishes clear goals and keeps those goals in the forefront of the school's attention.
9. Ideals/Beliefs – Communicates and operates from strong ideals and beliefs about schooling.
10. Input – Involves teachers in the design and implementation of important decisions and policies.

11. Intellectual Stimulation – Ensures faculty and staff are aware of the most current theories and practices and makes the discussion of these a regular aspect of the school's culture.
12. Involvement in Curriculum, Instruction, and Assessment – Is directly involved in the design and implementation of the curriculum, instruction, and assessment practices.
13. Knowledge of Curriculum, Instruction, and Assessment – Is knowledgeable about current curriculum, instruction, and assessment practices.
14. Monitoring/Evaluating – Monitors the effectiveness of school practices and their impact on student learning.
15. Optimizer – Inspires and leads new and challenging innovations.
16. Order – Establishes a set of standard operating procedures and routines.
17. Outreach – Is an advocate and spokesperson for the school to all stakeholders.
18. Relationships – Demonstrates an awareness of the personal aspects of teachers and staff.
19. Resources – Provides teachers with materials and professional development necessary for the successful execution of their jobs.
20. Situational Awareness – Is aware of the details and undercurrents in the running of the school and uses this information to address current and potential problems.
21. Visibility – Has quality contact and interactions with teachers and students.
(p. 42-43)

The authors explained that while each of these responsibilities has been addressed in the theoretical literature for decades, the finding that they are significantly related to student achievement is a new addition. The researchers concluded, "A highly effective school leader can have a dramatic influence on the overall academic achievement of students" (p. 10). In fact, schools with the most effective leaders in terms of these responsibilities have a 25% higher passing rate on a given standardized test.

While their factor analysis showed that all 21 traits were found to be important to first-order change to some degree, Marzano et al. (2005) asserted that not all are equally important. Some may be more or less important given the routine business of schooling. In contrast, seven responsibilities were found to be highly related to second-order change. It is significant to note that each of these responsibilities address a specific issue that is being addressed or a problem that is being solved. They include:

1. Knowledge of curriculum, instruction, and assessment – Being knowledgeable about how the innovation will affect curricular, instructional, and assessment practices and providing conceptual guidance in these areas.
2. Optimizer – Being the driving force behind the new innovation and fostering the belief that it can produce exceptional results if members of the staff are willing to apply themselves.
3. Intellectual stimulation – Being knowledgeable about the research and theory regarding the innovation and fostering such knowledge among staff through reading and discussion.
4. Change agent – Challenging the status quo and being willing to move forward on the innovation without a guarantee of success.
5. Monitoring/evaluating – Continually monitoring the impact of the innovation.
6. Flexibility – Being both directive and nondirective relative to the innovation as the situation warrants.
7. Ideals/beliefs – Operating in a manner consistent with his or her ideals and beliefs relative to the innovation. (p. 71-72)

While seven responsibilities may be critical to second-order change, Marzano et al. (2005) explained that others can be negatively affected during the change process and the leader may have to endure the following perceptions:

- Team spirit, cooperation, and common language have deteriorated as a result of the innovation (Culture).
- Communication has deteriorated as a result of the innovation (Communication).
- Order and routine have deteriorated as a result of the innovation (Order).
- The level of input from all members of the staff has deteriorated as a result of the innovation (Input). (p. 74)

Leaders who are involved in second-order change must realize that these perceptions will exist and must accept that leadership for second-order change is completely different than that required by first-order change. Marzano et al. (2005) explained, "To successfully implement a second-order change initiative, a school leader must ratchet up his idealism, energy, and enthusiasm. Additionally, the school leader must be willing to live through a period of frustration and even anger from some staff members" (p. 75).

Evans (1996) asserted that there are two realities to consider about school leadership. First, maintaining schools is difficult. The author asserted that the work is so

arduous that it keeps principals and superintendents under enormous pressure and allows less energy for implementing change. Evans stated, "The tensions that are innate in leadership have acquired a new intensity, leaving too many administrators vulnerable and stressed instead of vigorous and stimulated" (p. 147). A second reality is that most administrators practice a rational-structural paradigm that inhibits change. Both of these realities can be overcome, according to the author, by adopting the strategic-systemic paradigm.

Leadership theory and practice have been plagued by several key dilemmas that must be considered and confronted before moving forward with any innovation. The first dilemma is related to management. A new paradigm calls for more leadership and less management. A second dilemma is that leaders rarely feel that they have enough resources to do the job, even when others outside of the organization observe that the resources are adequate. Third, leaders have less power than they realize. They need to rely on those below them to have any influence. Furthermore, leaders find that the expectations at the highest levels of leadership become that of symbolism rather than substance. Leaders become more of a figure head as others expect them to be in the spotlight. As this becomes the basis of their work, they are able to focus less on the real work. Finally, leadership takes a personal toll on the leader as they are always in the public eye. As leaders rise to the top of an organization, they become more of a celebrity and are criticized for the decisions that they make. Evans (1996) contended that these dilemmas have always existed, but argued that they continue to be exacerbated by factors such as increased expectations, legal issues, and diminishing resources. Increased training

in the area of leadership has been tried to address these dilemmas, but has been unsuccessful.

Transformational leadership offers a new set of views that work in conjunction with the strategic-systemic paradigm. This kind of leadership seeks changes that go beyond technical competence. It seeks to change the values and culture of an organization. Evans (1996) stated, "Strategic-systemic approaches to leadership emphasize substance rather than technique. It sees leadership not as a science but as a craft, a unique blend of practical experience, personal skill, judgment, and intuition, all informed by training and research" (p. 167). This craft, according to the author, is guided by two overarching concepts: purpose (the pursuit of a vision for the institution based on shared values and beliefs) and followership (the enlisting of people in this effort on a basis of genuine commitment and the empowering of people throughout the organization as decision makers).

Sergiovanni (1991) asserted that there are four stages of leadership associated with transformation that can be used for organizational improvement. *Leadership by bartering* is sometimes the first stage of a change. This type of strategy offers something to the individual for attempting a change. It is transactional in nature and can only take a school so far. The second and third stages are *building* and *bonding*. Building offers individuals opportunities for achievement, challenge, responsibility, and recognition for accomplishment. Bonding is the stage where the innovation begins to transform. Bonding requires mutually agreed values, goals, and norms that link the members together toward one purpose. The final stage, *banking*, occurs as innovations become routine within an organization. Sergiovanni believed that at this stage, the leader "ministers to the school's

needs, enabling others to better fulfill their responsibilities and acts as a 'high priest' by articulating and protecting the school's values" (p. 126).

Trust and confidence form the foundation of transformational leadership. Those being led must trust the leader before they will follow. They must also have confidence that the leader can help them achieve their goals. Evans (1996) believed that the key to each of these is authentic leadership. This kind of leadership, according to the author, is distinguished by integrity and savvy. While integrity is focused on the leader's behavior and whether or not they do what they say they will do, savvy is a collection of qualities that includes craft knowledge, life experience, native intelligence, common sense, intuition, courage, and the capacity to "handle things" (p. 183).

Authentic leaders, according to Evans (1996), are guided by four action orientations that research demonstrates to be essential: clarity and focus, participation without paralysis, recognition, and confrontation. First, authentic leaders know what they want, and they pursue it. They are strongly convicted about how they believe things should be and they concentrate on a few goals. Their intense sense of clarity fosters trust within the organization. Evans stated, "When leaders are consistent, straightforward, and firm, staff find them reliable and predictable" (p. 213). In addition to being clear and focused, authentic leaders exhibit participatory leadership. That is, they encourage a collegial community and empower others to be leaders in the change process. People who are included in decisions tend to be more productive and have a higher level of satisfaction in their work. Next, authentic leaders use recognition to leverage improvement. Recognition, according to the author, is more than praise and positive feedback. It is also validation in the form of acknowledging and affirming the truth about

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a person or situation. Evans contended that recognition is maximized when it is focused on what we are trying to produce. When recognition focuses on collegial groups or work units rather than on individual people, the authentic leader demonstrates his commitment to these structures. Finally, the authentic leader confronts resistance. He begins by acknowledging and addressing the opposition through seeking to understand the sources of the conflict. If that is unsuccessful, he must resort to other strategies. The author stated, "When those sincere efforts at resolution fail, they confront directly those who continue to resist, especially when this resistance becomes exceptional-that is, when it violates the school's essential purposes or basic norms" (p. 273).

Systems Thinking

Leading researchers of change theory advocate for using a systems approach to change. A new model for change suggested by Evans (1996) consists of a strategic-systemic paradigm. This model combines strategic management and systems theory. It challenges traditional assumptions of stability and causality. Strategic theorists call for a focus on *people issues* and on the non-rational aspects of the organization. A new model of change would consider that an organization's environment is turbulent and unpredictable. Thus, the focus should be on its culture and its people. By looking at the larger system rather than the smaller parts, organizations can begin to understand the complexity of the entire system and how one change affects another. This focus on the whole allows an organization a greater ability to solve problems effectively. When the system is viewed as a whole and becomes meaningful to those who must implement it, change that is initiated becomes both top-down and bottom-up and has a better chance of success. Evans stated that a strategic-systemic paradigm model

takes the principle of participation seriously. Its emphasis on flexible, developmental planning and the building of shared meaning demands that leaders listen actively to staff, modify their initial goals to reflect staff experience, and aim toward building innovation that is truly collaborative wherever possible. (p. 18)

Senge (2006) explained that while the water cycle is a system that can be connected with a pattern, business and other human endeavors are also systems. Because we are part of a system, it is hard for us to see the whole pattern of change. He surmised that when we have a systems problem, we focus only on pieces of the system and wonder why are never able to solve the problem. He explained, "Systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the last fifty years to make the full patterns clearers, and to help us see how to manage them effectively" (p. 7). Hall and Hord (2006) asserted that a systems perspective is based on a holistic, large-scale view. It begins by including all factors inside and outside the organization that may be related to the change effort. They contended that an important aspect of the systems perspective is interactions. They stated,

> Rather than seeing the whole as static, in the systems perspective all the elements and pieces are seen as composing subsystems that are, at least to some extent, interconnected. When something happens in one part of the system, it affects other parts. (p. 39)

Fullan (2006), grounded in the same theory regarding change in schools, asserted that we should "Think system and not individual school if the goal is to fundamentally change the culture of schools" (p. 10). He advocates for schools and districts learning from each other. Schlecty (2006) sums up what is needed. He stated, "If student performance in America's public schools is to be improved in a significant way, school leaders must transform their organizations from bureaucracies into learning organizations" (p. 62).

Al Bertani, Michael Fullan, and Joanne Quinn (2004) outline 10 components that create large-scale systemic improvement:

1. A compelling conceptualization – high engagement with others in the district and plenty of two-way communication that deepens shared ownership and commitment.

2. Collective moral purpose – everyone has a responsibility for changing the larger education context for the better.

3. The right bus – the right structures for getting the job done; a common direction and common purpose, a laserlike focus on teaching and learning for both adults and students.

4. Capacity building – achievement and development of future leaders.

5. Lateral capacity building – connecting schools within a district, developing new ideas, skills, and practices that increase the ability of individuals and organizations to bring about improvements.

6. Ongoing learning – continually refining strategy using systematically collected information.

7. Productive conflict – working in a high-trust yet demanding culture, participants view disagreement as a normal part of change and are able to value and work through differences.

8. A demanding culture – cultures that take action against persistently uncaring or incompetent teachers.

9. External partners – business groups, foundations, community-based organizations, or universities that help build the district's professional capacity.

10. Focused financial investments – deploy existing resources in the service of teaching and learning.

Evans (1996) argued that while advocates of school change may argue about what kind of change is needed in schools, "most share a common conviction that radical change is both crucial and necessary" (p. 3). Senge, Cambron-McCabe, Lucas, Smith, Dutton, and Kleiner (2000) asserted that change is possible. The authors stated, "It is becoming clear that schools can be re-created, made vital, and sustainably renewed not by fiat or command, and not by regulation, but by taking a learning orientation" (p. 5). They further explained that, "This means involving everyone in the system in expressing their aspirations, building their awareness, and developing their capabilities together" (p. 5). Senge (2006) asserted that five new component technologies are converging to build learning organizations that learn and enhance their capacity to reach their highest aspirations. These components consist of systems thinking, personal mastery, mental models, building shared vision, and team learning.

Systems thinking is the first component of a learning organization. Senge (2006) explained, "Systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make the full patterns clearer, and to help us see how to change them effectively" (p. 7). This framework, according to Senge et al. (2000), is based on three objectives. The first objective of systems thinking is to help people and organizations understand the nature of the systems in which they live.

This involves the use of systems simulations and models to help see the cause and effect relationships. A second objective is to help people and organizations develop personal skills such as clarity, consistency, courage, and the ability to see interrelatedness. This allows people to hold their assumptions up for critique and begin to improve them. Finally, systems should shape an outlook and personality to fit the twenty-first century. Individuals should have the confidence that they can shape their own futures. This can happen when individuals can study the past and understand the system and the reasons why mistakes were made. This new knowledge will assist individuals in developing an innovative outlook.

Fullan (2005a) proposed that the key to changing systems is to produce greater numbers of systems thinkers. He stated, "If more and more leaders become system thinkers, they will gravitate toward strategies that alter people's system-related experiences; that is, they will alter people's awareness of the system as a whole, thereby contributing to altering the system itself" (p. 40). He called for "system thinkers in action" (p. 40). These are comprised of leaders who are in the midst of innovation with a systems perspective and interacting with others to promote system awareness through their actions and conversations. Hall and Hord (2006) agreed. They stated, "Leaders who can think systematically are much more effective in leading change efforts" (p. 39). According to Fullan,

> systems thinking must be made accessible to a large group of new and emerging leaders who don't pile on policies upon policies, but rather work on alignment and celebrate accomplishments while developing leadership at all levels of the organization and system. (p. 45)

Personal Mastery

Personal mastery is another important component of a learning organization. Senge (2006) defined personal mastery as the "discipline of personal growth and mastery" (p. 131). He stated, "Organizations learn only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs" (p. 129). Personal mastery, according to Senge et al. (2000), is an awareness of what you want and what you have. This awareness creates a tension that seeks resolution. The authors stated, "The most desired resolution of this tension is for your reality to move closer to what you want" (p. 59). Sparks (2001) defined personal mastery as "the practice of articulating a coherent image of your personal vision—the results you most want to create in your life—alongside a realistic assessment of the current reality of your life today" (p. 46).

Creative tension is the central principle of personal mastery. The gap that occurs between vision and current reality is the source of creative energy (Senge, 2006). This gap is where the creative tension lies. Often times, we view this gap as being negative because we believe that we are powerless to make the things that we care about happen and because we believe that we are unworthy of having what we truly desire. These two underlying beliefs work to pull us away from our goals. The tension that occurs as we work towards our goals and then are pulled back by powerlessness and/or unworthiness is called structural conflict.

Fritz (as cited in Senge, 2006) identified three coping strategies commonly used when there is structural conflict: letting our vision erode, conflict manipulation, and willpower. Structural tension can be so strong of a force that it causes us to erode our

vision or manipulate conflict in order to avoid the tension. Conflict is manipulated when we focus on avoiding what we do not want rather than creating what we do want. It is based in fear and can be addictive. Fritz explained, "The tragedy is that many people who get hooked on conflict manipulation come to believe that only through being in a state of continual anxiety and fear can they be successful" (p. 147). Willpower is a third coping strategy. It produces similar addictive effects. Willpower occurs when we psych ourselves up to overcome all forms of resistance to achieving our goals. This kind of coping strategy leaves us exhausted and we never really overcome the feeling of powerlessness. In spite of this, some successful people believe that they have to pay a price to achieve a goal.

To effectively deal with structural conflict, we must learn to tell the truth. Senge (2006) explained that commitment to the truth, "means a relentless willingness to root out the ways we limit or deceive ourselves from seeing what is, and to continually challenge our theories of why things are the way they are" (p. 148). For this reason, the author explained that we should recognize the structural conflicts in our own lives and the resulting behaviors. Once we recognize the conflicts, we can identify our own patterns of behavior and develop skills to overcome them. Once these skills are developed, they become automatic. That is, we learn to deal with complexity at a subconscious level in such a way that we can accomplish difficult tasks easily.

People who have a high level of personal mastery have several common characteristics (Senge, 2006). First, they have a sense of purpose that is a calling. They have learned to work with the forces of change and use them for personal growth. They are continually learning and see personal mastery as a lifelong discipline. Even though

they are aware of their own weaknesses, they are confident in themselves as individuals

and continually strive to make their vision of the future a reality. Hanover's CEO,

O'Brien (as cited in Senge, 2006), believed that persons with high levels of personal

mastery had an *advanced maturity* that allowed them to delay gratification and work

towards long-term objectives. He concluded that we should intentionally focus on human

development:

> Whatever the reasons, we do not pursue emotional development with the same
> intensity with which we pursue physical and intellectual development. This is all
> the more unfortunate because full emotional development offers the greatest
> degree of leverage in attaining our full potential. (p. 133)

Two things occur when personal mastery becomes a discipline. First, we

continually seek to clarify what is important to us. This means that we actually take the

time to reflect about what is really important to us as an individual. Senge et al. (2000)

suggested that we engage in an exercise to draw forth our personal vision. We should

consider what we want to achieve in our life and refine our vision by asking questions

that cause us to think about what it would be like if we already had the future we desired.

In addition to establishing a vision, we should also seek to see our current reality more

clearly. Senge (2006) asserted,

> The juxtaposition of vision (what we want) and a clear picture of current reality
> (where we are relative to what we want) generates what we call "creative
> tension": a force to bring them together, caused by the natural tendency of tension
> to seek resolution. (p. 132)

Thus, the author concluded, "The essence of personal mastery is learning how to generate

and sustain creative tension in our lives" (p. 132). Senge et al. (2000) proposed that once

we identify our vision, we will have to make choices about what we most want. The

authors stated,

When you consciously make a choice you are more attuned, on every level, to the opportunities that come your way. You are more willing to take risks, and more clear in judging those risks. And you are more determined as you get closer to your vision. (p. 65)

Schools are critical to personal mastery and should want it from their employees. They should set the context for people to have time to reflect on their vision and they should avoid taking a position about what other people should want or how they should view the world. Hanover's O'Brien (as cited in Senge, 2006) argued that organizations that are committed to the personal growth of their employees will become stronger. Employees who have a high level of personal mastery are more committed and take more initiative. They also learn faster.

Mental Models

Mental models represent a third component critical to becoming a learning organization. Mental models help to explain why many innovations in schools fail. Often times those who are being asked to change are conflicted with the new initiative. What they hold to be true limits their thinking and actions. Senge (2006) asserted that "Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action" (p. 8). Senge et al. (2000) suggested that mental models as a discipline is probably the most practical of all the five disciplines and it has the most relevance for a larger number of challenges in schools. The authors explained that bringing tacit assumptions and attitudes to the surface so that people can explain and talk about their differences and misunderstanding is crucial to change. Two skills are needed for this practice: reflection and inquiry.

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Senge (2006) asserted that organizations should develop skills of reflection and skills of inquiry to assist in understanding mental models within the organization. The author explained that skills of reflection allow us to slow down our thinking processes in order to examine our own thinking processes and the ways that they influence our actions. Skills of inquiry involve the understanding of how we interact with others when dealing with complex and conflicting issues. These skills should be established as a part of the infrastructure of regular practice by leaders. As an example, Harley-Davidson's CEO, Rich Teerlink, changed their management structures to include these two skills by implementing *the circle coach*. The circle coach was someone who facilitated the team to get different mental models into the open. This process worked very well for the organization. As a result, they were able to achieve the core disciplines of mental models:

- Facing up to distinctions between espoused theories (that we say) and theories-in-use (the implied theory in what we do).

- Recognizing the "leaps of abstraction" (noticing our jumps from observation to generalization).

- Exposing the "left-hand column" (articulating what we normally do not say).

- Balancing inquiry and advocacy (skills for effective collaborative learning).

Senge stated, ". . . without reflective and interpersonal learning skills, learning is inevitably reactive, not generative" (p. 177). Generative learning requires that we become aware of and challenge our mental models. The problem is that our minds tend to leap to generalizations quickly and slow down our learning processes. Senge et al. (2000) argued that our ability to achieve the results we desire is compromised by our feelings that: (a) our beliefs are the truth, (b) the truth is obvious, (c) our beliefs are based on real data,

and the data we select are the real data. The authors contended that these quick leaps of generalizations, *leaps of abstraction,* impede our learning and should be tested by asking several questions that coincide with climbing a ladder. The questions on the *ladder of inference* include:

- What are the observable data behind that statement?
- Does everyone agree on what the data are?
- Can you run me through your reasoning?
- How did we get from that data to these abstract assumptions?

These questions used continuously will assist us in determining the differences between our perceptions and what we have in common.

Shared Vision

Perhaps one of the most critical components leading to the development of learning organizations is *building shared vision*. Senge (2006) explained, "The practice of shared vision involves the skills of unearthing shared 'pictures of the future' that foster genuine commitment and enrollment rather than compliance" (p. 9). Senge et al. (2000) asserted that shared vision is a set of tools and techniques that brings every person's aspirations of the organization into alignment around the things that everyone has in common. Images of the future are developed while identifying values and goals. It is critical that an intentional process is put in place to develop a shared vision.

Shared visions are important to the success of an organization. They have the power to help people reach their aspirations. Work becomes the pursuit of a higher purpose that creates a spark and a sense of energy in organizations. Senge (2006) stated, ". . . a shared vision changes people's relationship with the company. It is no longer 'their

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company'; it becomes 'our company'" (p. 194). In fact, shared vision creates a common identity that establishes the most basic level of commonality.

Shared vision also creates courage within an organization. Senge (2006) defines courage as "simply doing whatever is needed to in pursuit of the vision" (p. 194). For example, MIT's Draper Laboratories exhibited great courage after spending several years on designing a navigation system for NASA. They realized that their design was wrong and abandoned their project in order to start completely over. They realized that this was the only action that would lead them to realizing the country's vision of having a man walk on the moon. Another example of courage comes from Apple Computers. They rejected the opportunity to be a PC manufacturer in favor of developing the Macintosh that was rooted in their vision of *having fun* in personal computing.

In addition to courage, shared vision creates a stabilizing force that allows organizations to keep on course when stresses begin to develop. It also allows for greater risk taking and experimentation. Everyone in the organization realizes that there will be some ambiguity as they strive to reach their dreams. Nevertheless, they are committed. This commitment leads to long-term focus that is ultimately necessary to the achievement of an organization's aspirations. Senge (2006) asserted that every instance where a long-term view exists, there is also a long-term vision. He stated, "The Japanese believe building a great organization is like growing a tree; it takes twenty-five to fifty years" (p. 196).

Shared visions begin with personal visions. Senge (2006) argued that organizations should encourage individuals to develop their own personal visions. He stated, "If people don't have their own vision, all they can do is 'sign up' for someone

else's" (p. 197). This leads to compliance rather than commitment. For this reason, personal mastery becomes important once again. Persons within an organization must be comfortable with the creative tension that exists when they are between the current state and the vision that they are trying to achieve. Leaders should take care to respect the visions of others by allowing them to freely share their personal visions and then connect those visions to the organization.

Leaders should realize that their vision is a personal vision and that their level position of leadership does not mean that their vision is automatically the organization's vision. In order to build commitment, they need to share their personal vision and enlist others to follow them. Senge (2006) believed that leaders should ask persons within the organization to follow them. This strategy is different than the typical announcement of goals and may ultimately take more time. It involves sharing and listening. Ongoing conversations are needed to allow people to share their dreams and listen to each others dreams. This time ultimately leads to commitment rather than enrollment. The author stated, "The committed person brings energy, passion, and excitement that cannot be generated by someone who is only compliant, even genuinely compliant" (p. 205).

Team Learning

A final and important component leading to the development of learning organizations is *team learning*. This discipline builds on personal mastery and shared vision. While it is important for an organization to have shared vision and talented individuals, they are not enough. Many organizations who have both of these still fail. Senge (2006) explained the importance of using the combined intelligence of a team to produce great results. He stated, "When teams are truly learning, not only are they

producing extraordinary results, but the individual members are growing more rapidly than could have occurred otherwise" (p. 9).

Team learning is characterized by alignment. Senge (2006) asserted that most teams do not effectively work together. They tend to work at cross purposes creating wasted energy. The author stated, "Individuals may work hard, but their efforts do not efficiently translate to team effort" (p. 217). The author contended that there is a great need to work in teams. In fact, teams are becoming the key learning unit in organizations. These teams must develop the skill to produce a learning team. Senge asserted, "Learning teams learn how to learn together" (p. 240).

According to Senge (2006), there are three critical dimensions to team learning. First, there is a need to think about complex issues. Teams learn how to use the potential for many minds to be more intelligent than just one. Second, there is a need for coordinated action. Great teams develop *operational trust* and remain conscious of each team member while counting on them to act in ways that compliment each other. Finally, senior team members serve as members of other teams and work to implement team learning more broadly throughout an organization.

Team learning is most effective when teams master the skills of dialogue and discussion. Senge et al. (2000) explained that the practice of dialogue affords us the opportunity to actively listen to each other while suspending our own assumptions so that we can temporarily examine our attitudes about a new way of thinking. This happens in three ways. First, we surface our assumptions so that we are aware of them before we raise them to others. Next, we display them so that others can see them. Finally, we invite others to participate in inquiry of them so that we can understand new dimensions of

what we are thinking and saying. Dialogue is best, according to Senge (2006), when three conditions are met: "all participants suspend their assumptions, all participants hold each other as colleagues, and there is a facilitator who holds the context of dialogue" (p. 226).

Discussion is unlike dialogue. It represents the opportunity to defend one's point of view and occurs when decisions need to be made. Actions are the focus of discussion. Senge (2006) stated, "A learning team masters movement back and forth between dialogue and discussion" (p. 230). In order to be successful, teams must distinguish between dialogue and discussion and be able to move between the two as needed. When this occurs, the team develops a strong sense of trust and a richer understanding of each person's point of view.

According to Reeves (2009), "Failure in change strategies need not be inevitable. In fact, it is avoidable if change leaders will balance their sense of urgency with a more thoughtful approach to implementing change" (p. 7). While it is tempting to implement policies and programs that claim quick gains in student achievement, research suggests that the best improvements are aimed directly on strategies aimed at improving the quality of the teacher and the instructional strategies being implemented. In an attempt to solve the problem of poor performance, policy makers and other stakeholders often impose curricular mandates on classrooms and leave teachers with little control to determine the best solutions for their students' needs. In doing so, they fail to address the fear and anxiety that accompany change. Reeves explained, "Anxiety displaces the advantages of change with overwhelming, if irrational, disadvantages and therefore stops change before it has the opportunity to begin" (p. 8).

Teacher Professional Development

Buffum and Hinman (2006) stated, "No longer can a teaching staff be asked to implement the 'reform dujour.' They (teaching staff) must both take and be given the responsibility to determine the path that will lead to the academic success of their students" (p. 16). Empowering our teachers to make decisions regarding school improvement is what is needed to increase student achievement. Hayes (2004), when reviewing the *A Nation at Risk* report, declared, "Whether it be a high or low-performing school, it will be the individual teachers in the classroom who will most affect the success of the educational reform" (p. 74). He stated, "The *A Nation at Risk* report recognized the importance of improving the teaching profession" (p. 74).

Nations around the world are investing in teacher learning as their greatest resource for increasing student achievement. Wei, Andree, and Darling-Hammond (2009) examined the professional development opportunities of teachers in high achieving nations, including Finland, Sweden, Japan, South Korea, Singapore, the United Kingdom, and Australia, and found several commonalities in their learning systems. Their research included the following characteristics:

- Time for professional learning and collaboration built into teachers' work hours.
- Ongoing professional development activities that are embedded in teachers' contexts and focused on the content to be taught.
- Extensive opportunities for both formal and informal inservice development.
- Supportive induction programs for new teachers.
- School governance structures that involve teachers in decisions about curriculum, instruction and assessment, and professional development. (p. 28-29)

The researchers contended that professional development in America has been at odds with these kinds of professional development approaches. They stated,

> In addition to the fact that most are still one-shot or one- or two-day activities, relatively few learning opportunities for U.S. teachers feature either the intense emphasis on content or the collegial work that has been found to predict greater success. (p. 29)

It has historically been unproductive and has consisted of a series of mandated sessions in which administrators select the topics and teachers are held a captive audience for half or a whole day. The result is often frustration and resentment on the part of teachers and a waste of school resources.

A critical aspect for teacher engagement in professional learning is the allocation of time to support such work. Most schools still lack structures for collective work on problems of practice. More than 85% of schools in European countries, such as Denmark, Belgium, Sweden and Switzerland, provide time for professional learning into most teachers' work hours (Wei et al., 2009). In Asian countries, such as Korea, Japan and Singapore, about 35% of a teacher's work time is actually spent providing instruction. The remainder of time is spent sharing, planning, and working together. According to the National Commission on Teaching and America's Future (as cited in Wei et al.), teachers in both European and Asian countries spend on average approximately 15-20 hours per week working with colleagues on preparing and analyzing lessons, developing and evaluating assessments, observing other classrooms, and meeting with students and parents. In the U.S., teachers generally spend 3-5 hours each week for lesson planning, usually scheduled independently rather than jointly with colleagues.

Professional development is more effective when schools approach it not in isolation (as in the traditional one-shot workshop) but rather as a coherent part of a school reform effort. Stein, Smith, and Silver (as cited in Darling Hammond & Richardson, 2009) called for a new paradigm for professional development, "one that rejects the

ineffective 'drive-by' workshop model of the past in favor of more powerful

opportunities" (p. 46). Darling-Hammond and Richardson further explained that the

content, context, and design of professional development are critical points to consider.

First, the authors explained that the content of professional development should be

focused on student learning and the development of pedagogical skills to teach specific

content and asserted that when teachers are actively involved in hands-on work that

deepened teachers' knowledge of content, they developed a deeper sense of efficacy.

The context of professional development, according to Darling-Hammond and

Richardson (2009) should be that professional development is focused on a coherent plan

for school reform. They stated, "To avoid disparities between what teachers learn in

professional development work and what they can actually implement in their

classrooms, schools should seamlessly link curriculum, assessment, standards and

professional learning opportunities" (p. 48). Research, according to the authors, also

indicated that collaborative and collegial learning environments that develop

communities of practice are important to the effectiveness of professional development.

The final consideration of professional development, according to Darling-

Hammond and Richardson (2009) to consider is design. They contended that the design

should address how teachers learn and advocated for a design which allows for modeling

of new strategies and constructing opportunities for teachers to practice. In addition, time

was found to be critical to effective learning. The most effective programs, according to a

review of nine research studies conducted by Yoon, Duncan, Lee, Scarlos, and Shapley

(2007) (as cited in Darling-Hammond & Richardson), were those found for programs

offering between 30 and 100 hours spread out over 6-12 months.

According to Darling-Hammond and Richardson (2009), research supports professional development that:

- Deepens teachers' knowledge of content and how to teach it to students.
- Helps teachers understand how students learn specific content.
- Provides opportunities for active, hands-on learning.
- Enables teachers to acquire new knowledge, apply it to practice, and reflect on the results with colleagues.
- Is part of a school reform effort that links curriculum, assessment, and standards to professional learning.
- Is collaborative and collegial.
- Is intensive and sustained over time. (p. 49)

The authors asserted that research DOES NOT support professional development that:

- Relies on the one-shot workshop model.
- Focuses only on training teachers in new techniques and behaviors.
- Is not related to teachers' specific contexts and curriculums.
- Is episodic and fragmented.
- Expects teachers to make changes in isolation and without support.
- Does not provide sustained teacher learning opportunities over multiple days and weeks. (p. 49)

Wei et al. (2009) stated, "When time for professional development is built into the teachers' working time, their learning activities can be ongoing and sustained and can focus on particular issues over time" (p. 30). They advocated for job-embedded professional development which allows teachers to study topics and engage in action research over a period of time. According to Barber and Mourshed (2007), Fernandez (2002), and Pang (2006) (as cited in Wei et al.), action research enables teachers to refine individual lessons, consult with other teachers, and receive feedback based on colleagues' observations of their classroom practice, reflect on their own practice, learn new content and approaches, and build a culture that emphasizes continual improvement and collaboration (p. 31).

DuFour (2004a) believes that too much time is wasted in one-shot professional development sessions. He argues that "Site-based staff development can be, and often is, ineffective" (p. 63). DuFour proposed that leaders should ask four questions regarding professional development:

- Does the professional development increase the staff's collective capacity to achieve the school's vision and goals?

- Does the schools approach to staff development challenge staff members to act in new ways?

- Does the school's approach to staff development focus on results rather than activities?

- Does the school's approach to staff development demonstrate a sustained commitment to achieving important goals?

It is critical to note that the common thread among the current best practices of professional development and the improvement of teacher quality is the workplace. Hall and Hord (2006) elaborated on the importance of workplace factors in the discussion of teaching quality. The authors asserted that teachers who felt supported in their ongoing learning and classroom practice were more committed and effective than those who were not supported. They stated,

> Such support was manifested as teachers worked together, sharing their craft and wisdom, learning from each other, and collaborating on problems and issues of concern to them. This support increased teacher efficacy, which meant that they gave more attention to students' needs and adopted new classroom behaviors more readily. (p. 25)

Rosenholz, Darling-Hammond, Lieberman, Little, and McLaughlin and Talbert all agreed (as cited in Hall & Hord, 2006). Their research has validated the importance of the

workplace culture on teachers' practice and on student outcomes. Darling-Hammond observed that workplaces that are supportive of teachers are few and far between, and that attention must be focused on rethinking the organizational arrangements of the work setting.

Professional Learning Communities

Professional learning communities is a professional development model that supports job-embedded learning and action research. Smith, Wilson, and Corbett (2009) explained that professional learning communities are a growing forum for teacher learning. They stated, "The opportunity to share ideas and reflect on teaching practices makes learning communities attractive" (p. 20). Mason (2003) explained that "Professional communities are school-based, teacher-centered organizational structures that are linked to organizational culture in such a way as to promote organizational learning and improvement in schools" (p. 5). According to Chappuis, Chappuis, and Stiggins (2009), the traditional workshop approach to teacher learning has been unsuccessful for several reasons. First, they contended that a passive *sit-n-get* mind-set can permeate the environment, even with an engaging presenter and interactive agenda. Additionally, they asserted that "traditional approaches offer no opportunity for reflection among participants, no implantation of the new learning, and no collegial discussions; and no why to determine whether learning has taken place once teachers return to their classrooms" (p. 57). For this reason, the authors argued that a new model of professional development is needed.

The professional learning community has become known as the most effective strategy for schools to employ as they work to improve student achievement. Professional

learning communities are designed to allow teachers to work together with administrators and other teachers to provide quality instruction and improve student learning (Hughes & Kritsonis, 2006). The basic structure of the professional learning community is a group of collaborative teams that share a common purpose. This new approach to professional development has created a culture whereby teachers are learning from each other. Wood and Anderson (2003) stated,

> a culture of openness is a necessary condition of maintaining professional learning communities. Here, staff in most circumstances, are comfortable with other professionals observing and critiquing their lessons and where the school community routinely interrogates teaching and learning methods. (p. 24)

The research stated that "Using the talents and support of the critical mass of teacher leaders who are working within the professional learning community culture facilitates the inclusion of staff who are uncommitted" (Hipp et al., 2003, p. 1).

"Teaching in isolation has become the norm for schools, especially at the secondary level" (Hughes & Kritsonis, 2006, p. 1). Because the culture of most schools is one of isolation, the implementation of this unique approach to professional development can be difficult and met with much resistance. It can also impede student achievement. DuFour (2003) stated, "School structures and cultures that celebrate working in isolation are unlikely to result in significantly higher levels of achievement" (p. 71). This is particularly true in high schools where most teachers are left to practice on their own. A study was conducted by McLaughlin and Talbert (2001) to answer the question, *How do various contexts of secondary schooling affect teachers' work lives and professional development practice?* The researchers tried to understand the ways in which high school teaching could be improved. By studying 16 high schools over a period of four years, they looked for patterns in teachers' work that would reveal the culture of the profession.

The researchers found that there were three kinds of communities: weak, strong traditional, and teacher learning communities. Weak communities were those in which teachers kept thoughts and practices private, resources were not shared and teachers never mentioned that their colleagues were resources. In addition, the norms of the culture were individualism and conservatism. Teachers relied heavily on their subject matter and most believed that students did not want to learn. In strong traditional communities, teachers were found to have a sense of mission. While developing practice, they shared resources with each other; however, they still tended to focus on subject areas and they still had a deficit view of nontraditional students which was reinforced by strong pedagogical traditions. Where strong teacher learning communities or professional learning communities were found, a different approach was evident. The following practices and ideas were present:

- Teachers had a shared vision and commitment.
- All students were seen as learners and their success was everyone's responsibility.
- The faculty was responsible for creating the context for success.
- Consistent instructional quality and evaluation were critical.
- Departments shared methods, materials, lesson plans, and successes and struggles.
- Experimentation and critical reflection were the norm.
- A strong norm of interdependence existed.
- Teachers were engaged in knowledge of practice (collective inquiry).

Based on these findings, the researchers concluded, "The work of high school teaching takes shape in professional communities— through norms for teaching, curriculum structures and assignment policies, collegial supports, and leadership messages about good professional practice" (p. 140).

A study had also been conducted to compare two research projects in K-12 United States and K-12 England schools working to implement professional learning communities (Hipp et al., 2003). The United States project, *Creating Communities of Continuous Inquiry and Improvement* (1995-2000) has been compared to England's project, *Creating and Sustaining Effective Professional Learning Communities* (2001-2004). The purpose of the comparison was to document efforts of schools actively engaged in creating professional learning communities. The underlying belief in both projects was that "the quality of learning and teaching can be enhanced by teachers working and learning together" (p. 7). The studies found that "the most important element in the development of a professional learning community is the leadership and determination of the principal" (p. 19). Because many factors are outside of the control of the school, the author explained that school leaders must be proactive when dealing with both external and internal barriers. Without the direction from the leader, the effectiveness of the program is limited.

DuFour (2004b) explained that the term *professional learning community* is in vogue and that the term has been used so freely that it is in danger of losing all meaning. DuFour et al. (2006) define a professional learning community as being "composed of collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all" (p. 3). The authors further explain that:

The very essence of a learning community is a focus on and a commitment to the learning of each student. When a school or district functions as a professional learning community, educators within the organization embrace high levels of learning for all students as both the reason the organization exists and the fundamental responsibility of those who work in it. (p. 3)

DuFour (2006) outlined three big ideas related to professional learning communities: ensuring that students learn, a culture of collaboration, and a focus on results. He said that there are three crucial questions that should drive the work of those in a professional learning community:

1. What do we want each student to learn?

2. How will we know when each student has learned it?

3. How will we respond when a student experiences difficulty in learning it?

Traditional school models place teachers on a contract of approximately 180 work (teaching) days with a few additional days for professional development. Professional development typically consists of teachers attending conferences away from the school or presenters coming in from the outside of the school or district a few days a year. Teachers are then left to go back to their classrooms and try to implement what was learned. Schmoker (2006) contends that "We have relied far too much, with miserable results, on a failed model for improving instructional practice: training, in the form of workshops or staff development" (p. 108).

The professional learning community model opposes one-shot staff development and advocates job-embedded professional development whereby professional learning is moved to the school site. Schmoker (2006) stated, "Effective team-based learning communities - not workshops - are the very best kind of professional development" (p. 109). DuFour (2004a) calls for school leaders to end the distinction between working

and learning and create conditions that enable staff to grow and learn as part of their daily or weekly work routines. This kind of learning is unusual in schools. Collins (as cited in Schmoker) points out that the most powerful improvement actions will "appear boring and pedestrian" to those who love glitzy initiatives and programs (p. 110). Schmoker argued that "Professional learning communities have emerged as arguably the best, most agreed-upon means by which to continuously improve instruction and student performance" (p. 110).

Professional learning communities are designed to allow teachers to work together with administrators and other teachers to provide quality instruction and improve student learning (Hughes & Kritsonis, 2006). The basic structure of the professional learning community is a group of collaborative teams that share a common purpose. Leading educational experts advocate that professional learning communities, as an organizational arrangement, is a powerful professional development approach and a strong strategy for school improvement (Hughes & Kritsonis). Research indicates that schools are being encouraged to take a slower approach and cultivate and evolve into *learning organizations* and to develop approaches to school improvement through collaboration, inquiry, and continuous improvement (Mason, 2003).

The research is clear that second order change is what is needed to change America's schools. The implementation of professional learning communities as a strategic-systemic improvement strategy is aligned with the basic ideas associated with the change process and systems thinking. It offers a clear structure for schools implementing the ideas, components, and strategies outlined above and can ultimately be used as a model to change the culture of a school. Because professional learning

communities have the ability to draw forth teachers' basic assumptions and address them while protecting the psychological safety of each teacher, there is great hope that schools who implement them effectively can transform to meet students' needs. Senge et al. (2000) stated, "In high-performing schools, a nurturing professional community seems to be the container that holds the culture. Teachers feel invigorated, challenged, professionally engaged, and empowered just because they teach there" (p. 326). As a result, instruction is improved. "Most (though not all) instruction, despite our best intentions, is not effective but could improve significantly and swiftly through ordinary and accessible arrangements among teachers and administrators" (Schmoker, 2006, p. 10).

DuFour, DuFour, Eaker, and Many (2006) explained that professional learning communities (PLCs) are composed of collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all. The authors further explained that:

> The very essence of a learning community is a focus on and a commitment to the learning of each student. When a school or district functions as a professional learning community, educators within the organization embrace high levels of learning for all students as both the reason the organization exists and the fundamental responsibility of those who work in it. (p. 3)

While focusing on a common vision of what the school must look like for students to become successful, both students and adults become involved in learning. Job-embedded learning becomes a part of the school's routine and practices and three critical questions are the focus: (a) What is it we want all students to learn?, (b) How will we know when each student has acquired the essential knowledge and skills?, and (c) What happens in our school when a student does not learn?

DuFour et al. (2006) offered five defining characteristics of PLCs. First, members must be focused and committed to guiding principles of the organization. They should have a shared mission, vision, and values. In order to be committed to the learning of each student, members of the PLC must be clear of what they must become in order to help all students learn. In order to impact student learning, the adults in the school must also be continually learning. The authors explained that structures are needed to provide for job-embedded learning in the school community. This practice addresses the change process in that teachers must adopt the new vision of the organization and be given the opportunity to develop new competences. The PLC creates a safe place for teachers to do this. Systems thinking components are addressed because shared vision is built as teachers engage in dialogue and discussion about their ideas in teams. This allows them to test and challenge their assumptions. In addition, they are developing their own personal mastery and learning as a team.

A second characteristic of PLCs is that they are focused on learning. The authors explained,

> Collaboration is a means to an end, not the end itself. . . . In a PLC, collaboration represents a systematic process in which teachers work together interdependently in order to impact their classroom practice in ways that will lead to better results for their students, for their team, and for their school. (DuFour et al., 2006, p. 3)

Team learning is a critical component of systems thinking in the PLC model and is most effective when the team maintains good relationships. Joyner (as cited in Senge et al., 2000) asserted that "staff development and team learning should be synonymous" (p. 391). The author contended that because teachers are used to working as individuals, all staff development should now be in teams. This will allow teachers to develop new competencies and unlearn old habits.

In addition to a focus on learning, PLCs are defined by teams who engage in collective inquiry. This inquiry is based on best practices in teaching and learning and addresses the component of systems thinking related to mental models. Members of the team continually challenge their methods and are open to new ideas. Members of the team work together to build shared knowledge. DuFour et al. (2006) explained, "Members of a professional learning community are expected to work and learn together" (p. 4). Hord (2004) explained, "Such collaborative work is grounded in reflective dialogue or inquiry, where staff conducts conversations about students and teaching and learning, identifying related issues and problems" (p. 9).

Another characteristic of PLCs is that they are action oriented. Members of PLCs take action to meet the needs of students. They are quick to experiment with new ideas. DuFour et al. (2006) clarified, "Professional learning communities recognize that until members of the organization 'do' differently, there is no reason to anticipate different results. They avoid paralysis by analysis and overcome inertia with action" (p. 4). The change process requires an *unfreezing* of old ideas. While working in a team, teachers are provided a safety net for experimenting with new ideas. Leaders can support this change by acknowledging those teachers who are trying new strategies. In their study of high-performing organizations, Collins and Porras (as cited in DuFour et al., 2006) discovered ineffective organizations succumbed to the "Tyranny of Or- the rational view that cannot easily accept paradox, that cannot live with two seemingly contradictory forces at the same time. We must be A or B, but not both" (p. 45). High-performing organizations rejected this idea and embraced the "Genius of And" by demonstrating the ability to embrace both extremes at the same time. "Schools and districts need not choose between

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demanding adherence to certain core practices or empowering the staff" (DuFour et al., 2006, p. 45).

In addition to being action oriented, PLCs are focused on continuous improvement. Team members are unsatisfied with status quo. They seek continual improvement by gathering evidence of current levels of student learning, developing strategies and ideas to build on strengths and weaknesses in that learning, implementing strategies and ideas, analyzing the impact of changes to discover what was effective and what was not, and applying new knowledge in the next cycle of continuous improvement. DuFour and Eaker (2002) asserted that continuous improvement requires members of a PLC to ask questions such as, "What is our fundamental purpose? What do we hope to achieve? What are our strategies for becoming better? What criteria will we use to assess our improvement efforts?" (p. 28). This practice is the basis of systems thinking. Teams of teachers are continually looking at the whole system and analyzing the various parts to determine what can be improved.

The final characteristic of PLCs is that they are results-oriented. Peter Senge (as cited in DuFour & Eaker, 1998) stated, "The rationale for any strategy for building a learning organization revolves around the premise that such organizations will produce dramatically improved results" (p. 29). PLCs must judge their effectiveness on the basis of results. According to DuFour, DuFour, and Eaker (2005), "Working together to improve student achievement becomes the routine work of everyone in the school" (p. 39). As such, schools working as PLCs develop common formative assessments and reflect upon areas of concern. As a team, teachers share ideas, materials, strategies, and

talents. This action truly creates generative learning and has the power to transform the team to greater levels of success.

Having considered the change process and systems thinking in the context of PLCs, one can see that the ideas and principles of each, when working in concert and guided by an authentic leader, have greater potential to transform traditional classrooms and to increase the rigor of classroom instruction than of any other framework that has been attempted. Working through teams, teachers can continually analyze their systems to determine where they can improve. This kind of work can be sustained over time and continually refined as schools seek long-term improvements. Wood and Anderson (2003) stated, "a culture of openness is a necessary condition of maintaining professional learning communities. Here, staff in most circumstances, are comfortable with other professionals observing and critiquing their lessons and where the school community routinely interrogates teaching and learning methods" (p. 24).

Leadership in a Professional Learning Community

"Teachers learn more from one another, working in teams, than from a single harried supervisor, running frenetically from teacher to teacher, giving advice"(Schmoker, 2006, p. 125). The professional learning communities approach advocates for a new kind of school leadership. "Top-down, politically driven educational decisions have been replaced by a pedagogy based on a new paradigm - the professional learning community" (Buffum & Hinman, 2006, p. 16).

In order to develop a system whereby everyone is learning, Riley and Stoll (2004) outline three responsibilities of the school leader. First, the leader should provide opportunities for teachers to *make connections*. Time should be made for teachers to

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collaborate. Next, the leader should *go deeper*. This means that teachers should be observing peers, giving each other feedback, coaching each other, engaging in action research, and practicing new strategies. The critical factor to the success of this kind of mature implementation of professional learning communities is trust, which can take a great deal of time for teams to develop. A final responsibility of the school leader is to *ensure sustainability*. The authors state that this requires a mind shift and requires that "schools as a workplace need to become seen as a site for adult learning: not just the learning of children and young people" (Riley & Stoll, p. 36).

Hord and Hirsh (2009) contended that principals have found the following approaches to support strong learning communities:

- Emphasize to teachers that you know they can succeed together—Leaders should tell teachers that they believe the teachers have the expertise to make student learning happen and that it is expected that they will pool their expertise.
- Expect teachers to keep knowledge fresh—Leaders should let teachers know that they expect them to keep their skills up-to-date through collaborative study.
- Guide communities toward self-governance—Leaders should share authority and decision making with teachers so that eventually teachers take the lead and provide for self-governance.
- Make data accessible—A variety of data on student achievement should be made available to teachers in a format which is easy to interpret. When necessary, training on how to interpret data can be offered.
- Teach discussion and decision-making skills—If collaboration is new in a school, the leader should help teachers understand the difference between dialogue and discussion. Dialogue allows teachers to share their knowledge, feelings, or biases and used to help teachers understand each other. Discussion allows teachers to clearly set out and support their view points in order to persuade the group to adopt a particular action and is useful when making a decision.
- Show teachers the research—Research on professional learning communities supports collective responsibility for student success, increased understanding of teachers' roles in helping students achieve, feedback and assistance from peers, and professional renewal. It also shows that learning in a social context is deeper than independent learning.

- Take time to build trust—Leaders should give teachers guided practice in conducting appropriate conversations, making decisions, managing conflict, and keeping the focus on student and teacher learning. All of these will build trust between the faculty and the principal. (p. 23)

Concepts and Practices of Professional Learning Communities

DuFour et al. (2002, 2006) outlined seven major concepts and related practices of professional learning communities. These concepts and practices are central to this research study. The authors clearly defined what each of the concepts should look like in practice and offered a tool to evaluate the level of implementation on a four-point continuum provided for each concept. DuFour et al. (2006) explained that the newly expanded model consists of seven clearly articulated components of professional learning communities with distinct practices for each. They are:

1. A Clear and Compelling Purpose—Professional learning communities seek to build commitment through consensus and move from dialogue to action. The following practices are a part of this concept:

   - *Clearly articulated mission.* The mission is established by asking, "Why do we exist?" The intent of the question is to help reach agreement regarding the fundamental purpose of the school. The clarity of the mission guides priorities and decisions (p. 23).

   - *Shared vision.* The vision is established by asking, "What?": "What must we become in order to accomplish our fundamental purpose?" Vision provides a sense of direction and a basis for assessing both the current reality of the school and potential strategies, programs, and procedures to improve upon that reality (p. 24).

- *Shared values.* Values are established by asking, "How must we behave to create the school that will achieve our purpose?" The answers to this question form collective commitments that are made and honored in order to achieve the shared vision of the school or the district (p. 25).

2. A Focus on Learning— Professional learning communities create an intensive focus on learning by clarifying exactly what students are to learn and by monitoring each students' learning on a timely basis (p. 43). The following practices are aligned to this concept:

- *Measurable performance goals.* Goals are essential to the collaborative team process and are established by asking "How will we know if all of this is making a difference?" Goals provide staff members with short-term priorities and the steps to achieve the benchmarks (p. 26).

- *Effective communication of school priorities.* The leader must be effective in communicating the purpose of the organization. This communication includes actions that are demonstrated. There must be congruency between what leaders say and what they do (p. 28).

- *Clarity regarding what students must know and be able to do.* Clarity is obtained by asking "What is it we want our students to learn?" and "How will we know when each student has learned it?" Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student achievement, and expectations of the next course or grade level (pp. 46, 60).

- *Assessing whether the students have learned the essential curriculum.* Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state standards and district curriculum guides. Teams have established the specific proficiency standards each student must achieve on each skill (p. 61).

3. Responding When Some Students Don't Learn—Professional learning communities create a systematic process of interventions to ensure students receive additional time and support for learning when they experience difficulty. The intervention process is timely and students are directed rather than invited to utilize the system of time and support (p. 71). The major practice inherent in this concept is the following:

- *Systematic interventions to ensure students receive additional time and support for learning.* The school has a highly coordinated, sequential system in place. The system identifies and makes plans for student to receive extra support. The achievement of each student is monitored on a timely basis. Students who are experiencing difficulty are required to put in extra time and utilize extra support (p. 79).

4. Building a Collaborative Culture of a Professional Learning Community— Members of a professional learning community recognize they cannot accomplish their fundamental purpose of high levels of learning for all students unless they work together collaboratively. The collaborative team is the fundamental block of a PLC (p. 89). The key practice of this concept is:

- *Focus on issues that directly impact student learning.* Self-directed teams represent the primary engine of continuous improvement in the school. Team members are skillful in advocacy and inquiry, hold each other accountable for honoring the commitments they have made to one another, consistently focus on the issues that are most significant in improving student achievement, and set specific measurable goals to monitor improvement (p. 112).

5. Results Orientation—Members of a professional learning community continually assess their effectiveness on the basis of results: tangible evidence their students are acquiring the knowledge, skills, and dispositions essential to their success (p. 117). The key practice of this PLC component is as follows:

- *Focus on results that impacts schools, teams, and teachers.* Collaborative teams of teachers establish both annual goals and a series of short-term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans (p. 139).

6. Using Information to Improve Results—In a professional learning community, educators are hungry for evidence of student learning. Relevant, timely information is the essential fuel of their continuous improvement process (p. 145). The key practice is as follows:

- *A focus on results.* Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning

process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources (p. 156).

7. Responding to Conflict—Members of a professional learning community view conflict as a source of energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as be understood. The key practice to be for this concept is the following:

- *Effective response to conflict.* Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as to be understood (p. 178).

Summary

> It is a system change that permanently de-privatizes teaching in order to build in continuous improvement. Professional learning communities must be seen in this light, i.e., they must be judged on their effectiveness at creating cultures of professional learning on a system scale (Fullan, 2006, p. 12).

The research reviewed in Chapter Two demonstrated the difficulty of educational change and emphasizes the need for schools and districts to take a different approach to educational reform and change. This new approach must include professional development which builds the capacity of teachers by allowing them to be active participants in the change process. Professional learning communities enable schools to build the kind of capacity that can lead to real educational reform and improved results in student achievement. Fullan (2005c) stated,

> The approach with the most chance for success involves reversing the emphasis on accountability and capacity building so that capacity building is the main

driver with high-stakes accountability playing a real, but smaller, and paradoxically more effective, role in the process. (p. 176)

This study compared one large Texas high school of 2,000 or more students with a formal plan for the implementation of professional learning communities to two similar large high schools without a formal professional learning communities plan. The study focused on the concepts and practices which existed in the school with and the schools without the formal professional learning communities plan and the impact of these concepts and practices upon learning and achievement in science.

CHAPTER THREE

Methodology

Introduction

Gay, Mills, and Airasian (2006) make the case that educational research is important. They explained that, "Educational research is the formal, systematic application of the scientific method to the study of educational problems. Its goal follows from the goal of all science: namely, to explain, predict, and/or control educational phenomena" (p. 5). This can be more difficult in educational research than in other fields due to the complex nature of human behaviors. Therefore, the authors contended that it can be difficult to generalize or replicate findings. Furthermore, they asserted that precise measurement is a challenge for educational researchers. Even so, the authors advocated for the use of the scientific method to find answers to important questions. They explained that it is much more reliable than relying solely on experts and/or experiences.

Research methods are driven by the type of questions that one proposes to answer. The purpose and context of this study calls for a quantitative approach. The purpose of the research was simply to compare the learning and achievement of students in science in a large high school implementing professional learning community concepts and practices with large high schools not implementing these concepts and practices. For the purpose of this study, large high schools are defined as having an enrollment of 2,000 or more students. The answers to this question and all sub-questions can be quantified and tests of significance can be used to interpret the data. This study does not require personal

interaction with participants and can be gathered without interactive instruments. Therefore, I have selected a quantitative approach to this study.

Operational Research Questions

This study attempts to investigate whether the implementation of professional learning community concepts and practices implemented in a science department of a large high school promotes learning and achievement in science. Therefore, data analysis answered the following overarching research question:

1. Does the implementation of professional learning community concepts and practices in the science department of a large high school promote learning and achievement in science?

The following sub-questions will further examine the role of professional learning communities in the learning and achievement of science for students attending large high schools:

1) What professional learning community concepts and practices are being implemented in large high schools?

2) At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?

3) Are professional learning community concepts and practices being implemented in schools that do not have a formal plan for professional learning communities?

4) Which professional learning community concepts and practices are being fully implemented in large high schools?

5) Which professional learning community concepts and practices are not being implemented in large high schools?

6) Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

7) Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

8) Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

9) Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Variables

Gay et al. (2006) explained that the independent variable in causal-comparative research "is a behavior or characteristic believed to influence some other behavior or characteristic" (p. 12). The authors further explained that the change or difference in behavior or characteristic that occurs as a result of the independent variable—that is, the effect—is known as the dependent variable. In this study, the independent variable was the implementation of professional learning community concepts and practices. The dependent variable was student achievement on the Texas Assessment of Knowledge and Skills (TAKS). The researcher gathered data about the achievement of students whose

teachers were participating in PLCs and students whose teachers had not participated in PLCs and then compared the groups.

Research Design

      Professional learning communities have become the buzz word in recent educational discussions regarding professional development. One persistent question for many educators who are under pressure to perform on high-stakes tests, particularly those who work in large high schools, is does the implementation of PLC concepts and practices promote learning and achievement in science? A causal-comparative quantitative study allowed the researcher to focus on professional learning communities as an independent variable. Archived quantitative science achievement data of a large high school implementing PLC concepts and practices was compared to that of two large high schools that were not implementing PLC concepts and practices. The dependent variable was student achievement in science. Student achievement data were collected and analyzed using ANOVA. In addition, quantitative descriptive research in the form of a survey (Appendix) was also conducted and provided the researcher with information concerning the level of implementation of learning community concepts and practices in each school. DuFour, DuFour, and Eaker's (2006) Professional Learning Community Continuum was used to describe the level of implementation of PLC concepts. The continuum was entered into a web-based survey software program, *SurveyMonkey* and was administered to teachers in the science department of a large high school implementing professional learning community concepts and practices. It was also administered to a campus administrator, science department head, and other key instructional leader at two large high schools that were not implementing professional

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learning community concepts and practices. Results on each of seven PLC concepts were evaluated by participants using a four-point continuum designed to measure the level of implementation. Each practice was rated as either being in the *pre-initiation* stage, *initiation* stage, *developing* stage or *sustaining* change.

Participants and Setting

School A, a public school operating under the control of an independent school district located in Central Texas, was selected as the site of this research. It was selected because of its known study and implementation of PLC concepts and practices over the last five years. It was also selected because of its size. School A has approximately 2,379 students. According to educational theorist and Regents Professor at Arizona State University, David Berliner, most of the nation's dropouts come from only a small portion of schools in the United States. These schools are very large comprehensive high schools. School A, a Texas Education Agency 2009 *Recognized* high school, is classified as a large high school by the State of Texas. It is a comprehensive high school offering curriculum in all four general content areas (English language arts, science, social studies, and math) as well as extracurricular courses and career and technical courses. Its course selection is comparable to all other large high schools in Texas. School A has an enrollment of 2,379 students in 9th through 12th grades. Most recent district demographics indicated a student population that is becoming more diverse, as reflected in the increasing numbers of low-income and minority students. The enrollment of School A for 2008-2009 was 6.4% African American, 26.6% Hispanic, 64.9% White, and 3.1% limited English Proficient. The Hispanic student population is the fastest growing student population and increased from 14.3% in 1999 to 26.6% in 2009. More than 31%

of School A's student population qualifies for the federal free or reduced-price meal program. School A met Adequate Yearly Progress (AYP) for 2009.

The science department of School A has been engaged in professional learning practices for five years. Implementation began as a professional development effort to increase student achievement and to address the increasing rigor of state assessments. Although not named as a professional learning community model, many aspects of PLCs were initially introduced as a part of professional development. The initial work was later guided by the study of specific PLC practices. The science department offers general, Pre-Advanced Placement and Advanced Placement courses in Anatomy and Physiology, Biology, Chemistry, Environmental Science, Integrated Physics and Chemistry (IPC), and Physics. The department consists of 19 teachers and one full-time instructional facilitator.

The two schools selected for comparison, School B and School C, are also large high schools with a student enrollment over 2,000. School B has an enrollment of 2,118 students and School B has an enrollment of 2,213 students. Administrators from each of these schools have reported that the science departments have not engaged in a study of or implemented professional learning community concepts or practices. School B is located approximately one hour from School A while School C is located approximately two hundred miles from School A. Both schools are rated as *Academically Acceptable* by the Texas Education Agency for 2009 and both have met AYP for 2009. In addition, the comparison schools have been identified by the Texas Education Agency as being a part of the *Campus Comparison Group* for School A as a part of the State's accountability

system. According to the Glossary of the Academic Excellence Indicator System (AEIS) for 2007-2008,

> Each campus is assigned to a unique comparison group of 40 other public schools (from anywhere in the state), that closely matches that campus on six characteristics. Comparison groups are provided so that schools can compare their performance to that of other schools with whom they are demographically similar. (p. 7)

Demographic characteristics used to determine the campus comparison groups include the following:

- the percentage of African American students enrolled,

- the percentage of Hispanic students enrolled,

- the percentage of White students enrolled,

- the percentage of economically disadvantaged students enrolled,

- the percentage of limited English proficient students enrolled, and

- the percentage of mobile students as determined from cumulative attendance data.

Schools are grouped by type (elementary, middle, secondary, or multi-level). Then the group is determined on the basis of the most predominant features at the target school. For example, School A has an enrollment of 64.9% White, 31.3% economically disadvantaged, 26.6% Hispanic, 16.0% mobile, 6.4% African American, and 3.1% limited English proficient. The following steps are followed to identify the comparison group.

Step 1 — 100 secondary campuses having percentages closest to 64.9% White students are identified,

Step 2 — 10 schools from the initial group of 100 are eliminated on the basis of being the most distant from the value of 31.3% economically disadvantaged students,

Step 3 — 10 of the remaining 90 schools that are the most distant from the 26.6% Hispanic students are eliminated,

Step 4 — 10 of the remaining 80 schools that are most distant from 16.0% mobile students are eliminated,

Step 5 — 10 of the remaining 70 schools are the most distant from 6.4% African American students are eliminated,

Step 6 — 10 of the remaining 60 schools that are the most distant from 3.1% limited English proficient students are eliminated, and

Step 7 — 10 of the remaining 50 schools that are the most distant from the least predominant characteristics among the four student groups evaluated in the accountability system: African American, Hispanic, White, and economically disadvantaged.

The final comparison group size is 40. This methodology creates a unique comparison for every campus in the State of Texas. Demographic data of Schools A, B, and C from the Texas Education Agency's Academic Excellence Indicator System for the school year 2008-2009 are shown in Tables 4-7.

Table 4

Demographic Data 2008-2009

Variable	School A	School B	School C
White	64.9%	67.7%	64.5%
Economically Disadvantaged	31.3%	29.9%	25.0%
Hispanic	26.6%	26.5%	19.9%
Mobility	16.0%	16.8%	17.3%
African American	6.4%	4.2%	12.7%
Limited English Proficiency	3.2%	3.8%	4.9%

Table 5

Demographic Data – School A – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
64.9%	31.3%	26.6%	16.0%	6.4%	3.2%

Table 6

Demographic Data – School B – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
67.7%	29.9%	26.5%	16.8%	4.2%	3.8%

Table 7

Demographic Data – School C – 2008-2009

White	Economically Disadvantaged	Hispanic	Mobility	African American	Limited English Proficient
64.5%	25%	19.9%	17.3%	12.7%	4.9%

Data to be Collected

Data collection included multiple sources of quantifiable information including archived 2008 and 2009 Texas Academic Knowledge and Skills (TAKS) test scores obtained from Confidential Student Rosters provided by the Texas Education Agency and archived high school completion rate data obtained online from the Texas Education Agency's Academic Excellence Indicator System for 2008 and 2009. In addition, a survey was conducted and provided the researcher with information concerning the level of implementation of learning community concepts and practices in each school. DuFour, DuFour, and Eaker's (2006) Professional Learning Community Continuum was used to describe the level of implementation of PLC concepts. The continuum was entered into a web-based survey software program, *SurveyMonkey* and was administered to teachers in the science department of a large high school implementing professional learning community concepts and practices. It was also administered to a campus administrator, science department head, and other key instructional leader at two large high schools that are not implementing professional learning community concepts and practices. Results on each of seven PLC concepts were evaluated by participants using a four-point continuum designed to measure the level of implementation. Each practice was rated as either being

in the *pre-initiation* stage, *initiation* stage, *developing* stage or *sustaining* change. The survey can be found in Appendix A.

Instrumentation for Survey Data

A survey specific to the practices of professional learning communities, instruments, and protocols were based on the work of DuFour et al. (2006). The newly expanded model consists of seven clearly articulated components of professional learning communities with distinct practices for each. They are:

1. A Clear and Compelling Purpose—Professional learning communities seek to build commitment through consensus and move from dialogue to action. The following practices are a part of this concept:

    - *Clearly articulated mission.* The mission is established by asking, "Why do we exist?" The intent of the question is to help reach agreement regarding the fundamental purpose of the school. The clarity of the mission guides priorities and decisions (p. 23).

    - *Shared vision.* The vision is established by asking, "What?": "What must we become in order to accomplish our fundamental purpose?" Vision provides a sense of direction and a basis for assessing both the current reality of the school and potential strategies, programs, and procedures to improve upon that reality (p. 24).

    - *Shared values.* Values are established by asking, "How must we behave to create the school that will achieve our purpose?" The answers to this question form collective commitments that are made and honored in order to achieve the shared vision of the school or the district (p. 25).

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2. A Focus on Learning— Professional learning communities create an intensive focus on learning by clarifying exactly what students are to learn and by monitoring each students' learning on a timely basis (p. 43). The following practices are aligned to this concept:

- *Measurable performance goals.* Goals are essential to the collaborative team process and are established by asking "How will we know if all of this is making a difference?" Goals provide staff members with short-term priorities and the steps to achieve the benchmarks (p. 26).

- *Effective communication of school priorities.* The leader must be effective in communicating the purpose of the organization. This communication includes actions that are demonstrated. There must be congruency between what leaders say and what they do (p. 28).

- *Clarity regarding what students must know and be able to do.* Clarity is obtained by asking "What is it we want our students to learn?" and "How will we know when each student has learned it?" Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student achievement, and expectations of the next course or grade level (p. 46, 60).

- *Assessing whether the students have learned the essential curriculum.* Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state standards and district curriculum guides. Teams have established the specific proficiency standards each student must achieve on each skill (p. 61).

3. Responding When Some Students Don't Learn—Professional learning

    communities create a systematic process of interventions to ensure students

    receive additional time and support for learning when they experience

    difficulty. The intervention process is timely and students are directed rather

    than invited to utilize the system of time and support (p. 71). The major

    practice inherent in this concept is the following:

    -   *Systematic interventions to ensure students receive additional time and*

        support for learning. The school has a highly coordinated, sequential

        system in place. The system identifies and makes plans for student to

        receive extra support. The achievement of each student is monitored on a

        timely basis. Students who are experiencing difficulty are required to put

        in extra time and utilize extra support (p. 79).

4. Building a Collaborative Culture of a Professional Learning Community—

    Members of a professional learning community recognize they cannot

    accomplish their fundamental purpose of high levels of learning for all

    students unless they work together collaboratively. The collaborative team is

    the fundamental block of a PLC (p. 89). The key practice of this concept is:

    -   *Focus on issues that directly impact student learning*. Self-directed teams

        represent the primary engine of continuous improvement in the school.

        Team members are skillful in advocacy and inquiry, hold each other

        accountable for honoring the commitments they have made to one another,

        consistently focus on the issues that are most significant in improving

student achievement, and set specific measurable goals to monitor improvement (p. 112).

5. Results Orientation—Members of a professional learning community continually assess their effectiveness on the basis of results: tangible evidence their students are acquiring the knowledge, skills, and dispositions essential to their success (p. 117). The key practice of this PLC component is as follows:

   - *Focus on results that impacts schools, teams, and teachers.* Collaborative teams of teachers establish both annual goals and a series of short-term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans (p. 139).

6. Using Information to Improve Results—In a professional learning community, educators are hungry for evidence of student learning. Relevant, timely information is the essential fuel of their continuous improvement process (p. 145). The key practice is as follows:

   - *A focus on results.* Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources (p. 156).

7. Responding to Conflict—Members of a professional learning community view conflict as a source of energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's

thinking, and they make a conscious effort to understand as well as be understood. The key practice to be for this concept is the following:

- *Effective response to conflict.* Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as to be understood (p. 178).

DuFour et al.'s (2006) continuum from each of the above professional learning community concepts and practices were converted to a web-based survey using *SurveyMonkey*. The survey was administered to teachers at School A to verify the implementation of PLCs. It was also given to the administrator, science department head, and one other key instructional leader at Schools B and C. The above professional learning community concepts and practices will be measured through the use of DuFour et al.'s (2006) four-point continuum:

1. Pre-Initiation Stage. The school has not yet begun to address this principle or practice of a PLC (p. 32).

2. Initiation Stage. An effort has been made to address this principle or practice, but the effort has not yet begun to impact a critical mass of staff members (p. 32).

3. Developing Stage. A critical mass of staff has begun to engage in the practice. Members are being asked to modify their thinking as well as their traditional practices. Structural changes are being made to support the transition (p. 32).

4. Sustaining Stage. The principle or practice is deeply embedded in the culture of the school. It is a driving force in the daily work of the staff. It is deeply

internalized and staff would resist attempts to abandon the principle or

practice (p. 33).

Instrumentation for Archived Quantitative Data

Archived quantitative science TAKS testing data for 2007-2008 and 2008-2009

were retrieved for Schools A, B, and C from the Administration of each school.

Permission was obtained from the school's principal and the Superintendent, acting as a

representative of the Board of Trustees, to perform this study. The Texas Education

Agency's Confidential Student Rosters provided for each school identified the

achievement level of each student in the 10th and 11th grade. High school completion

rate data were retrieved for each school online from the Texas Education Agency. The

source of data was the Academic Excellence Indicator System (AEIS). No names were

used during the quantitative data collection and reporting of science TAKS test scores

and high school completion rates. The confidentiality of the participants was protected at

all times. The identity of each student was kept secured in a file cabinet in the

researcher's office. All demographic data reported in this study is public information that

can be readily accessed on the Texas Education Agency website.

Issues of Validity and Reliability

According to Gay et al. (2006), "Validity is the most important characteristic a

test or measuring instrument can possess. Validity is the degree to which a test measures

what it is supposed to measure and, consequently, permits appropriate representation of

results" (p. 134). TAKS testing in Texas is done with a high degree of structure and

administered with strict guidelines from TEA. Directions are read verbatim to students

and procedures are monitored across districts and campuses to ensure compliance with

state guidelines. All items are previously field tested to ensure that there are no confusing or ambiguous test items. While TAKS data can be consistently measured from one school to another with a high degree of validity, the existence of PLC components and practices at School A as an independent variable may not actually turn out to be the variable that did or did not make a difference in terms of student achievement. Because independent variables have already occurred in causal-comparative studies, researchers should be extremely cautious in interpreting results.

Reliability, according to Gay et al. (2006) means "dependability or trustworthiness" (p. 139). The authors explained that this means that a test consistently measures whatever it is measuring and the same scores will be obtained if the test were re-administered to the same test takers. To ensure reliability, the researcher selected the TAKS test to measure student achievement data. The use of Microsoft Excel for data analysis processes adds to the care given to the data and increases the dependability of the results. Coding processes and cross-checks were made by a friend of the researcher who works as a director of research, testing, and PEIMS.

Researcher or Participant Bias

The researcher serves as the Deputy Superintendent of the school district of School A. The Deputy Superintendent has participated in the selection and design of the school's professional development since the school began implementing PLC concepts and practices in 2003.

Selected participants in School A, B, and C were forced to select an answer choice on each question of a survey about the school's implementation of PLCs. Participants in School A know the researcher and may opt to select the most socially

acceptable answer on the survey rather than providing an honest answer. This may lead to a false rating of the school on the PLC continuum and show that the school is further along in its implementation of PLC concepts and practices than it may actually be.

Data Collection Procedures

Data were collected beginning with the archived 10th and 11th grade science TAKS scores for 2007-2008 and 2008-2009. This data came from TEA's Confidential Student Rosters provided to Schools A, B, and C. The researcher is an administrator in the district of School A and has access to all archived student achievement data. The data for Schools B and C were requested from the principal and superintendent. The High school completion rate data came from TEA's AEIS reports for each school for 2008 and 2009. This information can be found on the TEA website. Data from School A were compared to data from Schools B and C. Results were charted and compared from the school years 2007-2008 and 2008-2009. In addition, a survey was conducted and provided the researcher with information concerning the level of implementation of learning community concepts and practices in each school. DuFour, DuFour, and Eaker's (2006) Professional Learning Community Continuum was used to describe the level of implementation of PLC concepts. The continuum was entered into a web-based survey software program, *SurveyMonkey* and was administered to teachers in the science department of a large high school implementing professional learning community concepts and practices. It was also administered to a campus administrator, science department head, and other key instructional leader at two large high schools that are not implementing professional learning community concepts and practices. Results on each of seven PLC concepts were evaluated by participants using a four-point continuum

designed to measure the level of implementation. Each practice was rated as either being

in the *pre-initiation* stage, *initiation* stage, *developing* stage or *sustaining* change. Table 8

represents the data collection strategies that were used for this study:

Table 8

Data Collection Methods

Research Question	Data Collection Method
1. What professional learning community concepts and practices are being implemented in large high schools?	Web-based survey developed by the research and administered using *SurveyMonkey*
2. At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?	Web-based survey developed by the research and administered using *SurveyMonkey*
3. Are professional learning community concepts and practices being implemented in schools that don't have a formal plan for professional learning communities?	Web-based survey developed by the research and administered using *SurveyMonkey*
4. Which professional learning community concepts and practices are being fully implemented in large high schools?	Web-based survey developed by the research and administered using *SurveyMonkey*
5. Which professional learning community concepts and practices are not being implemented in large high schools?	Web-based survey developed by the research and administered using *SurveyMonkey*
6. Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?	TEA Confidential Student Rosters for 10th Grade Science for 2007-2008 and 2008-2009

(continued)

Research Question	Data Collection Method
7. Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?	TEA Confidential Student Rosters for 11th Grade Science for 2007-2008 and 2008-2009
8. Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?	TEA Confidential Student Rosters for 10th and 11th Grade Science for 2007-2008 and 2008-2009
9. Do the completion rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?	TEA AEIS data for 2007-2008 and 2008-2009

Data Analysis Procedures

Data analysis consisted of three sets of data—survey data, archived TAKS data for all three schools, and archived completion rate data for all three schools. Survey data were described in detail using results provided in *SurveyMonkey*. Student achievement data of Schools A, B and C were analyzed using an inferential statistical parametric test of significance to determine whether a significant difference existed between School A and Schools B and C. A simple or one-way analysis of variance (ANOVA) was conducted for each group of data to answer the researcher's questions regarding student achievement in science. The completion rate data was also presented and discussed.

Summary

This chapter discussed the methodology the researcher used to determine whether the implementation of professional learning community concepts and practices have an impact on learning and achievement in science. The next two chapters present the data and demonstrate how the implementation of professional learning community concepts and practices impacts student achievement in large high schools.

CHAPTER FOUR

Report of Data Analysis

The purpose of this study was to investigate whether the implementation of professional learning community concepts and practices implemented in a science department of a large high school promotes learning and achievement in science. The framework for the study was guided by the question; *Does the implementation of professional learning community concepts and practices in the science department of a large high school promote learning and achievement in science?* There were two sources of data used in this study—survey data and archived quantitative data. Together they answer the research questions and add to the existing body of knowledge regarding professional learning community concepts and practices and their influence on achievement in science in large high schools.

Survey Data

The following research questions were answered using data collected from a web-based survey developed by the researcher using DuFour et al.'s (2006) continuum to measure professional learning community concepts and practices:

1. What professional learning community concepts and practices are being implemented in large high schools?

2. At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?

3. Are professional learning community concepts and practices being implemented in schools that don't have a formal plan for professional learning communities?

4. Which professional learning community concepts and practices are being fully implemented in large high schools?

5. Which professional learning community concepts and practices are not being implemented in large high schools?

Sixteen participants at School A and three participants at School C participated in a web-based survey. School A participants included 15 science teachers and one instructional facilitator while School C participants included the school principal, the science department head, and one other key instructional leader. School A has an identified professional learning communities plan while School C does not have a professional learning communities plan. The researcher was not given permission to conduct the survey in School B; therefore, there are no results for School B. A total of 12 survey questions based on the seven professional learning community concepts and practices identified by DuFour et al. (2006) were asked of participants. Participants were asked to select the level of implementation of their science department on DuFour et al.'s four-point continuum:

Pre-Initiation Stage – The school has not yet begun to address this principle or practice of a PLC.

Initiation Stage – An effort has been made to address this principle or practice, but the effort has not yet begun to impact a critical mass of staff members.

Developing Stage – A critical mass of staff has begun to engage in the practice.

Members are being asked to modify their thinking as well as their traditional

practices. Structural changes are being made to support the transition.

Sustaining Stage – The principle or practice is deeply embedded in the culture of

the school. It is a driving force in the daily work of the staff. It is deeply

internalized and staff would resist attempts to abandon the principle or practice.

Survey results for School A and School C can be found in Appendix B and C.

Professional Learning Community Concept #1: A Clear and Compelling Purpose

Five survey questions were asked of participants regarding practices connected to

the professional learning community concept of *A Clear and Compelling Purpose*.

Figures 1 and 2 show the results for the first question, *Is it evident that learning for all is*

your school/department's purpose? Participants were provided the following descriptions

and asked to select a level of implementation for their department:

Pre-Initiation Stage—No effort has been made to engage teachers in identifying

what they want students to learn or how they will respond if students do not learn.

Teachers view the mission of the school as teaching rather than learning.

Initiation Stage—An attempt has been made, typically by the central office, to

identify learning outcomes for all grade levels or courses, but this attempt has not

impacted the practice of most teachers. Respondent to students who are not learning is

left to the discretion of individual teachers.

Developing Stage—Teachers are clear regarding the learning outcomes their

students are to achieve. They have developed strategies to assess student mastery of these

outcomes, they monitor the results, and they attempt to respond to students who are not learning.

Sustaining Stage—Learning outcomes are clearly articulated to all stakeholders in the school/department, and each student's attainment of the outcomes is carefully monitored. The school/department has developed systems to provide more time and support for students experiencing initial difficulty in achieving the outcomes. The practices, programs, and policies of the school/department are continually assessed on the basis of their impact on learning. Staff members work together to enhance their effectiveness in helping students achieve learning outcomes.

The number of participants who selected each level of implementation is reported in a bar graph. Figure 1 shows that the results for this question indicate that 9 out of 16 (56.3%) participants at School A selected their science department as being in the *sustaining* stage. Figure 2 shows that all three participants (100%) at School C selected *developing* as the level of implementation of their science department.

Figures 3 and 4 show the results for the second question, *Does your school/department know what they are trying to create?* The following descriptions were provided for participants for each stage related to this question:

Pre-Initiation Stage—No effort has been made to engage the school/department in describing preferred conditions for their school.

Initiation Stage—A vision statement has been developed for the school/department, but most staff are unaware of or are unaffected by it.
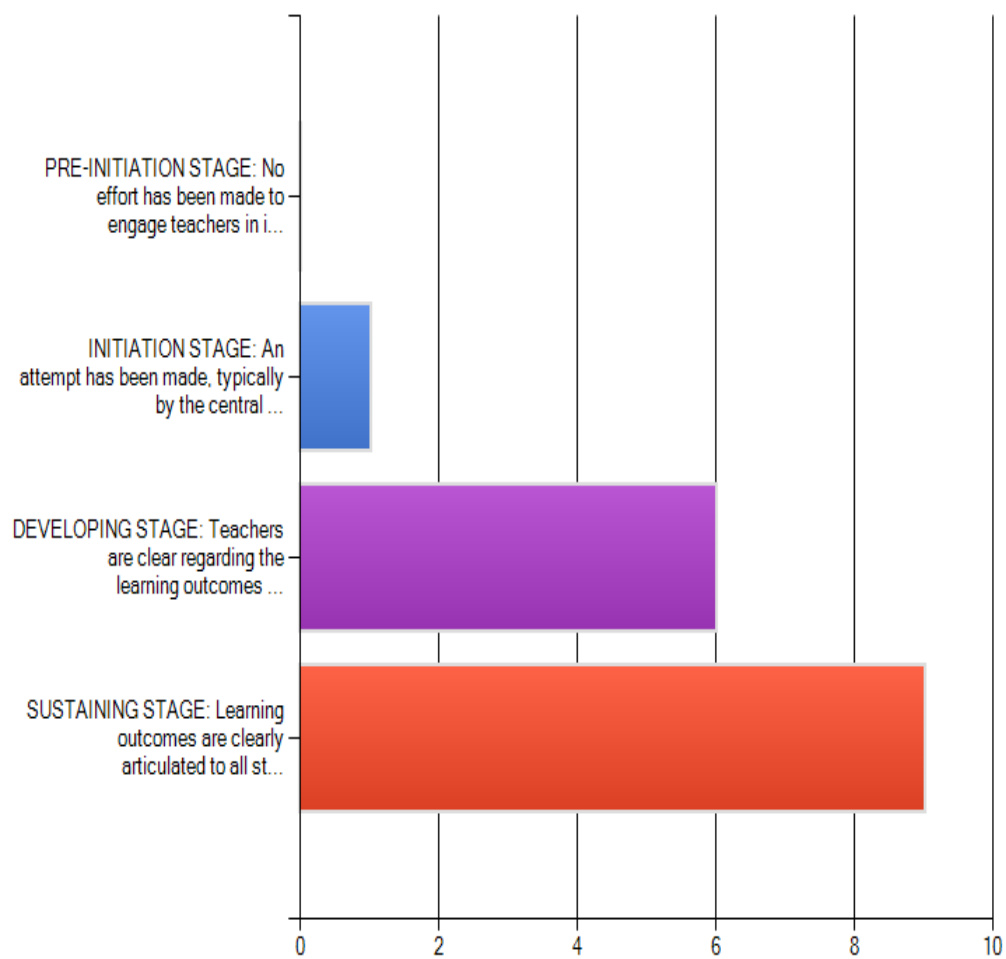
Figure 1. A clear and compelling purpose, question 1 for school A – Is it evident that learning for all is your school/department's goal?
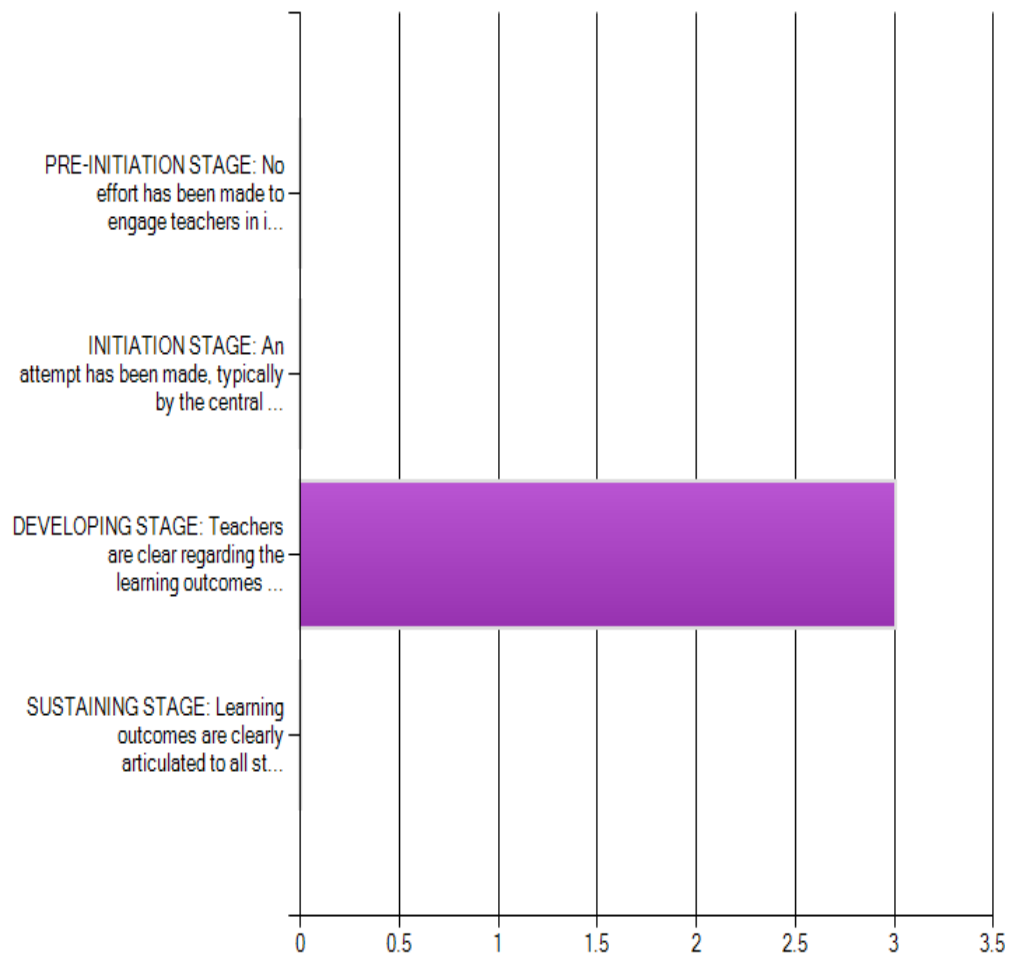
Figure 2. A clear and compelling purpose, question 1 for school C – Is it evident that learning for all is your school/department's goal?

Developing Stage—Staff members have worked together to describe the school/department they are trying to create. They have endorsed this general description and feel a sense of ownership in it. School/department improvement planning and staff development initiatives are tied to the shared vision.

Sustaining Stage—Teachers routinely articulate the major principles of the shared vision and use those principles to guide their day-to-day efforts and decisions. They honestly assess the current reality in their department and continually seek effective strategies for reducing the discrepancies between the conditions described in the vision statement and their current reality.

Figures 3 and 4 show that the majority of participants at each school believe that their science departments are in the *developing* stage of this professional learning community practice. Nine participants (56.3%) at School A and two participants (66.7%) at School C selected this stage as their level of implementation. It is important to note that five participants (31.7%) at School A indicated that they believe their school is in the *sustaining* stage. These participants believe that they are further along in this area.

The results of question three, *How must your school/department behave to advance your vision*, are shown in Figures 5 and 6. The following are the descriptions for each stage:

Pre-Initiation Stage—Teachers have not yet articulated the attitudes, behaviors, or commitments they are prepared to demonstrate in order to advance the mission of learning for all and the vision of what the school/department might become. If they discuss school improvement, they focus on what other groups must do.
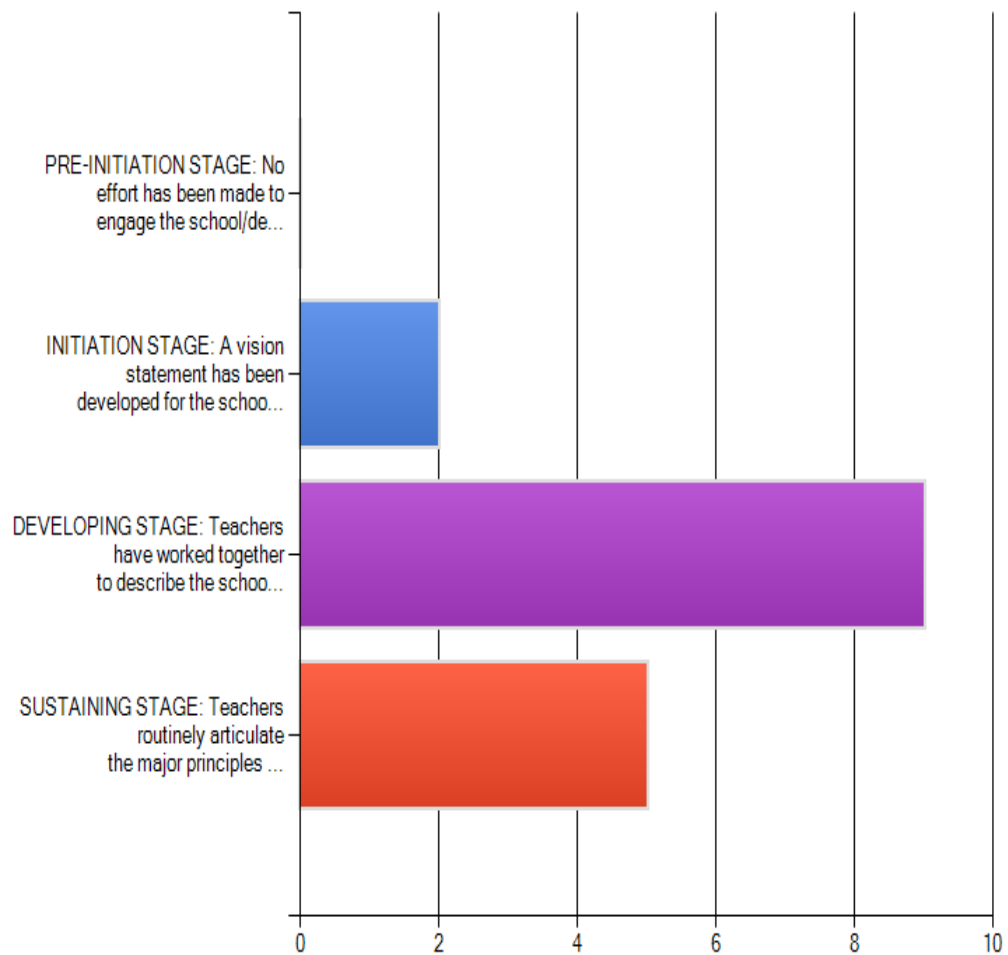
Figure 3. A clear and compelling purpose, question 2 for school A – Does your school/department know what they are trying to create?
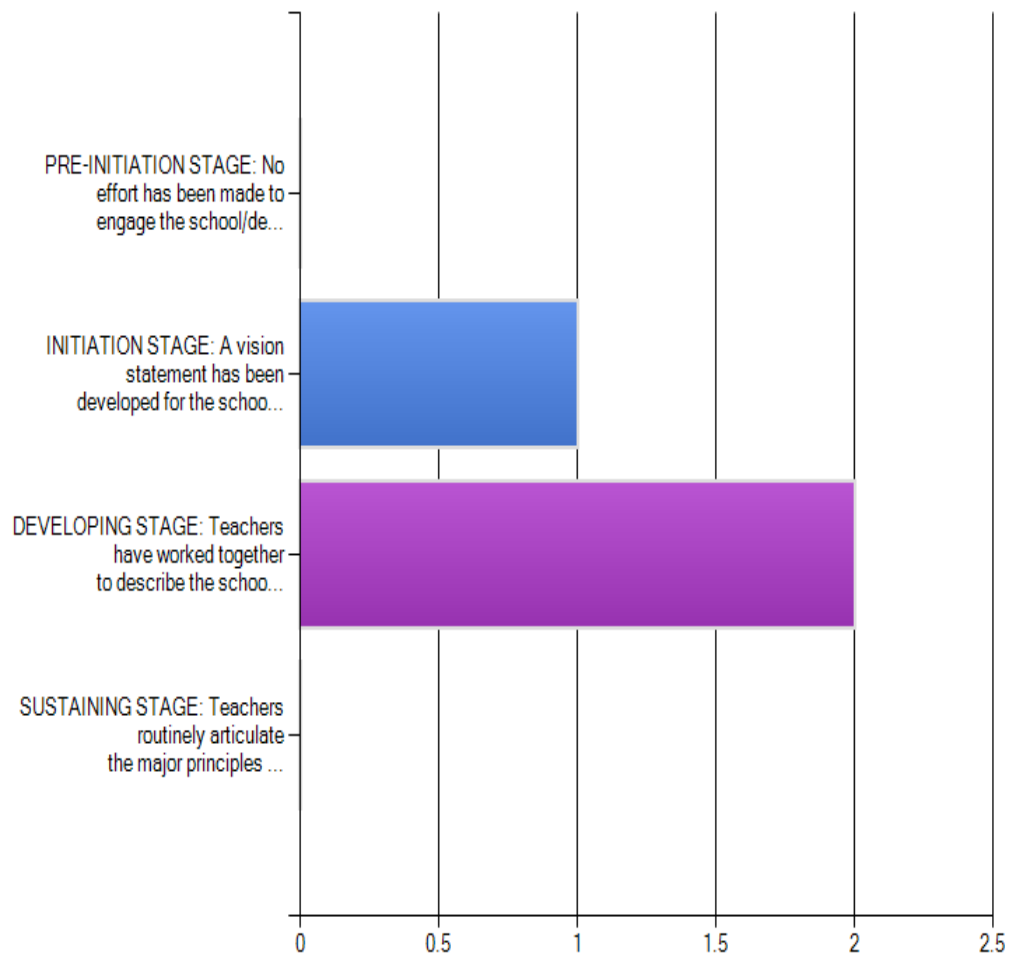
Figure 4. A clear and compelling purpose, question 2 for school C – Does your school/department know what they are trying to create?
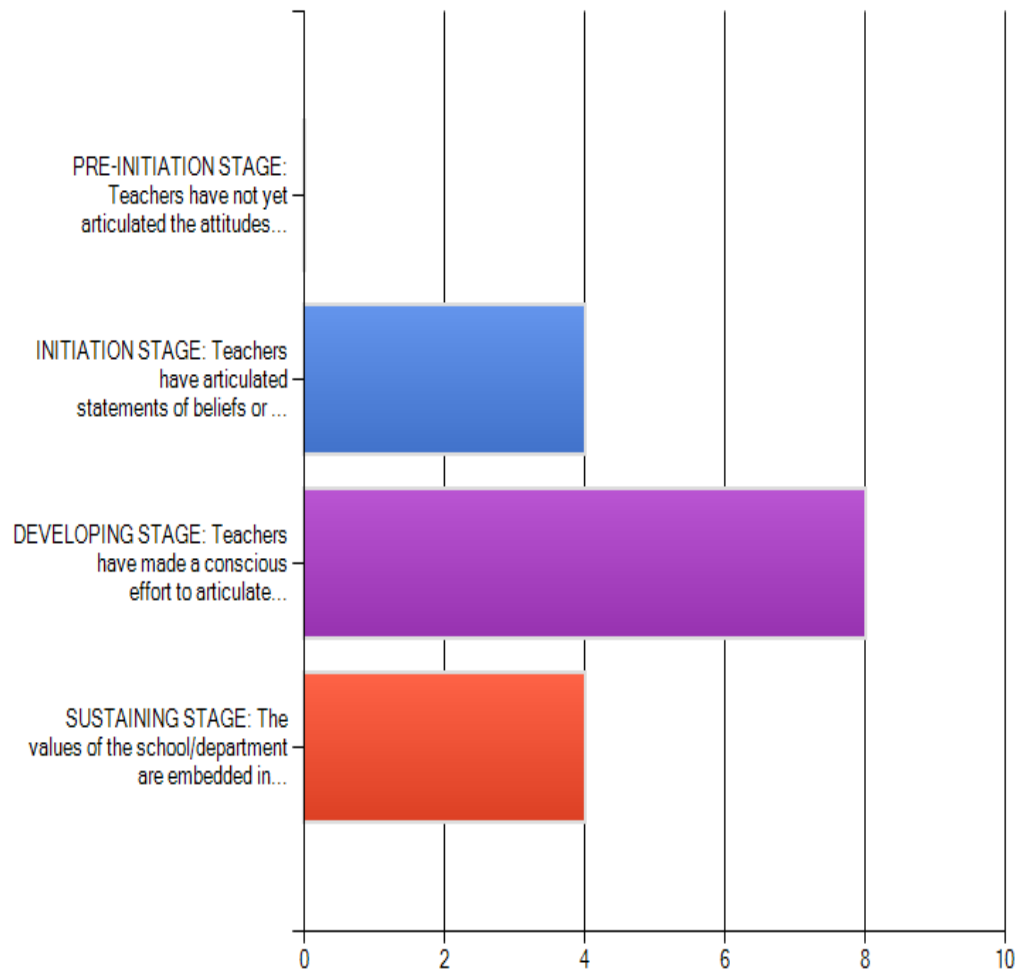
Figure 5. A clear and compelling purpose, question 3 for school A – How must your school/department behave to advance your vision?
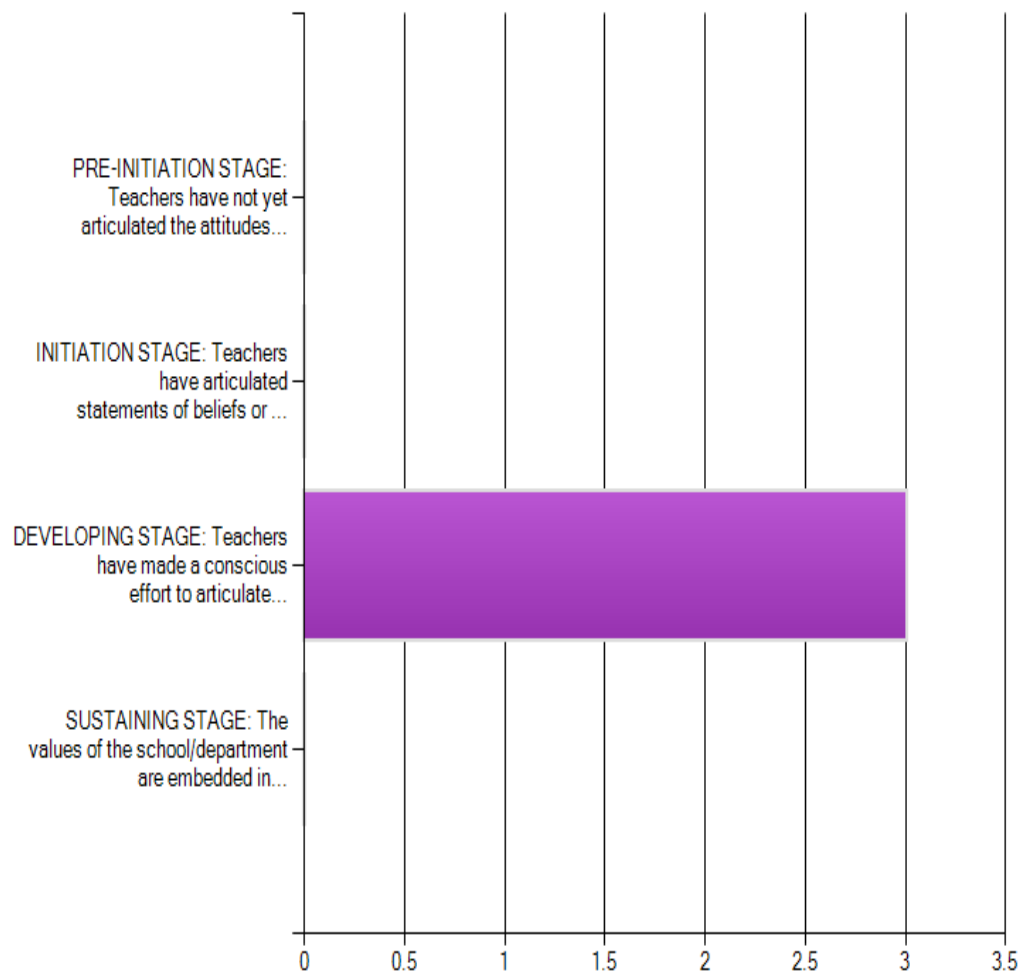
Figure 6. A clear and compelling purpose, question 3 for school C – How must your school/department behave to advance your vision?

Initiation Stage—Teachers have articulated statements of beliefs or philosophy for their school; however, these value statements have not yet impacted their day-to-day work or the operation of the school.

Developing Stage—Teachers have made a conscious effort to articulate and promote the attitudes, behaviors, and commitments that will advance their vision of the department. Examples of the core values at work are shared in stories and celebrations. People are confronted when they behave in ways that are inconsistent with the core values.

Sustaining Stage—The values of the school/department are embedded in the school culture. These shared values are evident to new staff and to those outside of the school/department. They influence policies, procedures, and daily practices of the school as well as day-to-day decisions of individual staff members.

While four participants (25%) at School A selected the *initiation* stage and four participants (25%) selected the *sustaining* stage, 8 of 16 participants (50%) in School A selected their science department's level of implementation on this practice as being in the *developing* stage. All three participants (100%) in School C also selected the *developing* stage.

Figures 7 and 8 show the results for question four, *What are your school/department's priorities?* The following descriptions were provided to participants:

Pre-Initiation Stage—No effort has been made to engage the teachers in setting and defining department school improvement goals related to student learning. If goals exist, they have been developed by the administration.
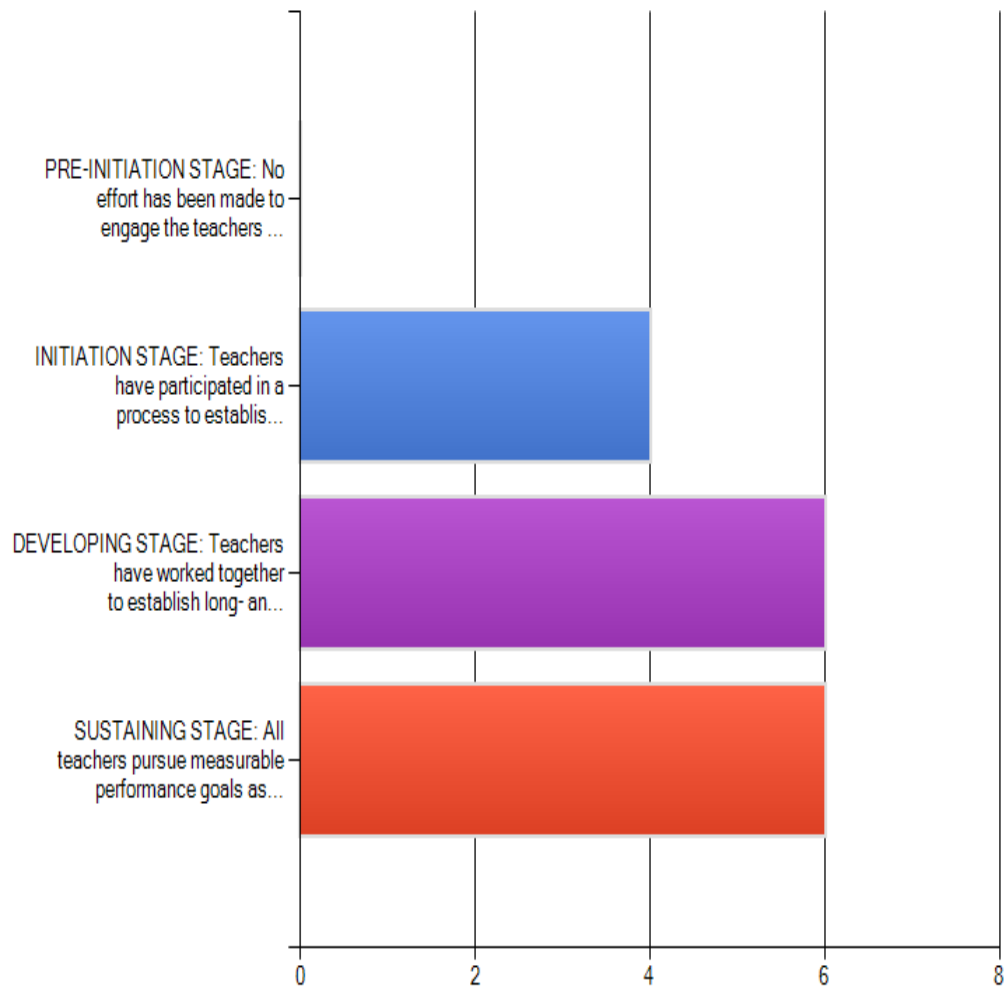
Figure 7. A clear and compelling purpose, question 4 for school A - What are your school/department's priorities?
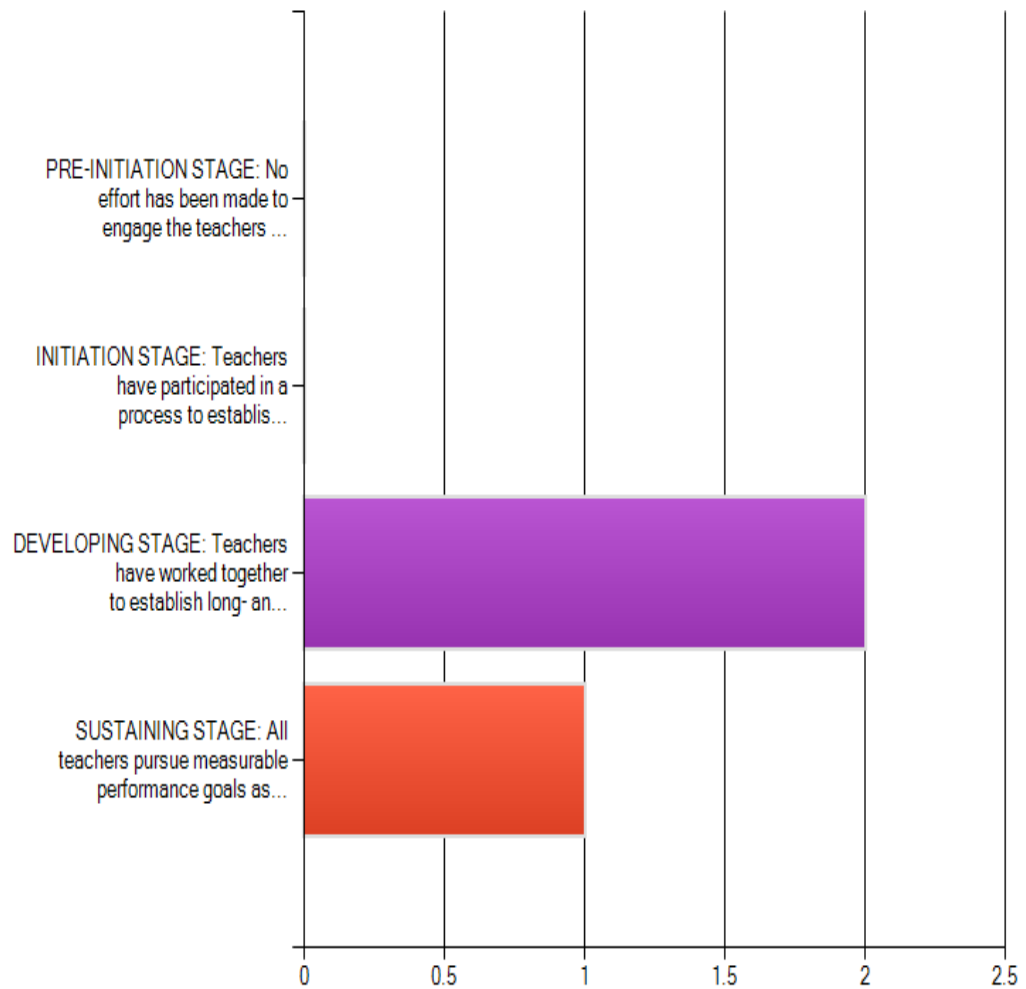
Figure 8. A clear and compelling purpose, question 4 for school C – What are your school/department's priorities?

Initiation Stage—Teachers have participated in a process to establish goals, but the goals are typically stated as projects to be accomplished or are written so broadly that they are impossible to measure. The goals do not yet influence instructional decisions in a meaningful way.

Developing Stage—Teachers have worked together to establish long- and short-term improvement goals for their department. The goals are clearly communicated. Assessment tools and strategies have been developed and implemented to measure progress toward the goals.

Sustaining Stage—All teachers pursue measurable performance goals as a part of their routine responsibilities. Goals are clearly linked to the school's shared vision. Goal attainment is celebrated and staff members demonstrate willingness to identify and pursue challenging stretch goals.

While four participants (25%) at School A selected the initiation stage, the remaining 75% of participants equally selected either the *developing* or *sustaining* stage. School C results show that two participants considered the science department as being in the *developing* stage and one participant considered the science department to be in the *sustaining* stage.

The last of the five questions related to the concept of *A Clear and Compelling Purpose* asked of participants was, *How does your school/department communicate what is important?* The following descriptions were provided to participants:

Pre-Initiation Stage—There is no clear, consistent message regarding the priorities of the department or school. Initiatives are changing constantly and different people in the organization seem to have pet projects.

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Initiation Stage—A small group of leaders in the department or the school is declaring the importance of a program or initiative. Their efforts have yet to impact practice to any significant degree.

Developing Stage—The department or school is beginning to align practices with stated priorities. New structures have been created to support the initiative, resources have been re-allocated, and systems for monitoring the priorities have been put into place. Evidence of progress is noted and publicly celebrated.

Sustaining Stage—The priorities of the department or school are demonstrated in the everyday practices and procedures of the department and the assumptions, beliefs, and behaviors of the teachers. The priorities are evident to students, parents, new staff members, and even visitors to the school or district. Stories of extraordinary commitment to the priorities are part of the lore than binds people together.

Figures 9 and 10 show that the majority of participants at Schools A and C consider their science department's to be in the *developing* stage. At School A, ten participants (62.5%) selected *developing*, five participants (31.3%) selected *sustaining* and one participant (6.3%) selected the *initiation* stage. Two participants (66.7%) at School C selected the *developing* stage and one participant (33.3%) at School C selected the *sustaining* stage.
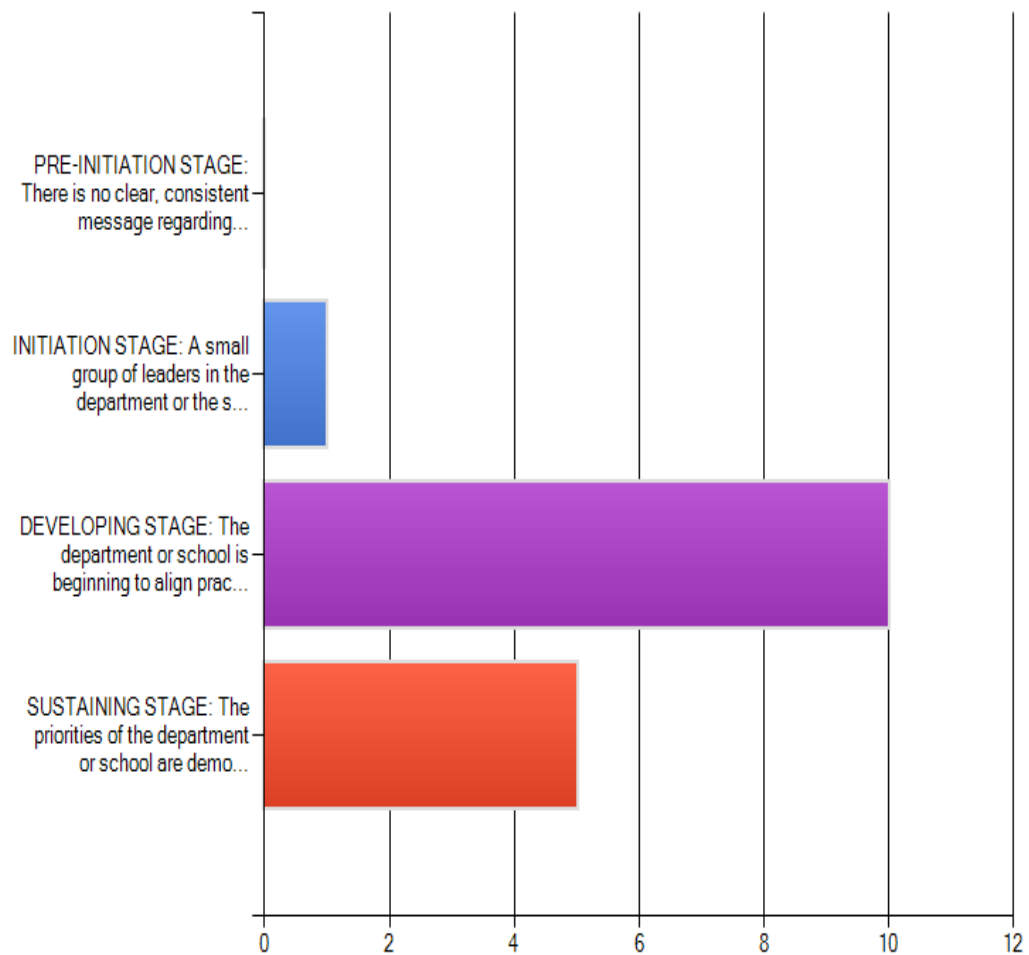
Figure 9. A clear and compelling purpose, question 5 for school A – How does your school/department communicate what is important?
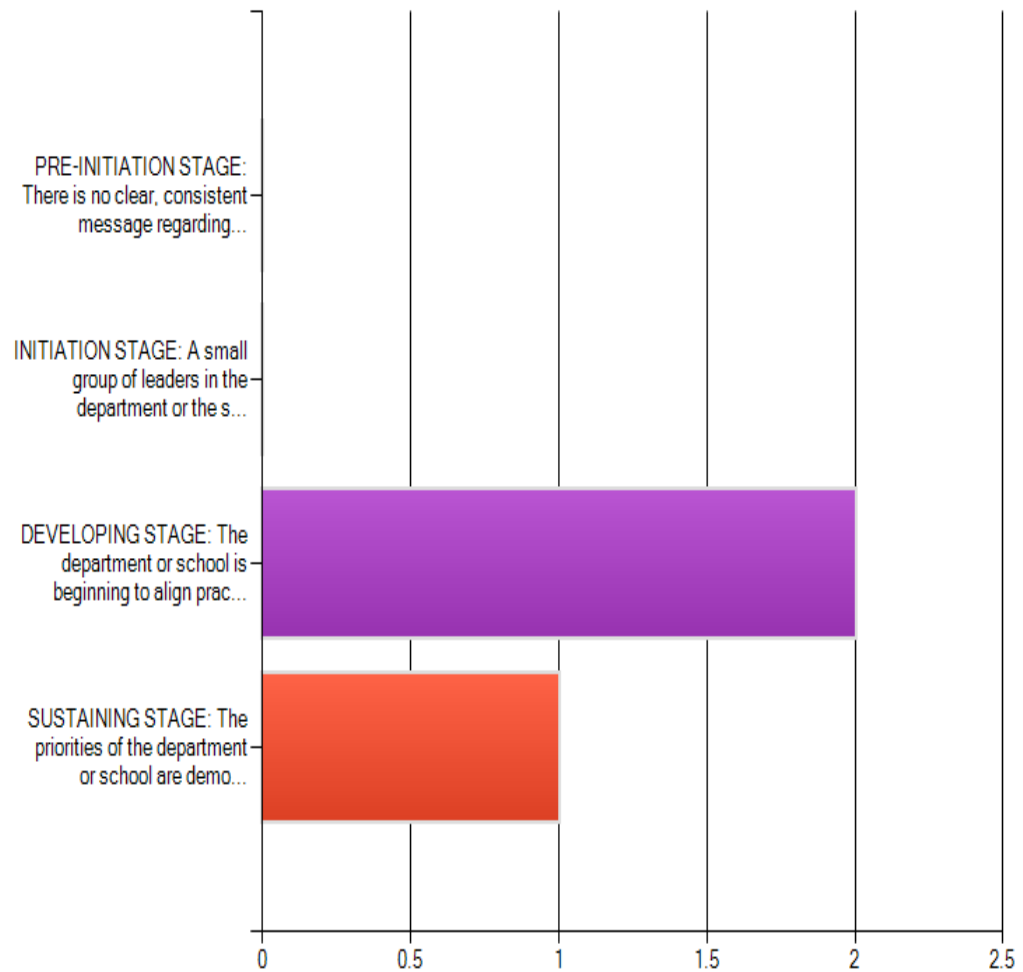
Figure 10. A clear and compelling purpose, question 5 for school C – How does your school/department communicate what is important?

The figures show that while both School A and School C indicate that overall their science department's are at a high level of implementation in the area of *A Clear and Compelling Purpose*, School C has a slightly higher level of implementation. School A selected the *sustaining* stage at a higher percentage on three out of the five questions.

Professional Learning Community Concept #2: A Focus on Learning

The next concept of a professional learning community, *A Focus on Learning*, was measured by asking two questions, *Is there clarity regarding what students must know and be able to do?* and *Does your department assess whether students have learned the essential curriculum?* Participants were asked to select from the following responses:

Pre-Initiation Stage—There has been little effort to establish a common curriculum for students. Teachers are free to determine what they will teach and how long they will teach it.

Initiation Stage—District leaders have established curriculum guides that attempt to align the district curriculum with state standards. Representative teachers may have assisted in developing the curriculum guides. The materials have been distributed to each school, but there is no process to determine whether the designated curriculum is actually being taught.

Developing Stage—Teachers have worked with colleagues to review state standards and district curriculum guides. They have attempted to clarify the meaning of the standards, establish pacing guides, and identify strategies for teaching the content effectively.

Sustaining Stage—Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student

achievement, and expectations of the next course or grade level. As a result of this collective inquiry, teachers have established the essential learning for each unit of instruction and are committed to instruct their students in the essential learning according to the team's agreed-upon pacing guide. They know the criteria they will use in judging the quality of student work, and they practice applying those criteria until they can do so consistently. They demonstrate a high level of commitment to the essential curriculum, to their students, and to their teammates.

Figures 11-14 show that School A is at a higher level of implementation regarding this concept. Figures 11 and 12 show that nine participants (60%) from School A selected the *sustaining* stage on the first question of this concept, while only one participant (33.3%) from School C selected this same stage of implementation.

The results are identical for the second question of the concept, *A Focus on Learning*. Descriptions of each stage as provided to participants were:

Pre-Initiation Stage—Each teacher creates the assessments he or she will use to monitor student learning. Assessments may vary widely in format and rigor from one teacher to another. The assessments are used primarily to assign grades rather than to inform teacher and student practice. State or provincial tests are administered in the school, but teachers pay little attention to the results.

Initiation Stage—District officials analyze the results of state and provincial tests and report the results for each school. Principals are expected to work with staff to improve upon the results. The district may also administer district-level assessments in core curricular areas. These assessments have been created by key central office personnel, by representative teachers serving on district committees, or by testing

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companies who have sold their services to the district. Classroom teachers typically feel little commitment to the assessments and pay little attention to the results.

Developing Stage—Teachers have worked together to analyze results from state and district tests and to develop improvement strategies to apply in their classrooms. They have discussed how to assess student learning on a consistent and equitable basis. Parameters are established for assessments, and individual teachers are asked to honor those parameters as they create tests for their students. Teachers of the same course or grade level may create a common final exam to help identify strengths and weaknesses in their program.

Sustaining Stage—Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state or provincial standards and district curriculum guides. The teams have established the specific proficiency standards each student must achieve on each skill. The team administers common assessments multiple times throughout the school year and analyzes the results together. Team members then use the results to inform and improve their individual and collective practice, to identify students who need additional time and support for learning, and to help students monitor their own progress toward agreed-upon standards.

Figures 13 and 14 show that nine participants (60%) from School A selected the *sustaining* stage, while only one participant (33.3%) from School C selected this same stage of implementation. Overall, both questions on the concept, *A Focus on Learning*, show that the school implementing a formal professional learning communities plan, School A, has a higher level of implementation for this concept than School C, the school without a formal plan for professional learning communities.
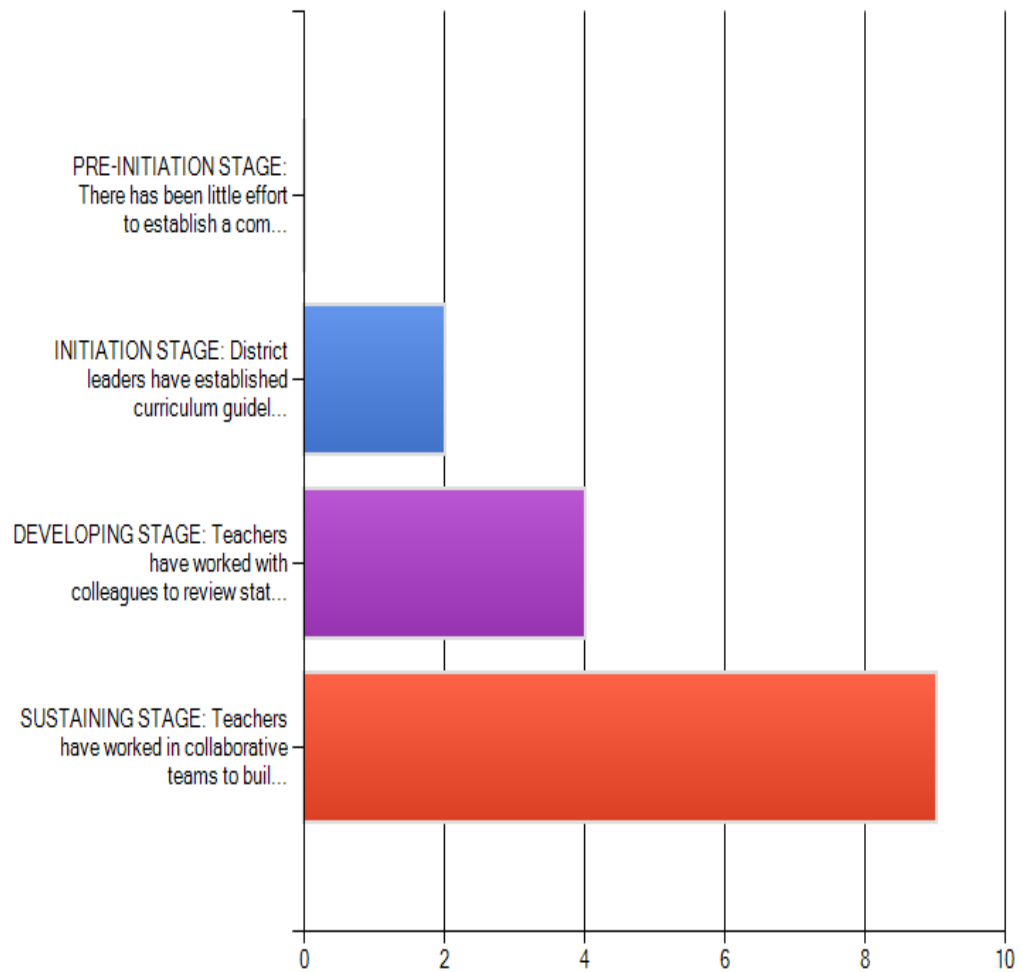
Figure 11. A focus on learning, question 1 for school A – Is there clarity regarding what students must know and be able to do?
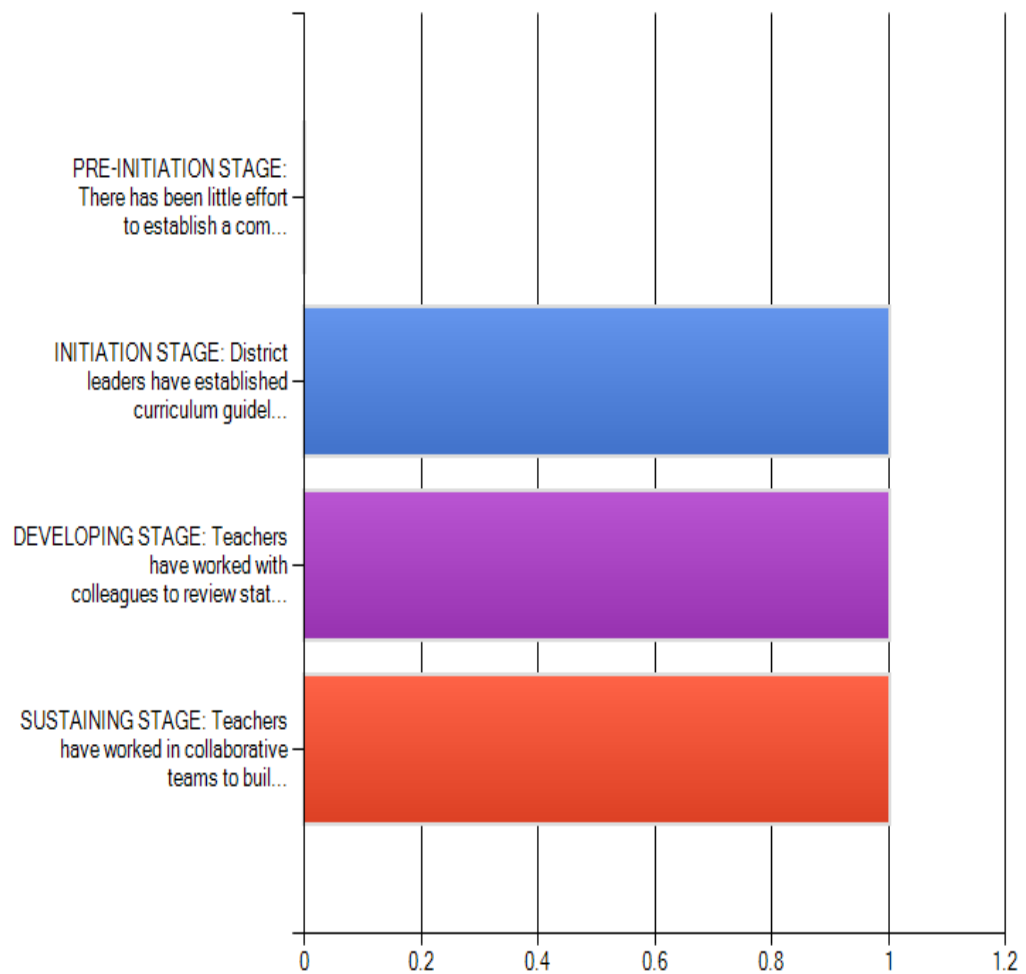
Figure 12. A focus on learning, question 1 for school C – Is there clarity regarding what students must know and be able to do?
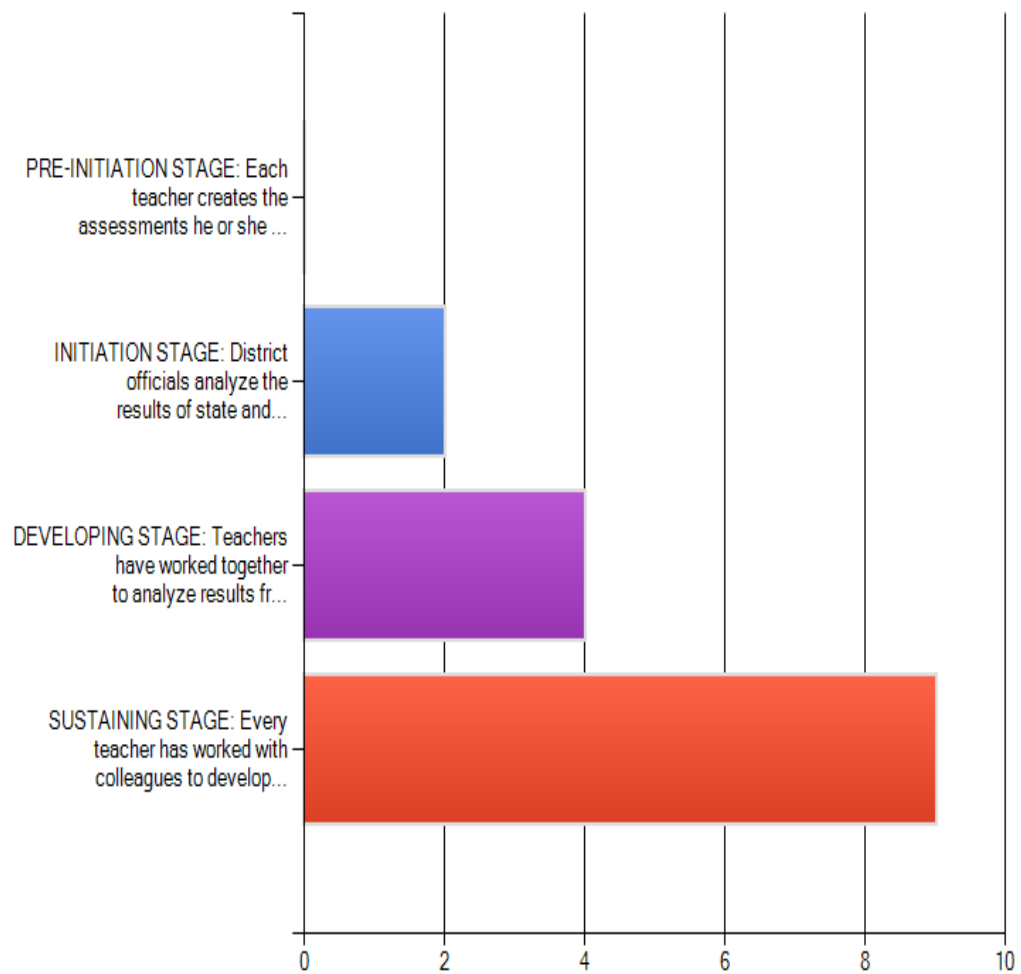
Figure 13. A focus on learning, question 2 for school A – Does your department assess whether students have learned the essential curriculum?
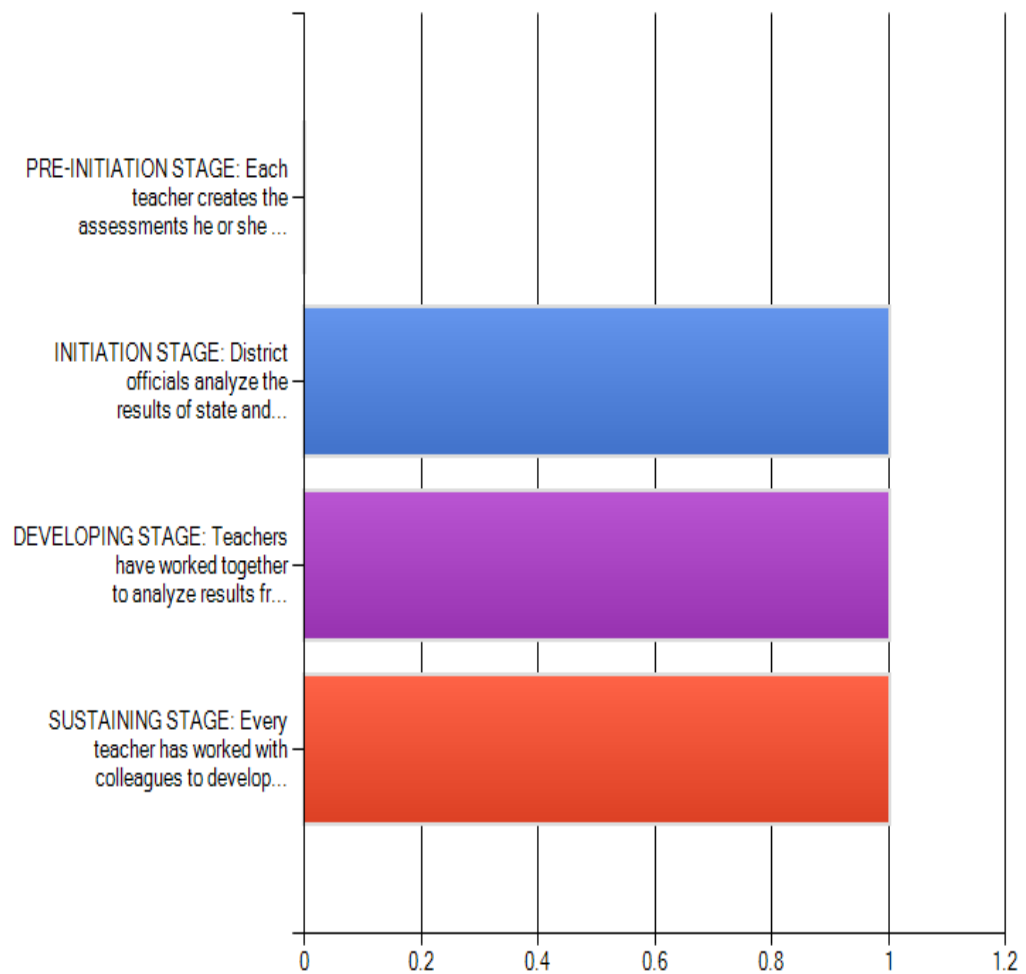
Figure 14. A focus on learning, question 2 for school C – Does your department assess whether students have learned the essential curriculum?

Professional Learning Community Concept #3: How We Respond When Some Students Don't Learn

The third professional learning community concept, *How We Respond When Some Students Don't Learn*, was measured with one question, *Does your department provide systemic interventions that ensure students receive additional time and support for learning?* The following descriptions were provided for participants:

Pre-Initiation Stage—There is no systematic plan either to monitor student achievement on a timely basis or to respond to students who are not learning with additional time and support. What happens when students experience difficulty in learning will depend entirely upon the teacher to whom they are assigned.

Initiation Stage—The department has created opportunities for students to receive additional time and support for learning before and after school. Students are invited rather than required to get this support. Many of the students who are most in need of help choose not to pursue it.

Developing Stage—The department has begun a program of providing time and support for learning within the school day, but unwillingness to deviate from the traditional schedule is limiting the effectiveness of the program. The staff has retained its traditional 9-week grading periods, and it is difficult to determine which students need additional time and support until the end of the first quarter. Additional support is only offered at a specific time of the day or week (for example, over the lunch period or only on Wednesdays), and the school is experiencing difficulty in serving all the students who need help during the limited time allotted.

Sustaining Stage—The department has a highly coordinated, sequential system in place. The system is proactive: It identifies and makes plans for students to receive extra

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support even before they enroll. The achievement of each student is monitored on a timely basis. Students who experience difficulty are required, rather than invited, to put in extra time and utilize extra support. The plan is multi-layered. If the current level of support is not sufficient, there are additional levels of increased time and support. Most importantly, all students are guaranteed access to this systematic intervention regardless of the teacher to whom they are assigned.

Figure 15 shows that 60% of participants at School A selected the *developing* or *sustaining* stage while 40% selected the *initiation* stage. Figure 16 shows that the results are mixed for School C. One participant each selected the *initiation*, *developing* and *sustaining* stage.

Professional Learning Community Concept #4: A Collaborative Culture

The next concept of a professional learning community, *A Collaborative Culture*, was measured in the survey with only one question. Results to the question, *Do collaborative teams of teachers focus on issues that directly impact student learning?* The following descriptions were provided to participants:

Pre-Initiation—There is no systematic plan in place to assign staff members to teams or provide them with time to collaborate. Teachers work in isolation with little awareness of the strategies, methods, or materials used by their colleagues.

Initiation— Some structures have been put into place for teachers who may be interested in collaborating. Teachers are encouraged but not required to participate. Topics tend to focus on matters other than classroom instruction and student learning.
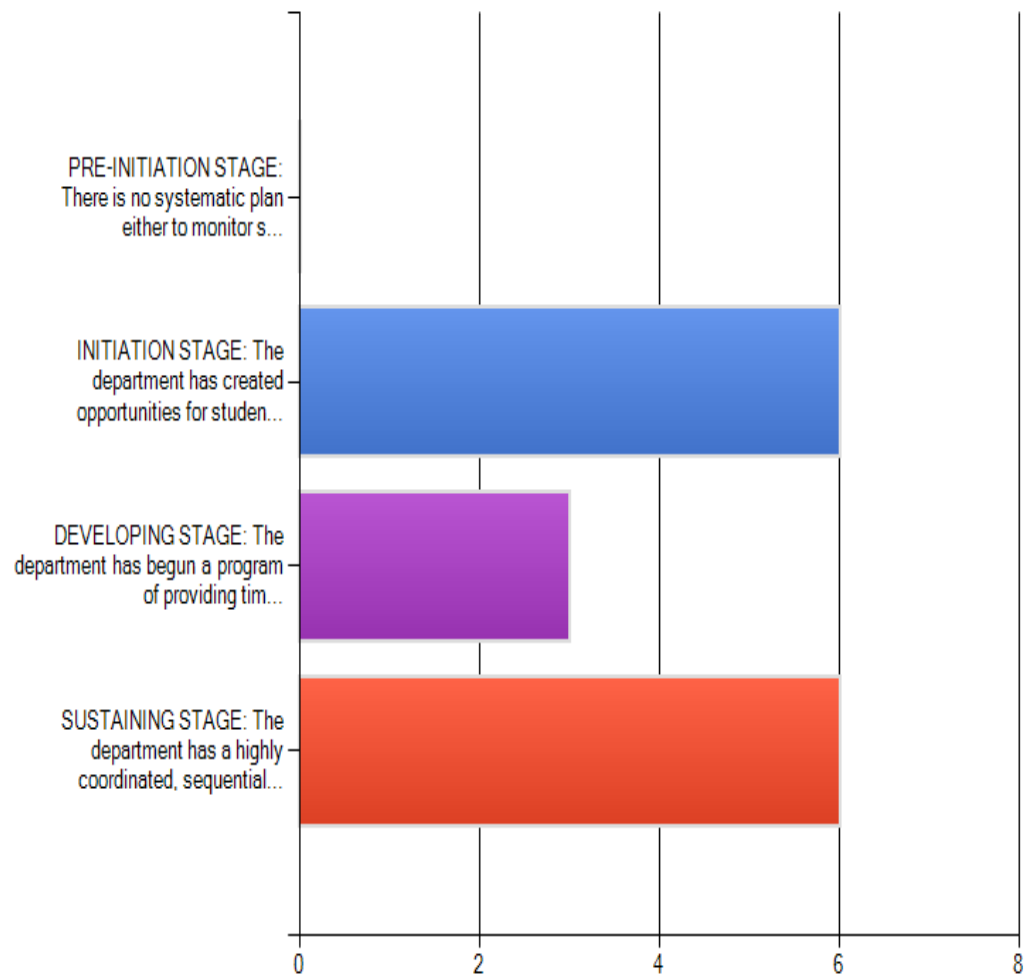
Figure 15. How we respond when some students don't learn, school A – Does your department provide systemic interventions that ensure students receive additional time and support for learning?
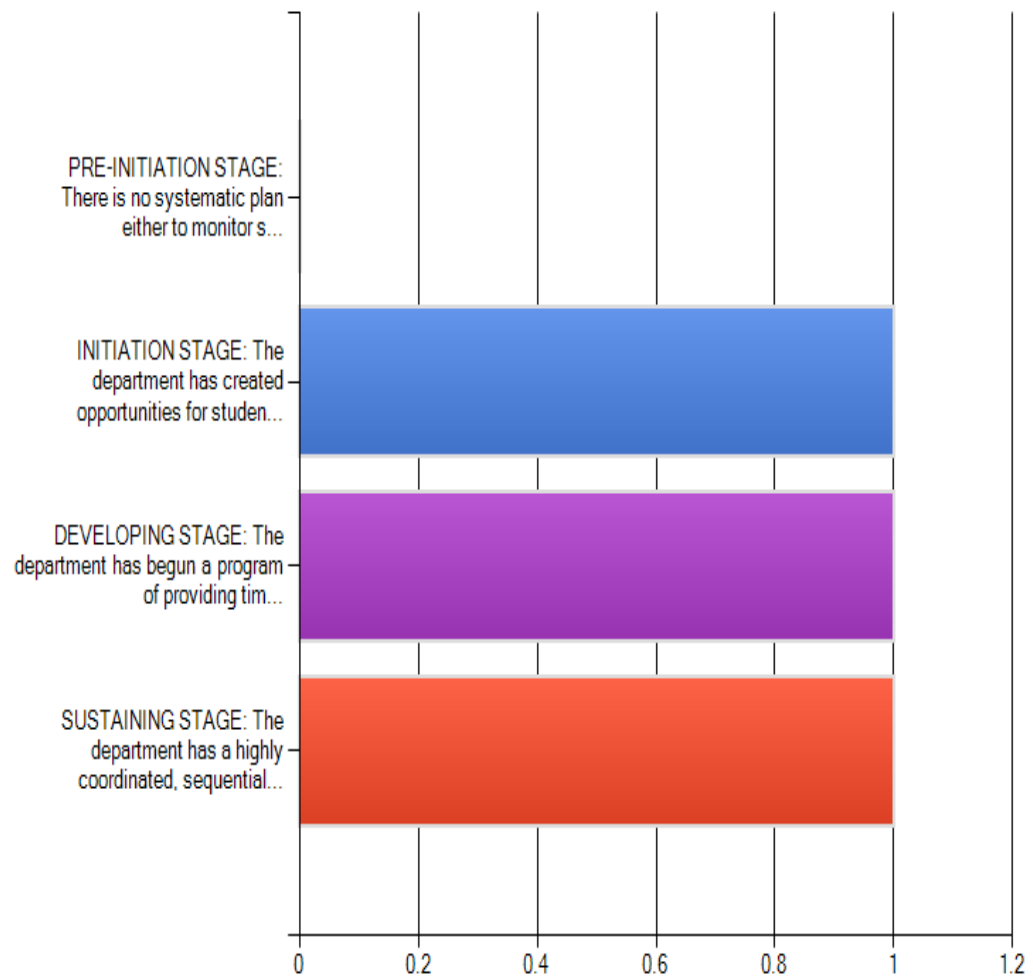
Figure 16. How we respond when some students don't learn, school C – Does your department provide systemic interventions that ensure students receive additional time and support for learning?

Developing—Time has been provided during the contractual day for teachers to work together in teams on a regular basis (at least once a week). Guidelines have been established in an effort to ensure teachers use collaborative time to address topics that will impact instruction. Teams are attempting to develop positive relationships and implement specific procedures, but they may not be convinced the collaborative team process is beneficial. Leaders of the school are seeking ways to monitor the effectiveness of the teams.

Sustaining—Self-directed teams represent the primary engine of continuous improvement in the school. Team members are skillful in advocacy and inquiry, hold each other accountable for honoring the commitments they have made to one another, consistently focus on the issues that are most significant in improving student achievement, and set specific measurable goals to monitor improvement. The collaboration team process serves as a powerful form of job-embedded staff development, helping both individual members and the team in general become more effective in helping students learn at high levels. Teachers consider their collaborative culture vital to the effectiveness of their department.

Figure 17 shows that 13 participants (93.3%) at School A selected the *developing* or *sustaining* stage while Figure 18 shows that three participants (100%) at School C selected the *developing* stage. No participants at School C selected the *sustaining* stage. Participant selections indicate that School A has an overall higher level of implementation of this professional learning community concept.
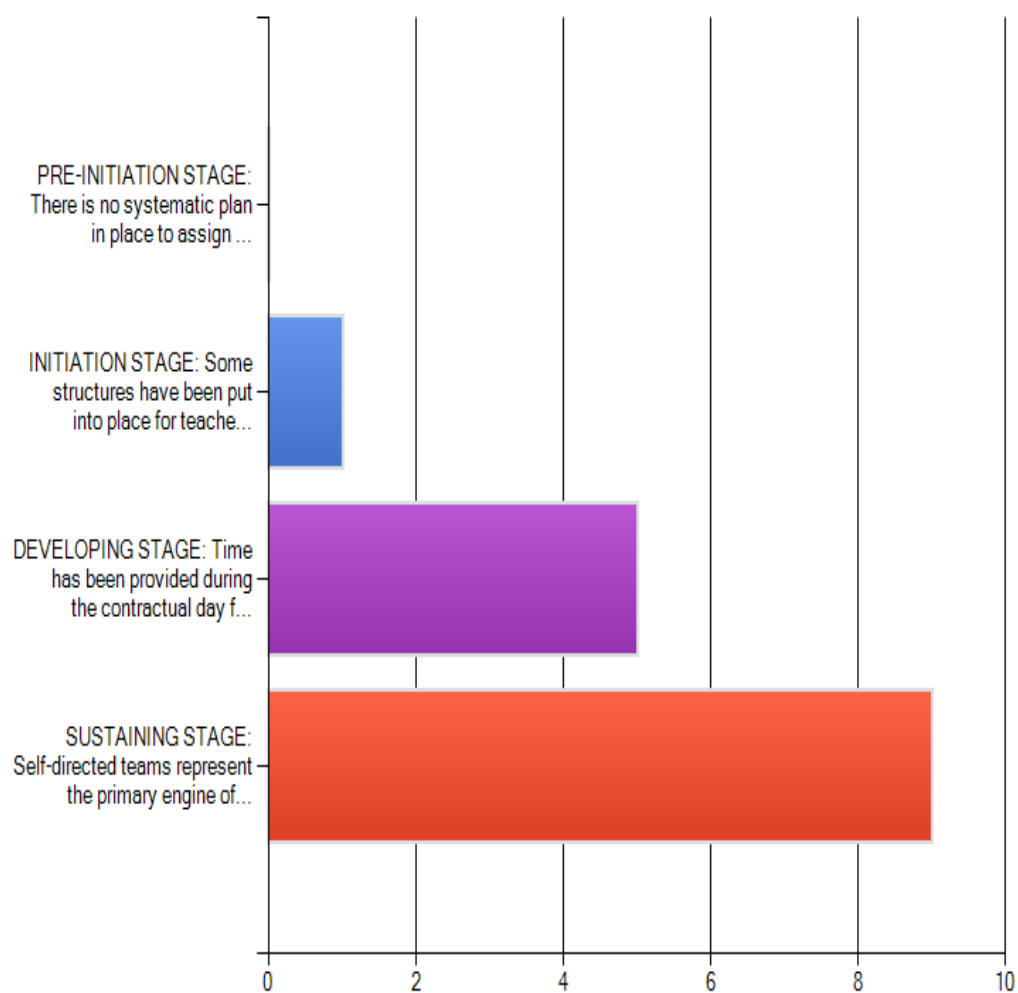
Figure 17. A collaborative culture, school A – Do collaborative teams of teachers focus on issues that directly impact student learning?
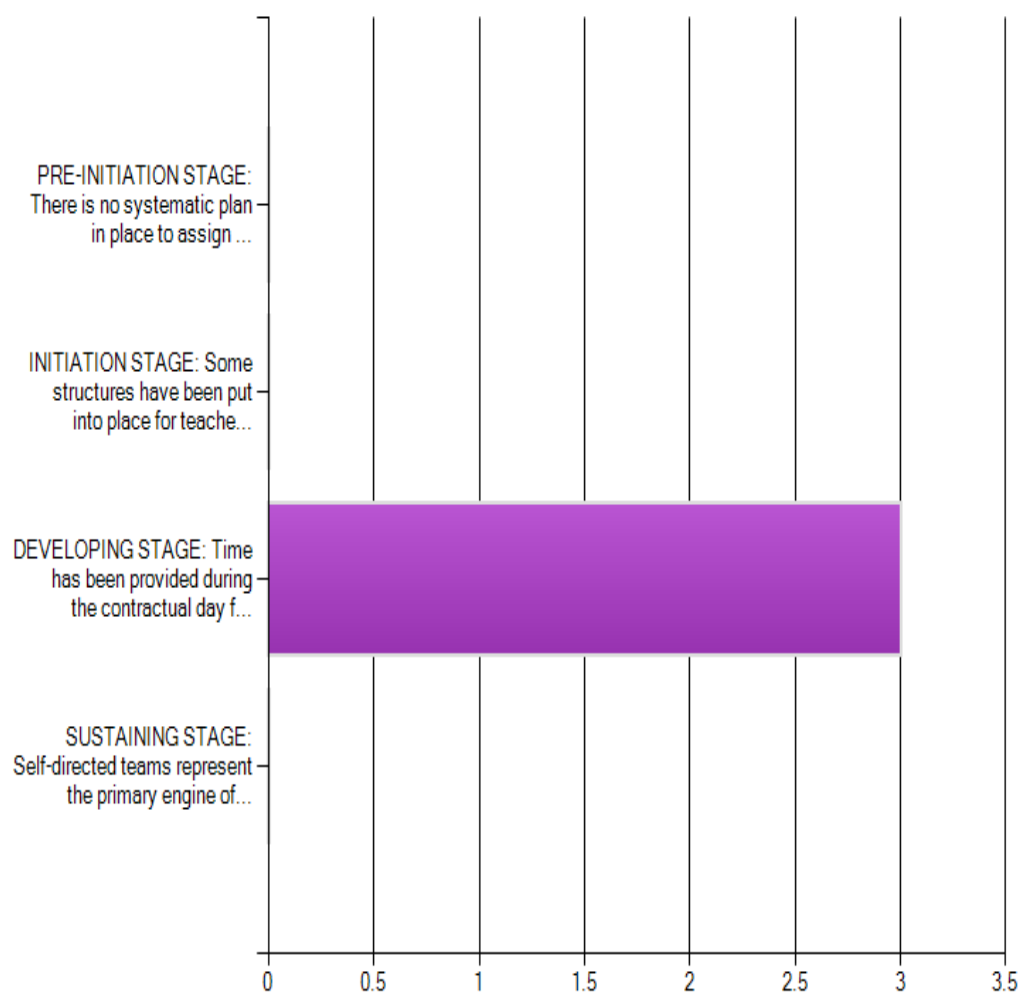
Figure 18. A collaborative culture, school C – Do collaborative teams of teachers focus on issues that directly impact student learning?

Professional Learning Community Concept #5: Using Goals to Focus on Results

The fifth professional learning concept, Using Goals to Focus on Results, was measured with the question, *Does your department create a focus on results that impacts schools, teams, and teachers?* Participants were asked to select an answer from the following:

Pre-Initiation Stage—There is no effort to establish specific district goals to impact the direction of each school. The district reacts to problems as they arise and does little to either focus on the future or promote continuous improvement.

Initiation Stage—The district establishes multiple long-range goals as part of a comprehensive strategic planning process. Schools may create annual school improvement plans in response to district requirements, but those plans have little impact upon classroom instruction.

Developing Stage—The district has identified a few key goals. Every school then adopts goals designed to help the district achieve its targets. Every collaborative team in every school adopts SMART goals specifically aligned with its school goals. A process is in place to monitor each team's progress throughout the year.

Sustaining Stage—Educators throughout the district have a results orientation. Collaborative teams of teachers establish both annual goals and a series of short term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans. This tangible evidence of results guides the work of teams as part of a continuous improvement process. Each member understands the goals of the team, how those goals relate to school and district goals, and how he or she can contribute to achieving the goals.

Figures 19 and 20 show that School A has a higher level of implementation of this concept. Figure 19 shows that the *sustaining* stage was selected by seven participants (53.8%) at School A. At School C, the results are mixed. Figure 20 shows that one participant each selected the *initiation*, *developing,* and *sustaining* stage.

The sixth professional learning community concept, *Using Evidence of Student Learning*, was measured in the survey by the question, *Is your team focused on results?* Participants were asked to select one of the following descriptions as their department's level of implementation of this concept:

Pre-Initiation Stage—There are no processes to use results as a tool for improvement. Teachers fall into a predictable pattern: They teach, they test, they hope for the best, and then they move on to the next unit.

Initiation Stage—District leaders analyze results from high-stakes tests such as state and provincial examinations. Data are shared with each school, and principals are encouraged to review the results and address weaknesses as part of their school improvement plans.

Developing Stage—The school has created a specific process to bring together collaborative teams of teachers several times throughout the year to analyze the results from common formative assessments. Teams identify areas of concern and discuss strategies for improving the collective results. Assessments are also used to identify students who are experiencing difficulty, and the school/department creates systems to provide those students with additional time and support for learning.

Figure 19. Using goals to focus on results, school A – Does your department create a focus on results that impacts schools, teams, and teachers?
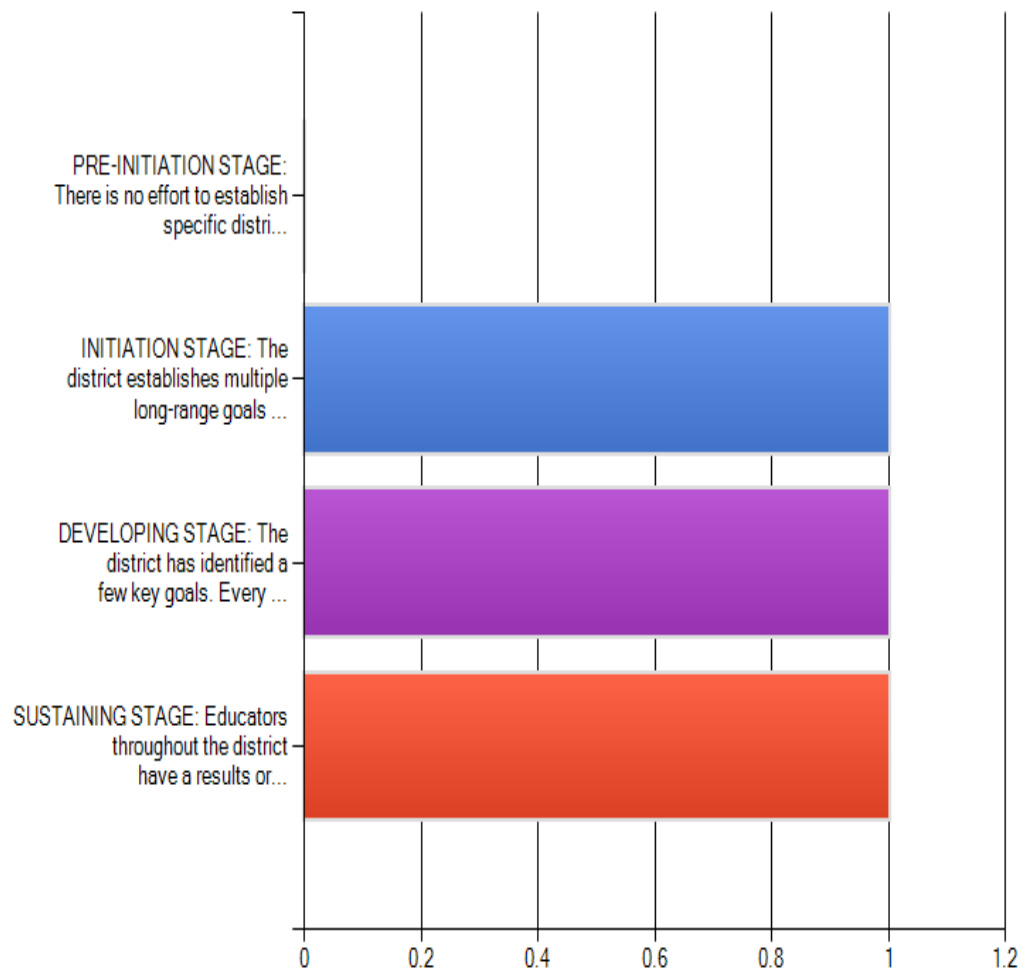
Figure 20. Using goals to focus on results, School C – Does your department create a focus on results that impacts schools, teams, and teachers?

Professional Learning Community Concept #6: Using Evidence of Student Learning

    Sustaining Stage—Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources. Results from their common formative assessments are compared to results from state and provincial assessments to validate the effectiveness of their local assessments. Teachers use results to identify strengths and weaknesses in their individual practice, to help each other address areas of concern, and to improve their effectiveness in helping all students learn. Strategically linked SMART goals drive the work of each collaborative team. Analysis of the performance of individual students enables the team and school to create efficient and timely interventions. Improved results and achievement of goals are the basis for a culture of celebration within classrooms, the school, and the district.

    The results for Schools A and C are shown in Figures 21 and 22. Like the previous concept, participants in School A indicate that their science department is implementing this concept to a high degree while participants in School C show mixed results. The majority of participants in School A selected the *sustaining* stage.

Professional Learning Community Concept #7: Responding to Conflict

    The last concept of a professional learning community, *Responding to Conflict,* was also measured with one question. Participants were asked, *How does your school/department respond to conflict in a PLC?* Descriptions provided to participants were:
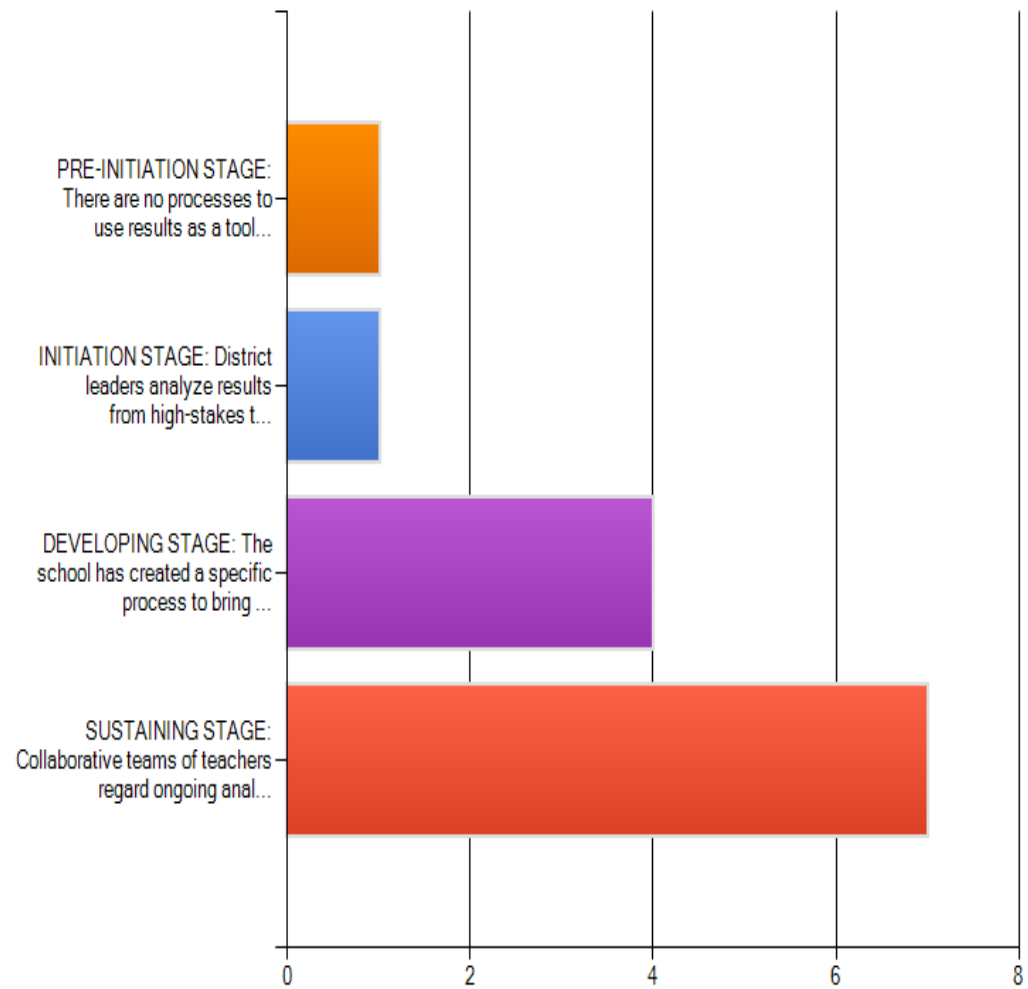
Figure 21. Using evidence of student learning, school A – Is your team focused on results?
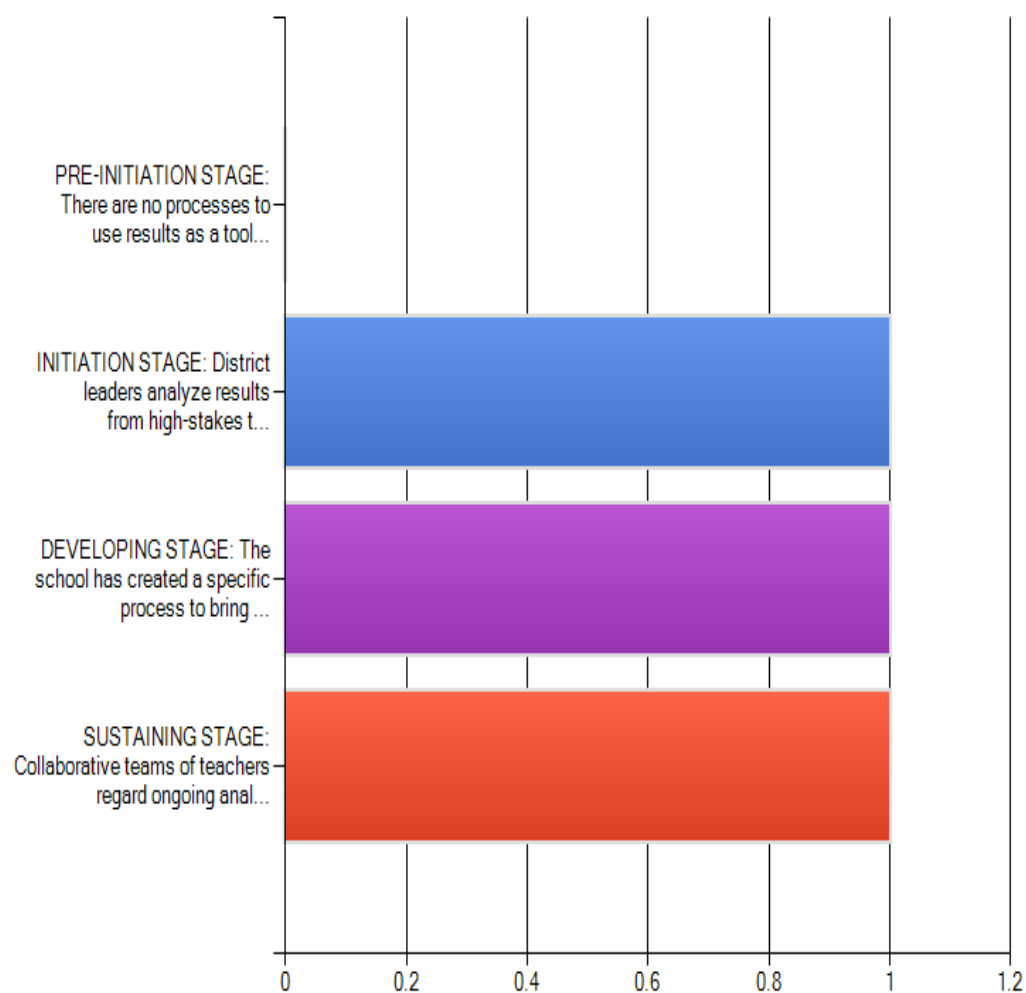
Figure 22. Using evidence of student learning, school C – Is your team focused on results?

Pre-Initiation Stage—People react to conflict with classic flight or fight responses. Most staff members withdraw from interactions in order to avoid those they find disagreeable. Others are perpetually at war in acrimonious, unproductive arguments that never seem to get resolved. People seem more interested in winning arguments than in resolving differences.

Initiation Stage—School and district leaders take steps to resolve conflict as quickly as possible. Addressing conflict is viewed as an administrative responsibility. The primary objective of administrators in addressing disputes is to restore the peace.

Developing Stage—Staff members have created norms or protocols to help them identify and address the underlying issues causing conflict. Members are encouraged to explore their positions and the fundamental assumptions that have led them to their positions. They attempt to use a few key, guiding principles to assist them in coming to closure.

Sustaining Stage—Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as be understood. They seek ways to test competing assumptions through action research and are willing to re-think their position when research, data, and information contradict their suppositions. Because they have found common ground on their purpose and priorities, they are able to approach disagreements with high levels of trust and an assumption of good intentions on the part of all members.

The results to this question are shown in Figures 23 and 24. It appears that School A is further developed in its implementation of this concept than School C. Results in

Figure 23 show that 8 participants (61.6%) in School A selected either *developing* or *sustaining* for this concept. Figure 24 shows that two participants (66.7%) selected the *initiation* stage while only one participant selected the *sustaining* stage. No participants selected the sustaining stage of implementation.

Summary of Survey Results

A careful examination of the survey results indicate that although a large high school with an enrollment of more than 2,000 students in grades 9-12 has no formal plan for implementing professional learning community concepts and practices, all seven concepts still exist to some degree; however, it is clear that a school of similar size and demographics with a formal implementation plan for professional learning communities is further along in its implementation of all identified concepts and practices. On all 12 survey questions, School A, a school with a formal professional learning communities plan, is implementing all seven professional learning community concepts and practices at a higher level than School C, who does not have a formal professional learning communities plan.

Archived Quantitative Data

The following research questions regarding student achievement were answered using archived quantitative data collected from each school:

6. Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?
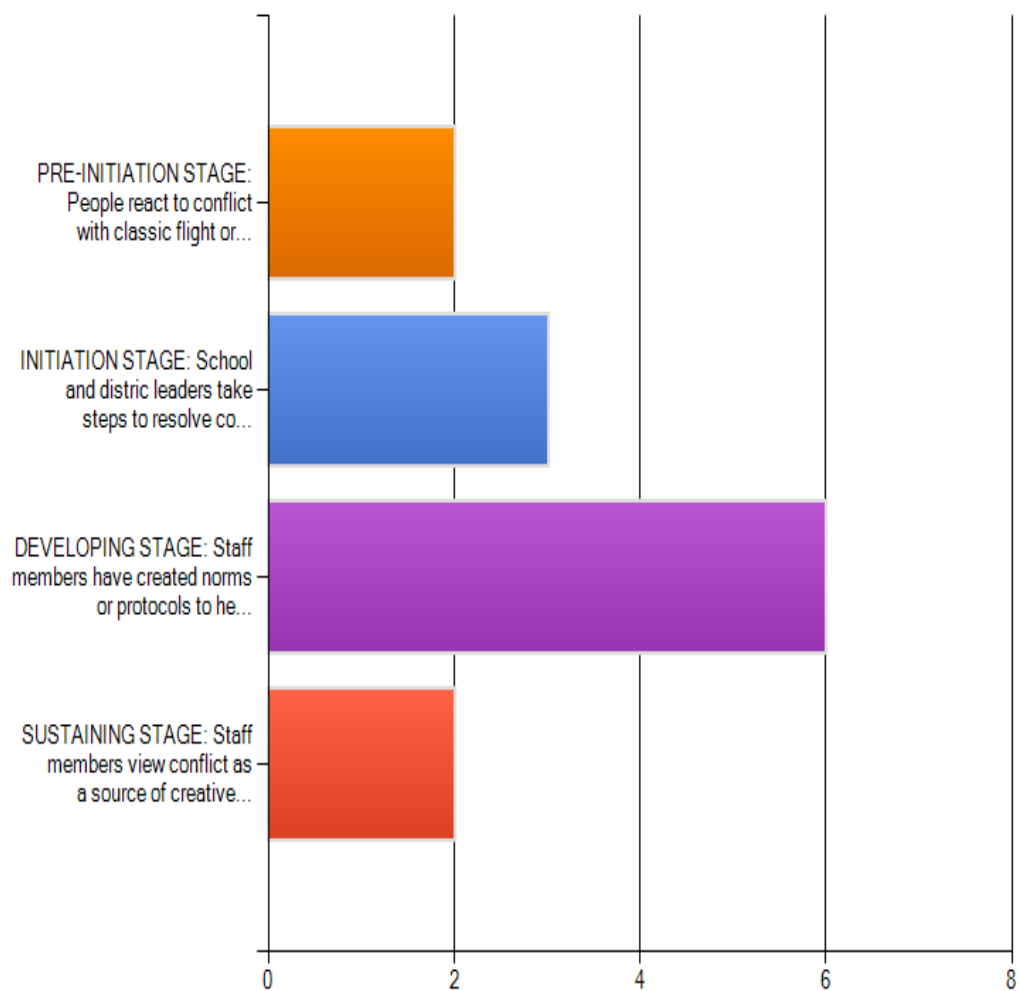
Figure 23. Responding to conflict, school A – How does your school/department respond to conflict in a PLC?
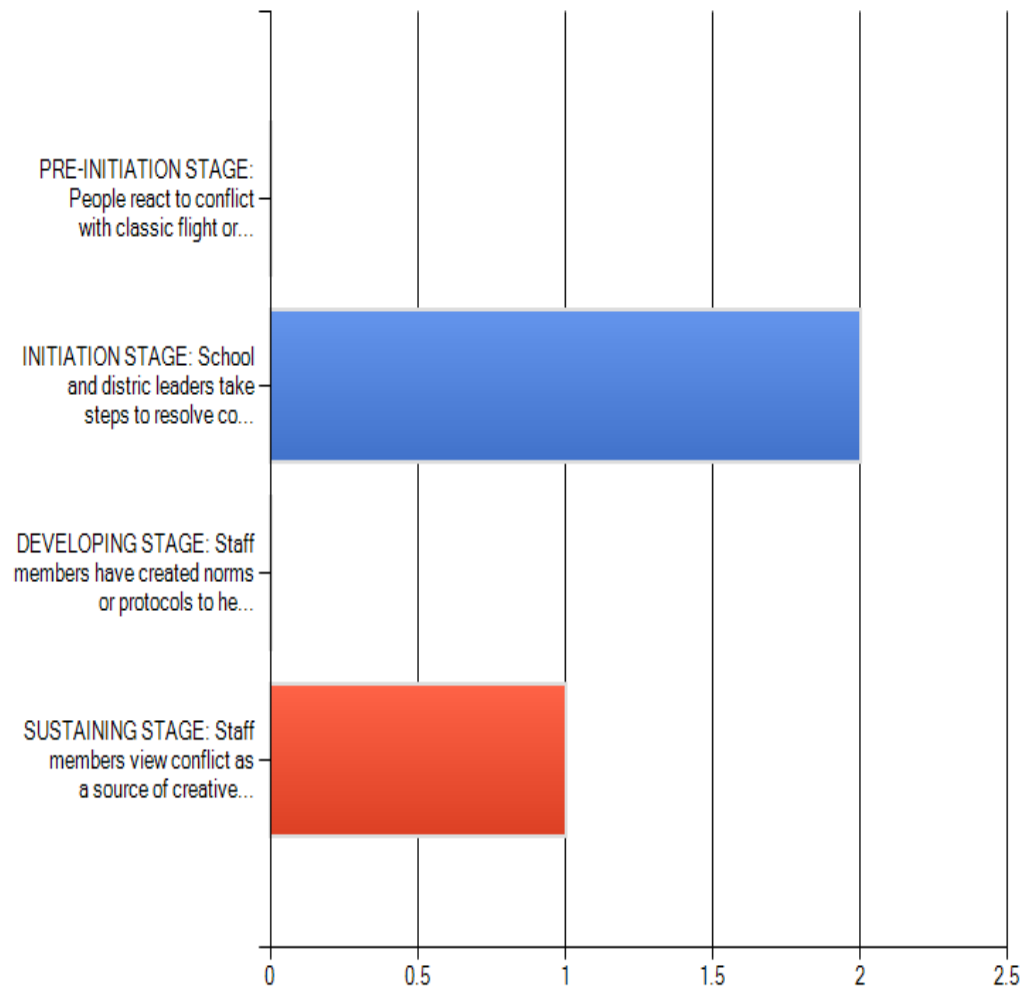
Figure 24. Responding to conflict, school C - How does your school/department respond to conflict in a PLC?

7. Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

8. Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

9. Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Each of the research questions are discussed separately.

Research Question #6 – TAKS 2008

In order to answer the question, *Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?,* it was necessary to apply a test of significance to both the 2008 and the 2009 data for each of the three schools in the study. A simple or one-way analysis of variance (ANOVA) single factor test was applied to the scale scores for all three schools on the 2008 science TAKS for the 10th grade (Tables 9 and 10). The P-value of 2.59E-14 indicates that scientific notation was used because the number was very small; 2.59E-14 is less than the significance level (0.05), so we can conclude that professional learning communities positively affects student achievement in science in this set of data. Also, *F* (31.82488) *is* greater than *F crit*, so again, we can draw the same conclusion from the data. Professional learning communities positively affects student achievement.

Table 9

*Test of Significant Difference for 10th Grade Science TAKS 2008 – ANOVA-Single
Factor*

Groups	Count	Sum	Average	Variance
School A	559	1225771	2192.792	34494.43
School B	731	1633677	2234.852	35265.45
School C	548	1180172	2153.599	27809.46

Table 10

Test of Significant Difference for 10th Grade Science TAKS 2008 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2088248	2	1044124	31.82488	2.59E-14	3.000628
Within Groups	60203448	1835	32808.42			
Total	62291696	1837				

Note: Alpha Level .05

Research Question #6 – TAKS 2009

The same research question, *Do the science achievement scores of 10th graders in
a large high school implementing professional learning communities differ from those in
similar schools not implementing professional learning communities?*, was also answered
by using scores TAKS scores for 2009. In order to check the student achievement data for
statistical significance, a simple or one-way analysis of variance (ANOVA) single factor
test was applied to the scale scores for all three schools on the 2009 science TAKS for the
10th grade (Tables 11 and 12). The P-value of 4E-05 indicates that scientific notation was

used because the number was very small; 4E-05 is less than the significance level (0.05), so we can conclude that professional learning communities positively affects student achievement in science in this set of data. Also, *F* (10.13589) *is* greater than *F crit*, so again, we can draw the same conclusion. Professional learning communities positively affects student achievement.

Table 11

Test of Significant Difference for 10th Grade Science TAKS 2009 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	529	1184348	2238.843	29764.57
School B	723	1614771	2233.432	38026.67
School C	526	1153687	2193.321	30299.41

Table 12

Test of Significant Difference for 10th Grade Science TAKS 2009 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	674715.2	2	337357.6	10.13589	4E-05	3.00079
Within Groups	59078140	1775	33283.46			
Total	59752855	1777				

Note: Alpha Level .05

In order to answer the question, *Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?,* it was necessary to apply a test of significance to the data.

To check the student achievement data for statistical significance, a simple or one-way analysis of variance (ANOVA) single factor test was applied to the scale scores for all three schools on the 2008 science TAKS for the 11th grade (Tables 13 and 14). The P-value of 2.28E-21 indicates that scientific notation was used because the number was very small; 2.28E-21 is less than the significance level (0.05), so we can conclude that professional learning communities positively affects student achievement in science in this set of data. Also, *F* (49.10137) *is* greater than *F crit*, so again, we can reach the same conclusion. Professional learning communities positively affects student achievement.

Table 13

Test of Significant Difference for 11th Grade Science TAKS 2008 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	456	1018157	2232.800	17849.22
School B	544	1230270	2261.526	22269.83
School C	471	1023834	2173.745	20301.10

Table 14

Test of Significant Difference for 11th Grade Science TAKS 2008 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1990508	2	995253.8	49.10137	2.28E-21	3.001854
Within Groups	29755432	1468	20269.37			
Total	31745939	1470				

Note: Alpha Level .05

Research Question #7 – TAKS 2009

The same question, *Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?,* can be answered by examining a second year of student achievement data. A simple or one-way analysis of variance (ANOVA) single factor test was applied to the scale scores for all three schools on the 2009 science TAKS for the 2009 science TAKS for the 11th grade (Tables 15 and 16). The P-value of 7E-14 indicates that scientific notation was used because the number was very small; 7E-14 is less than the significance level (0.05), so we can conclude that professional learning communities positively affects student achievement in science in this set of data. Also, *F* (30.84555) *is* greater than *F crit*, so again, we can make the same conclusion from the data. Professional learning communities positively affects student achievement.

Table 15

Test of Significant Difference for 11th Grade Science TAKS 2009 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	469	1066809	2274.646	19585.76
School B	623	1430033	2295.398	24281.92
School C	537	1196502	2228.123	20681.57

Table 16

Test of Significant Difference for 11th Grade Science TAKS 2009 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1341376	2	670687.9	30.84555	7E-14	3.00126
Within Groups	35354812	1626	21743.43			
Total	36696188	1628				

Note: Alpha Level .05

Research Question #8 – 2008 Science TAKS - 10th Grade

The data for both 2008 and 2009 for the 10th and 11th grades was also examined further to answer the question, *Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?* In Texas, student scores are rated as *Commended* when the student achieves a minimum scale score of 2400.

In order to test the Commended scores for significance, the scale scores of 2400 and higher were sorted so that a simple or one-way analysis of variance (ANOVA) single factor test could be applied to only the *Commended* scores for all three schools on the 2008 science TAKS for the 10th grade (Tables 17 and 18). The P-value for this set of data was 0.168193. Because this value is greater than the significance level (0.05), we cannot conclude that professional learning communities make a difference in the Commended scores for this set of data. Also, *F* (1.790856) *is not* greater than *F crit*, so again, we cannot conclude that professional learning communities have an impact on Commended scores. There is not a difference in the mean commended scores between the three schools in this set of data; therefore, we can conclude that professional learning communities negatively impacts Commended performance for science student achievement.

Table 17

Test of Significant Difference for 10th Grade Commended Science TAKS 2008 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	97	240676	2481.196	9054.159
School B	169	419748	2483.716	12559.99
School C	125	307874	2462.992	5455.089

Table 18

Test of Significant Difference for 10th Grade Commended Science TAKS 2008 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	33746.65	2	16873.32	1.790856	0.168193	3.018982
Within Groups	3655709	388	9421.929			
Total	3689455	390				

Note: Alpha Level .05

Research Question #8 – 2008 Science TAKS - 11th Grade

A simple or one-way analysis of variance (ANOVA) single factor test was also applied to only the Commended scores for all three schools on the 2008 science TAKS for the 11th grade (Tables 19 and 20). The P-value for this set of data was 0.3188. Because this value is greater than the significance level (0.05), we cannot conclude that professional learning communities have an impact on Commended student achievement.

Table 19

Test of Significant Difference for 11th Grade Commended Science TAKS 2008 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	64	156815	2450.234	4049.135
School B	125	307874	2462.992	5455.089
School C	38	93014	2447.737	2938.902

Table 20

Test of Significant Difference for 11th Grade Commended Science TAKS 2008 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	10672.45	2	5336.223	1.149047	0.3188	3.036156
Within Groups	1040266	224	4644.044			
Total	1050938	226				

Note: Alpha Level .05

Also, *F* (1.149047) *is not* greater than *F crit*, so again, we cannot conclude that there is a difference in the Commended scores for schools implementing professional learning communities. There is not sufficient evidence at the alpha level of 0.05. There is not a difference in the mean commended scores between the three schools in this set of data; therefore, we can conclude that professional learning communities negatively impacts Commended performance for science student achievement.

Research Question #8 – 2009 Science TAKS - 10th Grade

In the next set of commended scores, a simple or one-way analysis of variance (ANOVA) single factor test was also applied to the scale scores for all three schools on the 2009 science TAKS for the 10th grade (Tables 21 and 22). The P-value of 0.03544 indicates that there is moderately strong evidence to conclude that professional learning communities positively affects science Commended student achievement; 0.03544 is less than the significance level (0.05), so we can conclude that professional learning communities positively affects the commended scores in science in this set of data. Also,

F (3.37523) *is* greater than *F crit*, so again, we can draw the same conclusion.

Professional learning communities positively affect Commended score in science

achievement.

Table 21

Test of Significant Difference for 10th Grade Commended Science TAKS 2009 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	102	254758	2497.627	12964.65
School B	147	370208	2518.422	16332.74
School C	72	178208	2475.111	10105.03

Table 22

Test of Significant Difference for 10th Grade Commended Science TAKS 2009 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	93646.01	2	46823	3.37523	0.03544	3.024132
Within Groups	4411467	318	13872.54			
Total	4505113	320				

Note: Alpha Level .05

Research Question #8 – 2009 Science TAKS - 11th Grade

In the final set of commended scores, a simple or one-way analysis of variance

(ANOVA) single factor test was also applied to the scale scores for all three schools on

the 2009 science TAKS for the 11th grade (Tables 23 and 24). The P-value of 0.020006

indicates that there is moderately strong evidence to conclude that professional learning communities positively affects science Commended student achievement; 0.020006 is less than the significance level (0.05), so the null hypothesis can be rejected and it can be assumed that professional learning communities affects the Commended scores in science in this set of data. Also, F (3.951442) *is* greater than *F crit*, so again, we can draw the same conclusion. Professional learning communities positively affects Commended score in science achievement.

Table 23

Test of Significant Difference for 11th Grade Commended Science TAKS 2009 – ANOVA-Single Factor

Groups	Count	Sum	Average	Variance
School A	115	283194	2462.557	8224.933
School B	189	468958	2481.259	8642.14
School C	87	213228	2450.897	5424.164

Table 24

Test of Significant Difference for 11th Grade Commended Science TAKS 2009 – ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	61692.25	2	30846.12	3.951442	0.020006	3.018982
Within Groups	3028843	388	7806.296			
Total	3090535	390				

Note: Alpha Level .05

Additional quantitative data were collected to answer the research question, *Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?* This data were found on the Academic Excellence Indicator System (AEIS) report found online at the Texas Education website for each school. Because the data is reported one year behind, completion rate data on the 2008 AEIS reported the number and percentage of completers for the Class of 2007 and completion rate data on the 2009 AEIS reported the number and percentage of completers for the Class of 2008. Tables 25 and 26 show the completion rate data for School A and Tables 27 and 28 show the data for School B. No data were found on the AEIS for School C. The school's report stated, "Completion data not evaluated for your accountability rating due to grade span, small numbers, or no data."

Table 25

Completion Rate Data – School A – Class of 2007

All Students	Economically Disadvantaged	White	Hispanic	African American
89.1%	76.6%	92.2%	86.5%	68.8%

Table 26

Completion Rate Data – School A – Class of 2008

All Students	Economically Disadvantaged	White	Hispanic	African American
90.9%	81.6%	92.6%	86.5%	92.9%

Table 27

Completion Rate Data – School B – Class of 2007

All Students	Economically Disadvantaged	White	Hispanic	African American
88.5%	79.9%	92.3%	80.0%	75.0%

Table 28

Completion Rate Data – School B – Class of 2008

All Students	Economically Disadvantaged	White	Hispanic	African American
89.0%	79.1%	93.5%	78.9%	85.7%

Overall, the data show that School A's completion rate was higher than School B for the *All Students* category on both the 2008 and 2009 AEIS reports. It was also higher in 2009 for School A's economically disadvantaged; however, School B's completion rate of 19.9% for 2008 was slightly higher than School A's rate of 76.6% for this same group. In 2008, School A had a completion rate of 86.5% for Hispanic students and School B had a rate of 80%. School A's completion rate for Hispanic students was also higher than School B in 2009. School A had a completion rate of 86.5% for this group compared to 78.9% for School B. Overall, School B's completion rate was slightly higher than School A for White students. Data shows that School A had a completion rate of 92.2% for White students in 2008 and a rate of 92.3% in 2009 while School B was at 92.3% and 93.5% respectively. Results for African-American students show that in 2008, School B had a higher completion rate of 75% while School A's rate was at 68.8%. In

2009, the results were reversed. School A had a rate of 92.9% for African-American students while School B's rate was 85.7%.

Summary

In summary, results of this study indicated that the implementation of professional learning community concepts and practices in large high schools does have a positive effect on student achievement in science. After careful analysis of the survey data and archived quantitative data for all three schools involved in this two-year study, it appears that there is a definite difference between the achievement in science of a large high school implementing professional learning community concepts and practices as compared to two large high schools not implementing professional learning community concepts and practices . When an ANOVA statistical test was applied to the scale scores on the 2008 and 2009 science TAKS for all students, in every case the data showed that professional learning communities make a difference in student achievement. When results of the *Commended* scores of 2400 and above were isolated for all three schools, the results show that there was no statistical difference for the data of the three schools in 2008; however there was a moderate statistical difference for both the 9th and the 10th grade in 2009. Finally, the overall completion rate for the school implementing professional learning communities was higher than that of School B for both years of the study.

Having reviewed the related literature and collected and analyzed the data in this study, conclusions and recommendations for further study can be made. These are presented in Chapter Five.

CHAPTER FIVE

Summary and Discussion

The purpose of this study was to compare the science achievement and high school completion rates of students in a large high school implementing professional learning community concepts and practices with two large high schools not participating in professional learning community concepts and practices. The primary methodology employed was a causal-comparative quantitative study. Information regarding student achievement and professional learning community concepts and practices was collected. The data collected included: archived 2008 and 2009 Texas Academic Knowledge and Skills (TAKS) test scores obtained from Confidential Student Rosters provided by the Texas Education Agency; archived high school completion rate data obtained online from the Texas Education Agency's Academic Excellence Indicator System for 2008 and 2009; and survey responses from science teachers, administrators, science instructional facilitators, and science department heads.

Data collection and analysis for this study was designed to answer the overarching research question, *Does the implementation of professional learning community concepts and practices in the science department of a large high school promote learning and achievement in science?* The study also proposed to determine the following:

1) What professional learning community concepts and practices are being implemented in large high schools?

2) At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?

3) Are professional learning community concepts and practices being implemented in schools that don't have a formal plan for professional learning communities?

4) Which professional learning community concepts and practices are being fully implemented in large high schools?

5) Which professional learning community concepts and practices are not being implemented in large high schools?

6) Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

7) Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

8) Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

9) Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Limitations and assumptions of this study included the following:

- The study was limited to one large Texas high school implementing PLC concepts and practices in a unique geographic region.

- The study only examined the perceptions of science teachers regarding the level of implementation of PLC concepts and practices at School A. As such, the study did not examine the perceptions of students, parents, or administrators.

- The study was limited to only one department within a large high school.

- The study was limited to those concepts of PLCs identified by DuFour, DuFour, Eaker and Many (2006).

- It was assumed that the teachers from School A gave an accurate rating for each PLC concept.

- It was assumed that the campus administrator, science department head, and other key instructional leader from School C gave an accurate rating for each PLC concept.

- The survey included all science teachers in the department. Teachers new to the department have only participated as a part of the PLC for one school year.

- It was assumed that the comparison of TAKS scores would indicate the impact of PLC concepts and practices on student achievement in science and high school completion rates.

- It was assumed that science achievement is higher in schools where PLC concepts and practices are being implemented.

- It was assumed that the two comparison schools were not implementing PLC concepts and practices.

- It was assumed that information regarding school demographics was accurately reported and the schools in comparison were similar in demographics and size.

- The study was limited by researcher bias. The researcher is an administrator in the District of the high school implementing the PLC concepts and practices; however, the researcher believed that she was able to interpret the data objectively.

- The study was limited by the data collected. The data collected may not have been the best way to evaluate the effectiveness of a PLC.

- It was assumed that all completion rate data were accurately and honestly reported to the Texas Education Agency. There appears to be one loophole in the State's data collection system. Students whose parents withdraw them to home school are not considered in a school's cohort. Texas schools must maintain proper documentation that a student withdrew to home school. The Texas Education does not actually verify that students are being taught while coded as home schooled.

Information in this chapter provides the following: (a) a summary of the major findings related to each research question; (b) conclusions based on the findings; (c) implications for practice; and (d) recommendations for further study.

Summary of Major Findings

Research Question #1

What professional learning community concepts and practices are being implemented in large high schools?

The researcher surveyed participants at Schools A and C to determine if professional learning community concepts and practices identified by DuFour et al. (2006) were being implemented in large high schools. School B did not participate in the survey. Survey results indicated the following:

Professional learning community concept #1: A clear and compelling purpose. Major practices of this concept include a clearly articulated mission, shared vision, and shared values. Five questions were asked of participants to ascertain what practices are being implemented:

- Is it evident that learning for all is your school/department's purpose?

- Does your school/department know what they are trying to create?

- How must your school/department behave to advance your vision?

- What are your school/department's priorities?

- How does your school/department communicate what is important?

Both School A and School C participant responses indicated that their science department is implementing practices associated with this PLC concept.

Professional learning community concept #2: A focus on learning. Major practices of this concept include measurable performance goals, effective communication of school priorities, clarity regarding what students must know and be able to do, and

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assessing whether the students have learned the essential curriculum**.** Two questions were asked of participants to ascertain which of these practices are being implemented:

- Is there clarity regarding what students must know and be able to do?

- Does your department assess whether students have learned the essential curriculum?

Participant responses indicated that practices associated with this concept were present at School A and School C.

Professional learning community concept #3: Responding when some students don't learn. The major practice for this professional learning community concept is the implementation of systematic interventions to ensure students receive additional time and support for learning. One question was asked of participants to determine if this practice existed:

- Does your department provide systematic interventions that ensure students receive additional time and support for learning?

Participant responses indicated that practices associated with this concept were present at School A and School C.

Professional learning community concept #4: Building a collaborative culture of a professional learning community. The major practice of this professional learning community concept is the focus on issues that directly impact student learning. The existence of this practice was determined by asking one question:

- *Do collaborative teams of teachers focus on issues that directly impact student learning?*

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Responses from participants indicate that practices associated with this concept were present at both School A and School C.

Professional learning community concept #5: Results orientation. The major practice associated with this professional learning community concept is the focus on results that impacts schools, teams, and teachers. One question was asked to determine whether or not this concept exists at each of the schools who participated in the survey:

- Does your department create a focus on results that impacts schools, teams and teachers?

Responses for this question show that practices for this professional learning concept was present at School A and C.

Professional learning community concept #6: Using evidence of student learning. This professional learning concept is characterized by practices which focus on results. Participants were asked one related question:

- *Is your team focused on results?*

Results indicate that practices related to this concept were present at School A and C.

Professional learning community concept #7: Responding to conflict. This professional learning concept is characterized by practices which allow for effective response to conflict among staff members. Participants were asked to respond to one question:

- *How does your school/department respond to conflict in a PLC?*

Participants indicated that this concept and associated practices were being implemented at School A and School C.

Major Conclusion for Research Question #1

There is evidence from the above findings that the professional learning community concepts and practices identified by DuFour et al. (2006) were being implemented in both of the large high schools that participated in the researcher's survey. School A was the large high school implementing a formal plan for professional learning communities while School C was the large high school not implementing a formal plan for professional learning communities.

Research Question #2

At what level are professional learning community concepts and practices being implemented in a large high school with an identified professional learning communities plan compared to schools with no identified plan?

The researcher determined the level of implementation of professional learning community concepts and practices in a large high school with an identified professional learning communities plan compared to schools with no identified plan through the use of a survey. Participants at Schools A and C rated the level of implementation of the concepts and practices identified by DuFour et al. (2006) using a four-point continuum. School B did not participate in the survey. Survey results indicated the following:

A clear and compelling purpose. The following observations were made about participant responses related to this concept:

- The school with an identified professional learning communities plan (School A) reported a higher level of implementation of practices for this concept.

- Participants in the school with an identified professional learning communities plan selected the *sustaining* stage of implementation on the majority (3 of 5) of questions.

- Results for participants at the school with no identified professional learning communities plan (School C) indicated that there were no questions (0 of 5) for which the school was in the *sustaining* stage of implementation.

A focus on learning. The following observations were made about participant responses related to this concept:

- The school with an identified professional learning communities plan more frequently selected the *sustaining* stage of implementation on both questions (9 of 16).

- Participants at the school with no identified professional learning communities plan selected the following stages of implementation for practices on both questions: *initiation* (1 of 3), d*eveloping* (1 of 3), and *sustaining* (1 of 3).

Responding when some students don't learn. The following observations were made about participant responses related to this concept:

- The majority of participants in the school with an identified professional learning communities plan who answered the question for this concept (9 of 15) selected either the *developing* or *sustaining* stage of implementation.

- Participants at the school with no identified professional learning communities plan selected the following stages of implementation on both questions: *initiation* (1 of 3), d*eveloping* (1 of 3), and *sustaining* (1 of 3). No level of implementation of practices for this concept was clearly predominant.

Building a collaborative culture of a professional learning community. The following observations were made about participant responses related to this concept:

- The majority of participants (9 of 15) at the school with an identified professional learning communities plan selected the *sustaining* stage of implementation for practices related to this concept.

- All participants (3 of 3) at the school without an identified professional learning communities plan selected *developing* as the level of implementation for practices related to this professional learning community concept.

Results orientation. The following observations were made about participant responses related to this concept:

- The majority of participants (7 of 13) at the school with an identified professional learning communities plan selected the *sustaining* stage of implementation for practices related to this concept.

- All participants (3 of 3) at the school without an identified professional learning communities plan selected *developing* as the level of implementation for practices related to this professional learning community concept.

Using evidence of student learning. The following observations were made about participant responses related to this concept:

- The majority of participants (7 of 13) at the school with an identified professional learning communities plan selected the *sustaining* stage of implementation for practices related to this concept.

- All participants (3 of 3) at the school without an identified professional learning communities plan selected *developing* as the level of implementation for practices related to this professional learning community concept.

Responding to conflict. The following observations were made about participant responses related to this concept:

- The majority of participants (6 of 13) at the school with an identified professional learning communities plan selected the *developing* stage of implementation for practices related to this concept.

- The majority of participants (2 of 3) at the school without an identified professional learning communities plan selected the *initiation* stage as the level of implementation for practices related to this professional learning community concept.

Major Conclusion for Research Question #2

There is evidence from the above findings that the professional learning community concepts and practices identified by DuFour et al. (2006) are more frequently being implemented at the *developing* or *sustaining* stage for School A, the large high school with an identified plan for professional learning communities. School C, the

school without an identified plan for professional learning communities reported sporadic levels of implementation which most often range from the *initiation* stage of implementation to the *developing* stage.

Research Question #3

Are professional learning community concepts and practices being implemented in schools that don't have a formal plan for professional learning communities?

Data collected in this study as summarized for research questions #1 and #2 indicated that professional learning community concepts and practices as identified by DuFour et al. (2006) exist at a large high school that does not have a formal plan for professional learning communities.

Major Conclusion for Research Question #3

The data from this study indicate that professional learning community concepts and practices exist at a large high school that does not have a formal plan for professional learning communities in place.

Research Question #4

Which professional learning community concepts and practices are being fully implemented in large high schools?

Full implementation, for the purpose of this study, was measured by participants' selection of the *sustaining* stage of implementation occurring most frequently for a concept and/or practice. According to the data, the following concepts and practices are being fully implemented in large highs schools:

- Mission — The school with a formal plan for professional learning communities, School A, is fully implementing the practice of a clearly articulated mission as evidenced by the results on the question, *Is it evident that learning for all is your school/department's purpose?* This is the only practice being fully implemented for the concept, A Clear and Compelling Purpose.

- A Focus on Learning — Major practices of this concept include measurable performance goals, effective communication of school priorities, clarity regarding what students must know and be able to do, and assessing whether the students have learned the essential curriculum**.** This concept and associated practices are being fully implemented at School A according to the data collected on two questions. The majority of participants at School A rated the practices as being in the *sustaining* stage of implementation.

- A Collaborative Culture — This concept and the practice of teams focusing directly on issues that directly impact student learning is being fully implemented at School A.

- Using Goals to Focus on Results — This concept and the practice of teams focusing on the results that impact schools, teams and teachers is being fully implemented at School A as evidenced by the majority of survey participants selecting *sustaining* as the level of implementation.

- Using Evidence of Student Learning — This concept and the practice of teams focusing on results is being fully implemented at School A. The majority of

participants selected the *sustaining* level of implementation for the associated question.

Major Conclusion for Research Question #4

The data for this research question clearly indicates that only the school with a formal plan for professional learning communities (School A) is fully implementing concepts and practices identified by DuFour et al. (2006). The school without a formal plan (School C) is not fully implementing any professional learning community concepts and practices.

Research Question #5

Which professional learning community concepts and practices are not being implemented in large high schools?

The evidence in this study shows that all professional learning community concepts and practices are being implemented in large high schools to some degree at both schools with and without a formal implementation plan.

Major Conclusion for Research Question #5

The data in this study indicated that professional learning community concepts and practices are being implemented in large high schools to some degree regardless of whether there was a formal plan in place for professional learning communities.

Research Question #6

Do the science achievement scores of 10th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Tenth grade TAKS scores from 2008 and 2009 were analyzed for three schools using a simple one-way analysis of variance. The results for both years of the analysis indicated a difference in the achievement scores of 10th graders in a large high school implementing professional learning communities as compared to those in similar schools not implementing professional learning communities. Because of this difference, the researcher concluded that the implementation of professional learning communities in large high schools with 2,000 or more students positively affects student achievement.

Major Conclusion for Research Question #6

A review of two years of science achievement data for 10th graders in large high schools of more than 2,000 students indicated that professional learning communities has a positive impact on student achievement.

Research Question #7

Do the science achievement scores of 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Eleventh grade TAKS scores from 2008 and 2009 were analyzed for three schools using a simple one-way analysis of variance. The results for both years of the analysis indicated a difference in the achievement scores of 11th graders in a large high school implementing professional learning communities as compared to those in similar schools

not implementing professional learning communities. Because of this difference, the researcher concluded that the implementation of professional learning communities in large high schools with 2,000 or more students positively affects student achievement.

Major Conclusion for Research Question #7

A review of two years of science achievement data for 11th graders in large high schools of more than 2,000 students indicated that professional learning communities has a positive impact on student achievement.

Research Question #8

Do the Commended scores of 10th and 11th graders in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

Results on Commended TAKS scores are mixed. The Commended scores for 10th and 11th grade TAKS from 2008 and 2009 were analyzed for three schools using a simple one-way analysis of variance. The results for the analysis of 2008 scores indicated that there was not a difference in the Commended achievement scores of 10th and 11th graders in a large high school implementing professional learning communities as compared to those in similar schools not implementing professional learning communities. Because of this difference, the researcher concluded that the implementation of professional learning communities in large high schools with 2,000 or more students does not affect student achievement. When 2009 Commended scores were examined for all three schools, there was moderate evidence to conclude that professional learning communities affect student achievement for those students who are rated as Commended on TAKS.

Major Conclusion for Research Question #8

A review of two years of Commended science achievement data for 10th and 11th graders in large high schools of more than 2,000 students was mixed. In 2008, the data indicated that professional learning communities negatively impact the Commended achievement of students in schools implementing professional learning communities. In 2009, the data indicated that there was a moderately positive impact on Commended student achievement for schools implementing a formal professional learning communities plan.

Research Question #9

Do the Completion Rates of students in a large high school implementing professional learning communities differ from those in similar schools not implementing professional learning communities?

The completion rates of students for School A and School B were examined for 2008 and 2009 to determine if there was a difference for large high schools implementing professional learning communities when compared to similar schools not implementing professional learning communities. No results were available for School B. Results indicated that completion rates for the *All Students* category for both years were higher in the school implementing professional learning communities than in the school not implementing professional learning communities. When analyzed by student subgroups, the results were inconsistent. The school not implementing professional learning communities sometimes had a higher completion rate.

Major Conclusion for Research Question #9

High school completion rates are positively impacted by the implementation of a professional learning communities plan.

Summary of Major Conclusions for Research Questions 1-9

This study began with the belief that large high schools implementing professional learning communities had higher achievement results than schools that do not have a formal professional learning communities plan. The data indicate that this was the case. Final conclusions of this study include the following:

1. Schools with identified professional learning community implementation plans have a higher level of implementation of concepts and practices identified by DuFour et al. (2006).

2. Professional learning community concepts and practices positively affect science student achievement in large high schools with 2,000 or more students.

3. The implementation of professional learning communities in large high schools with 2,000 or more students does not appear to have an impact on students' Commended performance on the TAKS.

4. The high school completion rate for *all students* is higher for large high schools implementing a formal professional learning communities plan.

Implications for Practice

Based on the findings of the study, the following actions are recommended:

1. Continue the development of professional learning community concepts and practices in order to increase the level of implementation in every area.

2. Evaluate professional learning community concepts and practices which can attribute to the performance of high achievers so that they can fully master state assessments in science.

3. Identify professional learning community concepts and practices which have the greatest impact on students who come to high school failing the 8th grade state science assessment.

4. Identify student leavers from current cohorts and engage teachers in discussions regarding professional learning community concepts and practices which can be used to guarantee that students are successful in learning.

5. Develop a formal plan to address the implementation of professional learning community concepts and practices.

Recommendations for Further Study

This study has answered the overarching question, *Does the implementation of professional learning community concepts and practices in the science department of a large high school promote learning and achievement in science?* Results from the analysis of the data raise further questions which should be studied in order to more fully understand the impact of professional learning communities upon student achievement. Future studies which should be conducted include the following:

1. A study should be done to determine how many students are not receiving a high school diploma solely on not meeting the standard on the science TAKS compared to similar schools not implementing professional learning communities.

2. A studying analyzing leaver data for large high schools should be conducted to describe what happens to students who do not complete high school.

3. A study should be conducted to determine teacher perceptions of professional learning community concepts and practices and the degree to which the concept and/or practice impacts student achievement.

4. A longitudinal study should be conducted to examine the achievement of students who are in schools implementing professional learning communities.

5. In-depth interviews with follow-up questions with teachers at each school may help to clarify the data collected on the survey and allow the researcher to assure that the level of implementation of PLC concepts and practices is accurate.

6. Having the science teachers in all three schools participate in the survey regarding PLC concepts and practices might assure a greater interpretation of what concepts and practices may be occurring in schools without a formal PLC plan.

Concluding Remarks

The researcher has become fascinated with the power of collaborative teams in the school improvement process. Interest in this area began as a result of working with math and science specialists at the Charles A. Dana Center at the University of Texas

who modeled the collaborative process as they led teachers through what they call the *Professional Teaching Model* (PTM). Observing math and science teachers engage in meaningful dialogue about curriculum and instruction reinforced the importance of building knowledge and change through shared understanding. This led the researcher to select the topic of professional learning communities to study. The data have reinforced the personal beliefs of the researcher regarding collaboration as a tool to school improvement.

As a result of this study and the researcher's personal experience with collaborative teacher teams over a five-year period, the following five significant observations can be made about professional learning communities:

1. The effective implementation of the concepts and practices associated with professional learning communities requires a unique kind of collaboration which is more difficult for secondary teachers who have traditionally worked in isolation.

2. Collaboration on the development of curriculum and instruction affects student achievement.

3. Collaboration on the development of formative assessments increases teacher knowledge of state standards and provides a clear picture of each student's level of proficiency.

4. It takes several years for teams to learn to work together as a professional learning community.

5. Professional learning communities have a greater potential to transform traditional classrooms and increase the rigor of classroom instruction than any other framework that has been attempted.

APPENDICES

APPENDIX A

Survey Instrument

1. Professional Learning Communities Survey

Please consider this opportunity to participate in a study that I am conducting regarding professional learning community concepts and practices in large high schools.

This study is being conducted in fulfillment of the dissertation requirement for my doctorate at Baylor University. This study will be conducted under the supervision of the Professor and Director of Graduate Programs, Department of Curriculum and Instruction, Betty Conaway.

The purpose of my study is to identify professional learning community concepts and practices and their level of implementation in large high schools.

I would like for you to participate in this survey which will take approximately 20 minutes of your time. It will focus on your experiences with and opinions of collaboration within your science department.

The data and practices will be used to understand the level of implementation of professional learning community concepts and practices in your science department. I may use the information for publication or presentations to interested groups. However, your identity and that of your school will always be kept confidential. I will not use any information that would reveal your identity.

To ensure confidentiality, the survey and notes will be printed and kept in a locked file for no more than five years. All information on the SurveyMonkey web-based software program will be deleted after the completion of this study. Only my supervisor and I will have access to the data.

While this survey is completely anonymous, electronic communication may be subject to interception, legally by your employer or illegally by another party, while the information is in transit. Therefore, it is possible that your information might be seen by another party and I cannot control whether that happens. None of the information requested is of a personal nature and you will not be asked to provide your name.

Participating in this survey is completely voluntary and there is no penalty for stopping the survey or loss of benefit for terminating participation. At not time will you or any participant be at risk of harm.

I can be reached at scobra@sbcglobal.net or at (254) 780-2798. Dr. Betty Conaway can be reached at betty_conaway@baylor.edu or at (254) 710-6115.

Please direct all inquiries to Dr. John Smith, Department of Psychology, Baylor University, Box 97334, Waco, TX, 76798. Dr. Smith can also be reached at (254) 710-2961. If you have any questions regarding your rights as a participant, or any other aspect of the research as it relates to you as a participant, please contact the Baylor University Committee for Protection of Human Subjects in Research, Dr. Michael E. Sherr, Chair, Baylor University, P. O. Box 97334, Waco, TX 76798. Dr. Sherr may also be reached at (254) 710-4483.

Your participation in this online survey indicates that you have read and understood this form, are aware of your rights as a participant, and have agreed to participate in this research.

Thank you for your interest.

Sincerely,

Susan Kincannon

2. A Clear and Compelling Purpose

There is a correlation between clarity of purpose and effective schools (Lezotte, 1991).

Please rate your department on each of the following elements by selecting the statement which best describes your current status.

*1. Is it evident that learning for all is your school/department's purpose?

○ PRE-INITIATION STAGE: No effort has been made to engage teachers in identifying what they want students to learn or how they will respond if students do not learn. Teachers view the mission of their department as teaching rather than learning.

○ INITIATION STAGE: An attempt has been made, typically by the central office, to identify learning outcomes for all grade levels or courses, but this attempt has not impacted the practice of most teachers. Responding to students who are not learning is left to the discretion of individual teachers.

○ DEVELOPING STAGE: Teachers are clear regarding the learning outcomes their students are to achieve. They have developed strategies to assess student mastery of these outcomes, they monitor the results, and they attempt to respond to students who are not learning.

○ SUSTAINING STAGE: Learning outcomes are clearly articulated to all stakeholders in the school/department, and each student's attainment of the outcomes is carefully monitored. The school/department has developed systems to provide more time and support for students experiencing initial difficulty in achieving the outcomes. The practices, programs and policies of the school/department are continually assessed on the basis of their impact on learning. Staff members work together to enhance their effectiveness in helping students achieve learning outcomes.

*2. Does your school/department know what they are trying to create?

○ PRE-INITIATION STAGE: No effort has been made to engage the school/department in describing preferred conditions for their school/department.

○ INITIATION STAGE: A vision statement has been developed for the school/department, but most teachers are unaware of or are unaffected by it.

○ DEVELOPING STAGE: Teachers have worked together to describe the school/department they are trying to create. They have endorsed this general description and feel a sense of ownership to it. School/department improvement planning and staff development initiatives are tied to the shared vision.

○ SUSTAINING STAGE: Teachers routinely articulate the major principles of the shared vision and use those principles to guide their day-to-day efforts and decisions. They honestly assess the current reality in their department and continually seek effective strategies for reducing the discrepancies between the conditions described in the vision statement and their current reality.

*3. How must your school/department behave to advance your vision?

○ PRE-INITIATION STAGE: Teachers have not yet articulated the attitudes, behaviors, or commitments they are prepared to demonstrate in order to advance the mission of learning for all and the vision of what the school/department might become. If they discuss improvement, they focus on what others must do.

○ INITIATION STAGE: Teachers have articulated statements of beliefs or philosophy for their school/department; however, these value statements have not yet impacted their day-to-day work or the operation of the school.

○ DEVELOPING STAGE: Teachers have made a conscious effort to articulate and promote the attitudes, behaviors, and commitments that will advance their vision of the department. Examples of the core values at work are shared in stories and celebrations. People are confronted when they behave in ways that are inconsistent with the core values.

○ SUSTAINING STAGE: The values of the school/department are embedded in the school/department culture. These shared values are evident to new staff and to those outside the school/department. They influence policy, procedures, and daily practices as well as day-to-day decisions of individual teachers.

*4. What are your school/department's priorities?

○ PRE-INITIATION STAGE: No effort has been made to engage the teachers in setting and defining department school improvement goals related to student learning. If goals exist, they have been developed by the administration.

○ INITIATION STAGE: Teachers have participated in a process to establish goals, but the goals are typically stated as objectives to be accomplished or written so broadly that they are impossible to measure. The goals do not yet influence instructional decisions in a meaningful way.

○ DEVELOPING STAGE: Teachers have worked together to establish long- and short-term improvement goals for their department. The goals are clearly communicated. Assessment tools and strategies have been developed and implemented to measure progress toward the goals.

○ SUSTAINING STAGE: All teachers pursue measurable performance goals as part of their routine responsibilities. Goals are clearly linked to the school's shared vision. Goal attainment is celebrated and teachers demonstrate willingness to identify and pursue challenging stretch goals.

*5. How does your school/department communicate what is important?

○ PRE-INITIATION STAGE: There is no clear, consistent message regarding the priorities of the department or the school. Initiatives are changing constantly and different people seem to have different pet projects.

○ INITIATION STAGE: A small group of leaders in the department or the school is declaring the importance of a program or initiative. Their efforts have yet to impact practice to any significant degree.

○ DEVELOPING STAGE: The department or school is beginning to align practices with stated priorities. New structures have been created to support the initiative, resources have been re-allocated, and systems for monitoring the priorities have been put into place. Evidence of progress is noted and publicly celebrated.

○ SUSTAINING STAGE: The priorities of the department or school are demonstrated in the everyday practices and procedures of the department and the assumptions, beliefs, and behaviors of the teachers. The priorities are evident to students, parents, new staff members, and even visitors to the department. Stories of extraordinary commitment to the priorities are part of the lore that binds people together.

3. A Focus on Learning Focus on Learning

Schools are most effective when they are focused on high levels of learning for ALL students.

Please rate your department on each of the following elements by selecting the statement which best describes your current status.

*1. Is there clarity regarding what students must know and be able to do?

○ PRE-INITIATION STAGE: There has been little effort to establish a common curriculum for students. Teachers are free to determine what they will teach and how long they will teach it.

○ INITIATION STAGE: District leaders have established curriculum guidelines that attempt to align the district curriculum with state standards. Representative teachers may have assisted in developing the curriculum guides. The materials have been distributed to each school, but there is no process to determine whether the designated curriculum is actually being taught.

○ DEVELOPING STAGE: Teachers have worked with colleagues to review state standards and district curriculum guides. They have attempted to clarify the meaning of the standards, establish pacing guides, and identify strategies for teaching the content effectively.

○ SUSTAINING STAGE: Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student achievement, and expectations of the next course or grade level. As a result of this collective inquiry, teachers have established the essential learning for each unit of instruction and are committed to instruct their students in the essential learning according to the team's agreed upon pacing guide. They know the criteria they will use in judging the quality of student work, and they practice applying those criteria until they can do so consistently. They demonstrate a high level of commitment to the essential curriculum, to their students, and to their teammates.

*2. Does your department assess whether students have learned the essential curriculum?

○ PRE-INITIATION STAGE: Each teacher creates the assessments he or she will use to monitor student learning. Assessments may vary widely in format and rigor from one to another. The assessments are used primarily to assign grades rather than to inform teacher and student practice. State or provincial tests are administered, but teachers pay little attention to the results.

○ INITIATION STAGE: District officials analyze the results of state and provincial tests and report the results to each school. Principals are expected to work with staff to improve upon the results. The district may also administer district-level assessments in core curricular areas. These assessments have been created by key central office personnel, by representative teachers serving on district committees, or by testing companies who have sold their services to the district. Classroom teachers typically feel little commitment to the assessments and pay little attention to the results.

○ DEVELOPING STAGE: Teachers have worked together to analyze results from state and district tests and to develop improvement strategies to apply in their classrooms. They have discussed how to assess student learning on a consistent and equitable basis. Parameters are established for assessments, and individual teachers are asked to honor those parameters as they create tests for their students. Teachers of the same course or grade level may create a common final exam to help identify strengths and weaknesses in their program.

○ SUSTAINING STAGE: Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state or provincial standards and district curriculum guides. The teams have established the specific proficiency standards each student must achieve on each skill. The team administers common assessments multiple times throughout the school year and analyzes the results together. Team members then use the results to inform and improve their individual and collective practice, to identify students who need additional time and support for learning, and to help students monitor their own progress toward agreed-upon standards.

4. How We Respond When Some Students Don't Learn

Professional learning communities create a systematic process of interventions to ensure students receive additional time and support for learning when they experience difficulty. The intervention process is timely and students are directed rather than invited to utilize the system of time and support.

Please rate your department on the following elements by selecting the statement which best describes your current status.

*1. Does your department provide systematic interventions that ensure students receive additional time and support for learning?

○ PRE-INITIATION STAGE: There is no systematic plan either to monitor student achievement on a timely basis or to respond to students who are not learning with additional time and support. What happens when students experience difficulty in learning will depend entirely upon the teacher to whom they are assigned.

○ INITIATION STAGE: The department has created opportunities for students to receive additional time and support for learning before and after school. Students are invited rather than required to get this support. Many of the students who are most in need of help choose not to pursue it.

○ DEVELOPING STAGE: The department has begun a program of providing time and support for learning within the school day, but unwillingness to deviate from the traditional schedule is limiting the effectiveness of the program. The staff has retained its traditional 9-week grading periods, and it is difficult to determine which students need additional time and support until the end of the first quarter. Additional support is only offered at a specific time of the day or week (for example, over the lunch period or only on Wednesdays), and the department is experiencing difficulty in serving all the students who need help during the limited time allotted.

○ SUSTAINING STAGE: The department has a highly coordinated, sequential system in place. The system is proactive: it identifies and makes plans for students to receive extra support even before they enroll. The achievement of each student is monitored on a timely basis. Students who experience difficulty are required, rather than invited, to put in extra time and utilize extra support. The plan is multi-layered. If the current level of support is not sufficient, there are additional levels of increased time and support. Most importantly, all students are guaranteed access to this systematic intervention regardless of the teacher to whom they are assigned.

5. A Collaborative Culture

Teachers should be organized into structures that allow them to engage in meaningful collaboration that is beneficial to them and their students.

Please rate your department on the following elements by selecting the statement which best describes your current status.

*1. Do collaborative teams of teachers focus on issues that directly impact student learning?

○ PRE-INITIATION STAGE: There is no systematic plan in place to assign staff members to teams or provide them with time to collaborate. Teachers work in isolation with little awareness of the strategies, methods, or materials used by their colleagues.

○ INITIATION STAGE: Some structures have been put into place for teachers who may be interested in collaborating. Teachers are encouraged but not required to participate. Topics tend to focus on matters other than classroom instruction and student learning.

○ DEVELOPING STAGE: Time has been provided during the contractual day for teachers to work together in teams on a regular basis (at least once a week). Guidelines have been established in an effort to ensure teachers use collaborative time to address topics that will impact instruction. Teams are attempting to develop positive relationships and implement specific procedures, but they may not be convinced the collaborative team process is beneficial. Leaders of the school are seeking ways to monitor the effectiveness of the teams.

○ SUSTAINING STAGE: Self-directed teams represent the primary engine of continuous improvement in the school. Team members are skillful in advocacy and inquiry, hold each other accountable for honoring the commitments they have made to one another, consistently focus on the issues that are most significant in improving student achievement, and set specific measurable goals to monitor improvement. The collaboration team process serves as a powerful form of job-embedded staff development, helping both individual members and the team in general become more effective in helping students learn at high levels. Teachers consider their collaborative culture vital to the effectiveness of their department.

6. Using Goals to Focus on Results

We are more effective when we are clear about our priorities and focus on results.

Please rate your department on the following element by selecting the statement which best describes your current status.

*1. Does your department create a focus on results that impacts schools, teams and teachers?

○ PRE-INITIATION STAGE: There is no effort to establish specific district goals to impact the direction of each school. The district reacts to problems as they arise and does little to either focus on the future or promote continuous improvement.

○ INITIATION STAGE: The district establishes multiple long-range goals as part of a comprehensive strategic planning process. Schools may create annual school improvement plans in response to district requirements, but those plans have little impact upon classroom instruction.

○ DEVELOPING STAGE: The district has identified a few key goals. Every school then adopts goals designed to help the district achieve its targets. Every collaborative team in every school adopts SMART goals specifically aligned with its school goals. A process is in place to monitor each team's progress throughout the year.

○ SUSTAINING STAGE: Educators throughout the district have a results orientation. Collaborative teams of teachers establish both annual goals and a series of short term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans. This tangible evidence of results guides the work of teams as part of a continuous improvement process. Each member understands the goals of the team, how those goals relate to school and district goals, and how he or she can contribute to achieving the goals.

7. Using Evidence of Student Learning

In a professional learning community, educators are hungry for evidence of student learning. Relevant, timely information is the essential fuel of their continuous improvement cycle.

Please rate your department on the following element by selecting the statement which best describes your current status.

*1. Is your team focused on results?

○ PRE-INITIATION STAGE: There are no processes to use results as a tool for improvement. Teachers fall into a predictable pattern: They teach, they test, they hope for the best, and then they move on to the next unit.

○ INITIATION STAGE: District leaders analyze results from high-stakes tests such as state and provincial examinations. Data are shared with each school, and principals are encouraged to review the results and address weaknesses as part of their school improvement plans.

○ DEVELOPING STAGE: The school has created a specific process to bring together collaborative teams of teachers several times throughout the year to analyze the results from common formative assessments. Teams identify areas of concern and discuss strategies for improving the collective results. Assessments are also used to identify students who are experiencing difficulty, and the school/department creates systems to provide those students with additional time and support for learning.

○ SUSTAINING STAGE: Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources. Results from their common formative assessments are compared to results from state and provincial assessments to validate the effectiveness of their local assessments. Teachers use results to identify strengths and weaknesses in their individual practice, to help each other address areas of concern, and to improve their effectiveness in helping all students learn. Strategically linked SMART goals drive the work of each collaborative team. Analysis of the performance of individual students enables the team and school to create efficient and timely interventions. Improved results and achievement of goals are the basis for a culture of celebration within classrooms, the school, and the district.

8. Responding to Conflict

The real strength of a PLC is determined by the response to the disagreements and violations of commitments that inevitably occur.

Please rate your department on the following element by selecting the statement which best describes your current status.

1. How does your school/department respond to conflict in a PLC?

○ PRE-INITIATION STAGE: People react to conflict with classic flight or fight responses. Most staff members withdraw from interactions in order to avoid those they find disagreeable. Others are perpetually at war in acrimonious, unproductive arguments that never seem to get resolved. People seem more interested in winning arguments than in resolving differences.

○ INITIATION STAGE: School and district leaders take steps to resolve conflict as quickly as possible. Addressing conflict is viewed as an administrative responsibility. The primary objective of administrators in addressing disputes is to restore the peace.

○ DEVELOPING STAGE: Staff members have created norms or protocols to help them identify and address the underlying issues causing conflict. Members are encouraged to explore their positions and the fundamental assumptions that have led them to their positions. They attempt to use a few key, guiding principles to assist them in coming to closure.

○ SUSTAINING STAGE: Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as be understood. They seek ways to test competing assumptions through action research and are willing to re-think their position when research, data, and information contradict their suppositions. Because they have found common ground on their purpose and priorities, they are able to approach disagreements with high levels of trust and an assumption of good intentions on the part of all members.

Thank you for participating in this survey regarding PLC concepts.

School A Survey Results

Professional Learning Community Concepts School A

Is it evident that learning for all is your school/department's purpose?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: No effort has been made to engage teachers in identifying what they want students to learn or how they will respond if students do not learn. Teachers view the mission of their department as teaching rather than learning.	0.0%	0
INITIATION STAGE: An attempt has been made, typically by the central office, to identify learning outcomes for all grade levels or courses, but this attempt has not impacted the practice of most teachers. Responding to students who are not learning is left to the discretion of individual teachers.	6.3%	1
DEVELOPING STAGE: Teachers are clear regarding the learning outcomes their students are to achieve. They have developed strategies to assess student mastery of these outcomes, they monitor the results, and they attempt to respond to students who are not learning.	37.5%	6
SUSTAINING STAGE: Learning outcomes are clearly articulated to all stakeholders in the school/department, and each student's attainment of the outcomes is carefully monitored. The school/department has developed systems to provide more time and support for students experiencing initial difficulty in achieving the outcomes. The practices, programs and policies of the school/department are continually assessed on the basis of their impact on learning. Staff members work together to enhance their effectiveness in helping students achieve learning outcomes.	56.3%	9
answered question		**16**
skipped question		**0**

Professional Learning Community Concepts School A

Does your school/department know what they are trying to create?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: No effort has been made to engage the school/department in describing preferred conditions for their school/department.	0.0%	0
INITIATION STAGE: A vision statement has been developed for the school/department, but most teachers are unaware of or are unaffected by it.	12.5%	2
DEVELOPING STAGE: Teachers have worked together to describe the school/department they are trying to create. They have endorsed this general description and feel a sense of ownership to it. School/department improvement planning and staff development initiatives are tied to the shared vision.	56.3%	9
SUSTAINING STAGE: Teachers routinely articulate the major principles of the shared vision and use those principles to guide their day-to-day efforts and decisions. They honestly assess the current reality in their department and continually seek effective strategies for reducing the discrepancies between the conditions described in the vision statement and their current reality.	31.3%	5
	answered question	16
	skipped question	0

Professional Learning Community Concepts School A

How must your school/department behave to advance your vision?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: Teachers have not yet articulated the attitudes, behaviors, or commitments they are prepared to demonstrate in order to advance the mission of learning for all and the vision of what the school/department might become. If they discuss improvement, they focus on what others must do.	0.0%	0
INITIATION STAGE: Teachers have articulated statements of beliefs or philosophy for their school/department; however, these value statements have not yet impacted their day-to-day work or the operation of the school.	25.0%	4
DEVELOPING STAGE: Teachers have made a conscious effort to articulate and promote the attitudes, behaviors, and commitments that will advance their vision of the department. Examples of the core values at work are shared in stories and celebrations. People are confronted when they behave in ways that are inconsistent with the core values.	50.0%	8
SUSTAINING STAGE: The values of the school/department are embedded in the school/department culture. These shared values are evident to new staff and to those outside the school/department. They influence policy, procedures, and daily practices as well as day-to-day decisions of individual teachers.	25.0%	4
	answered question	**16**
	skipped question	**0**

Professional Learning Community Concepts School A

What are your school/department's priorities?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: No effort has been made to engage the teachers in setting and defining department school improvement goals related to student learning. If goals exist, they have been developed by the administration.	0.0%	0
INITIATION STAGE: Teachers have participated in a process to establish goals, but the goals are typically stated as objectives to be accomplished or written so broadly that they are impossible to measure. The goals do not yet influence instructional decisions in a meaningful way.	25.0%	4
DEVELOPING STAGE: Teachers have worked together to establish long- and short-term improvement goals for their department. The goals are clearly communicated. Assessment tools and strategies have been developed and implemented to measure progress toward the goals.	37.5%	6
SUSTAINING STAGE: All teachers pursue measurable performance goals as part of their routine responsibilities. Goals are clearly linked to the school's shared vision. Goal attainment is celebrated and teachers demonstrate willingness to identify and pursue challenging stretch goals.	37.5%	6
answered question		**16**
skipped question		**0**

Professional Learning Community Concepts School A

How does your school/department communicate what is important?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no clear, consistent message regarding the priorities of the department or the school. Initiatives are changing constantly and different people seem to have different pet projects.	0.0%	0
INITIATION STAGE: A small group of leaders in the department or the school is declaring the importance of a program or initiative. Their efforts have yet to impact practice to any significant degree.	6.3%	1
DEVELOPING STAGE: The department or school is beginning to align practices with stated priorities. New structures have been created to support the initiative, resources have been re-allocated, and systems for monitoring the priorities have been put into place. Evidence of progress is noted and publicly celebrated.	62.5%	10
SUSTAINING STAGE: The priorities of the department or school are demonstrated in the everyday practices and procedures of the department and the assumptions, beliefs, and behaviors of the teachers. The priorities are evident to students, parents, new staff members, and even visitors to the department. Stories of extraordinary commitment to the priorities are part of the lore that binds people together.	31.3%	5
answered question		16
skipped question		0

Professional Learning Community Concepts School A

Is there clarity regarding what students must know and be able to do?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There has been little effort to establish a common curriculum for students. Teachers are free to determine what they will teach and how long they will teach it.	0.0%	0
INITIATION STAGE: District leaders have established curriculum guidelines that attempt to align the district curriculum with state standards. Representative teachers may have assisted in developing the curriculum guides. The materials have been distributed to each school, but there is no process to determine whether the designated curriculum is actually being taught.	13.3%	2
DEVELOPING STAGE: Teachers have worked with colleagues to review state standards and district curriculum guides. They have attempted to clarify the meaning of the standards, establish pacing guides, and identify strategies for teaching the content effectively.	26.7%	4
SUSTAINING STAGE: Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student achievement, and expectations of the next course or grade level. As a result of this collective inquiry, teachers have established the essential learning for each unit of instruction and are committed to instruct their students in the essential learning according to the team's agreed-upon pacing guide. They know the criteria they will use in judging the quality of student work, and they practice applying those criteria until they can do so consistently. They demonstrate a high level of commitment to the essential curriculum, to their students, and to their teammates.	60.0%	9
answered question		**15**
skipped question		**1**

Professional Learning Community Concepts School A

Does your department assess whether students have learned the essential curriculum?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: Each teacher creates the assessments he or she will use to monitor student learning. Assessments may vary widely in format and rigor from one to another. The assessments are used primarily to assign grades rather than to inform teacher and student practice. State or provincial tests are administered, but teachers pay little attention to the results.	0.0%	0
INITIATION STAGE: District officials analyze the results of state and provincial tests and report the results to each school. Principals are expected to work with staff to improve upon the results. The district may also administer district-level assessments in core curricular areas. These assessments have been created by key central office personnel, by representative teachers serving on district committees, or by testing companies who have sold their services to the district. Classroom teachers typically feel little commitment to the assessments and pay little attention to the results.	13.3%	2
DEVELOPING STAGE: Teachers have worked together to analyze results from state and district tests and to develop improvement strategies to apply in their classrooms. They have discussed how to assess student learning on a consistent and equitable basis. Parameters are established for assessments, and individual teachers are asked to honor those parameters as they create tests for their students. Teachers of the same course or grade level may create a common final exam to help identify strengths and weaknesses in their program.	26.7%	4
SUSTAINING STAGE: Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state or provincial standards and district curriculum guides. The teams have established the specific proficiency standards each student must achieve on each skill. The team administers common assessments multiple times throughout the school year and analyzes the results together. Team members then use the results to inform and improve their individual and collective practice, to identify students who need additional time and support for learning, and to help students monitor their own progress toward agreed-upon standards.	60.0%	9
answered question		**15**
skipped question		**1**

Professional Learning Community Concepts School A

Does your department provide systematic interventions that ensure students receive additional time and support for learning?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no systematic plan either to monitor student achievement on a timely basis or to respond to students who are not learning with additional time and support. What happens when students experience difficulty in learning will depend entirely upon the teacher to whom they are assigned.	0.0%	0
INITIATION STAGE: The department has created opportunities for students to receive additional time and support for learning before and after school. Students are invited rather than required to get this support. Many of the students who are most in need of help choose not to pursue it.	40.0%	6
DEVELOPING STAGE: The department has begun a program of providing time and support for learning within the school day, but unwillingness to deviate from the traditional schedule is limiting the effectiveness of the program. The staff has retained its traditional 9-week grading periods, and it is difficult to determine which students need additional time and support until the end of the first quarter. Additional support is only offered at a specific time of the day or week (for example, over the lunch period or only on Wednesdays), and the department is experiencing difficulty in serving all the students who need help during the limited time allotted.	20.0%	3
SUSTAINING STAGE: The department has a highly coordinated, sequential system in place. The system is proactive: it identifies and makes plans for students to receive extra support even before they enroll. The achievement of each student is monitored on a timely basis. Students who experience difficulty are required, rather than invited, to put in extra time and utilize extra support. The plan is multi-layered. If the current level of support is not sufficient, there are additional levels of increased time and support. Most importantly, all students are guaranteed access to this systematic intervention regardless of the teacher to whom they are assigned.	40.0%	6
answered question		**15**
skipped question		**1**

195

Professional Learning Community Concepts School A

Do collaborative teams of teachers focus on issues that directly impact student learning?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no systematic plan in place to assign staff members to teams or provide them with time to collaborate. Teachers work in isolation with little awareness of the strategies, methods, or materials used by their colleagues.	0.0%	0
INITIATION STAGE: Some structures have been put into place for teachers who may be interested in collaborating. Teachers are encouraged but not required to participate. Topics tend to focus on matters other than classroom instruction and student learning.	6.7%	1
DEVELOPING STAGE: Time has been provided during the contractual day for teachers to work together in teams on a regular basis (at least once a week). Guidelines have been established in an effort to ensure teachers use collaborative time to address topics that will impact instruction. Teams are attempting to develop positive relationships and implement specific procedures, but they may not be convinced the collaborative team process is beneficial. Leaders of the school are seeking ways to monitor the effectiveness of the teams.	33.3%	5
SUSTAINING STAGE: Self-directed teams represent the primary engine of continuous improvement in the school. Team members are skillful in advocacy and inquiry, hold each other accountable for honoring the commitments they have made to one another, consistently focus on the issues that are most significant in improving student achievement, and set specific measurable goals to monitor improvement. The collaboration team process serves as a powerful form of job-embedded staff development, helping both individual members and the team in general become more effective in helping students learn at high levels. Teachers consider their collaborative culture vital to the effectiveness of their department.	60.0%	9
	answered question	15
	skipped question	1

196

Professional Learning Community Concepts School A

Does your department create a focus on results that impacts schools, teams and teachers?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no effort to establish specific district goals to impact the direction of each school. The district reacts to problems as they arise and does little to either focus on the future or promote continuous improvement.	0.0%	0
INITIATION STAGE: The district establishes multiple long-range goals as part of a comprehensive strategic planning process. Schools may create annual school improvement plans in response to district requirements, but those plans have little impact upon classroom instruction.	23.1%	3
DEVELOPING STAGE: The district has identified a few key goals. Every school then adopts goals designed to help the district achieve its targets. Every collaborative team in every school adopts SMART goals specifically aligned with its school goals. A process is in place to monitor each team's progress throughout the year.	23.1%	3
SUSTAINING STAGE: Educators throughout the district have a results orientation. Collaborative teams of teachers establish both annual goals and a series of short term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans. This tangible evidence of results guides the work of teams as part of a continuous improvement process. Each member understands the goals of the team, how those goals relate to school and district goals, and how he or she can contribute to achieving the goals.	53.8%	7
answered question		13
skipped question		3

Professional Learning Community Concepts School A

Is your team focused on results?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There are no processes to use results as a tool for improvement. Teachers fall into a predictable pattern: They teach, they test, they hope for the best, and then they move on to the next unit.	7.7%	1
INITIATION STAGE: District leaders analyze results from high-stakes tests such as state and provincial examinations. Data are shared with each school, and principals are encouraged to review the results and address weaknesses as part of their school improvement plans.	7.7%	1
DEVELOPING STAGE: The school has created a specific process to bring together collaborative teams of teachers several times throughout the year to analyze the results from common formative assessments. Teams identify areas of concern and discuss strategies for improving the collective results. Assessments are also used to identify students who are experiencing difficulty, and the school/department creates systems to provide those students with additional time and support for learning.	30.8%	4
SUSTAINING STAGE: Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources. Results from their common formative assessments are compared to results from state and provincial assessments to validate the effectiveness of their local assessments. Teachers use results to identify strengths and weaknesses in their individual practice, to help each other address areas of concern, and to improve their effectiveness in helping all students learn. Strategically linked SMART goals drive the work of each collaborative team. Analysis of the performance of individual students enables the team and school to create efficient and timely interventions. Improved results and achievement of goals are the basis for a culture of celebration within classrooms, the school, and the district.	53.8%	7
	answered question	13
	skipped question	3

Professional Learning Community Concepts School A

How does your school/department respond to conflict in a PLC?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: People react to conflict with classic flight or fight responses. Most staff members withdraw from interactions in order to avoid those they find disagreeable. Others are perpetually at war in acrimonious, unproductive arguments that never seem to get resolved. People seem more interested in winning arguments than in resolving differences.	15.4%	2
INITIATION STAGE: School and district leaders take steps to resolve conflict as quickly as possible. Addressing conflict is viewed as an administrative responsibility. The primary objective of administrators in addressing disputes is to restore the peace.	23.1%	3
DEVELOPING STAGE: Staff members have created norms or protocols to help them identify and address the underlying issues causing conflict. Members are encouraged to explore their positions and the fundamental assumptions that have led them to their positions. They attempt to use a few key, guiding principles to assist them in coming to closure.	46.2%	6
SUSTAINING STAGE: Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as be understood. They seek ways to test competing assumptions through action research and are willing to re-think their position when research, data, and information contradict their suppositions. Because they have found common ground on their purpose and priorities, they are able to approach disagreements with high levels of trust and an assumption of good intentions on the part of all members.	15.4%	2
	answered question	**13**
	skipped question	**3**

School C Survey Results

Professional Learning Community Concepts School C		
Is it evident that learning for all is your school/department's purpose?		
Answer Options	**Response Percent**	**Response Count**
PRE-INITIATION STAGE: No effort has been made to engage teachers in identifying what they want students to learn or how they will respond if students do not learn. Teachers view the mission of their department as teaching rather than learning.	0.0%	0
INITIATION STAGE: An attempt has been made, typically by the central office, to identify learning outcomes for all grade levels or courses, but this attempt has not impacted the practice of most teachers. Responding to students who are not learning is left to the discretion of individual teachers.	0.0%	0
DEVELOPING STAGE: Teachers are clear regarding the learning outcomes their students are to achieve. They have developed strategies to assess student mastery of these outcomes, they monitor the results, and they attempt to respond to students who are not learning.	100.0%	3
SUSTAINING STAGE: Learning outcomes are clearly articulated to all stakeholders in the school/department, and each student's attainment of the outcomes is carefully monitored. The school/department has developed systems to provide more time and support for students experiencing initial difficulty in achieving the outcomes. The practices, programs and policies of the school/department are continually assessed on the basis of their impact on learning. Staff members work together to enhance their effectiveness in helping students achieve learning outcomes.	0.0%	0
answered question		3
skipped question		0

Professional Learning Community Concepts School C

Does your school/department know what they are trying to create?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: No effort has been made to engage the school/department in describing preferred conditions for their school/department.	0.0%	0
INITIATION STAGE: A vision statement has been developed for the school/department, but most teachers are unaware of or are unaffected by it.	33.3%	1
DEVELOPING STAGE: Teachers have worked together to describe the school/department they are trying to create. They have endorsed this general description and feel a sense of ownership to it. School/department improvement planning and staff development initiatives are tied to the shared vision.	66.7%	2
SUSTAINING STAGE: Teachers routinely articulate the major principles of the shared vision and use those principles to guide their day-to-day efforts and decisions. They honestly assess the current reality in their department and continually seek effective strategies for reducing the discrepancies between the conditions described in the vision statement and their current reality.	0.0%	0
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

How must your school/department behave to advance your vision?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: Teachers have not yet articulated the attitudes, behaviors, or commitments they are prepared to demonstrate in order to advance the mission of learning for all and the vision of what the school/department might become. If they discuss improvement, they focus on what others must do.	0.0%	0
INITIATION STAGE: Teachers have articulated statements of beliefs or philosophy for their school/department; however, these value statements have not yet impacted their day-to-day work or the operation of the school.	0.0%	0
DEVELOPING STAGE: Teachers have made a conscious effort to articulate and promote the attitudes, behaviors, and commitments that will advance their vision of the department. Examples of the core values at work are shared in stories and celebrations. People are confronted when they behave in ways that are inconsistent with the core values.	100.0%	3
SUSTAINING STAGE: The values of the school/department are embedded in the school/department culture. These shared values are evident to new staff and to those outside the school/department. They influence policy, procedures, and daily practices as well as day-to-day decisions of individual teachers.	0.0%	0
answered question		3
skipped question		0

Professional Learning Community Concepts School C

What are your school/department's priorities?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: No effort has been made to engage the teachers in setting and defining department school improvement goals related to student learning. If goals exist, they have been developed by the administration.	0.0%	0
INITIATION STAGE: Teachers have participated in a process to establish goals, but the goals are typically stated as objectives to be accomplished or written so broadly that they are impossible to measure. The goals do not yet influence instructional decisions in a meaningful way.	0.0%	0
DEVELOPING STAGE: Teachers have worked together to establish long- and short-term improvement goals for their department. The goals are clearly communicated. Assessment tools and strategies have been developed and implemented to measure progress toward the goals.	66.7%	2
SUSTAINING STAGE: All teachers pursue measurable performance goals as part of their routine responsibilities. Goals are clearly linked to the school's shared vision. Goal attainment is celebrated and teachers demonstrate willingness to identify and pursue challenging stretch goals.	33.3%	1
answered question		3
skipped question		0

Professional Learning Community Concepts School C

How does your school/department communicate what is important?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no clear, consistent message regarding the priorities of the department or the school. Initiatives are changing constantly and different people seem to have different pet projects.	0.0%	0
INITIATION STAGE: A small group of leaders in the department or the school is declaring the importance of a program or initiative. Their efforts have yet to impact practice to any significant degree.	0.0%	0
DEVELOPING STAGE: The department or school is beginning to align practices with stated priorities. New structures have been created to support the initiative, resources have been re-allocated, and systems for monitoring the priorities have been put into place. Evidence of progress is noted and publicly celebrated.	66.7%	2
SUSTAINING STAGE: The priorities of the department or school are demonstrated in the everyday practices and procedures of the department and the assumptions, beliefs, and behaviors of the teachers. The priorities are evident to students, parents, new staff members, and even visitors to the department. Stories of extraordinary commitment to the priorities are part of the lore that binds people together.	33.3%	1
answered question		3
skipped question		0

Professional Learning Community Concepts School C

Is there clarity regarding what students must know and be able to do?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There has been little effort to establish a common curriculum for students. Teachers are free to determine what they will teach and how long they will teach it.	0.0%	0
INITIATION STAGE: District leaders have established curriculum guidelines that attempt to align the district curriculum with state standards. Representative teachers may have assisted in developing the curriculum guides. The materials have been distributed to each school, but there is no process to determine whether the designated curriculum is actually being taught.	33.3%	1
DEVELOPING STAGE: Teachers have worked with colleagues to review state standards and district curriculum guides. They have attempted to clarify the meaning of the standards, establish pacing guides, and identify strategies for teaching the content effectively.	33.3%	1
SUSTAINING STAGE: Teachers have worked in collaborative teams to build shared knowledge regarding state standards, district curriculum guides, trends in student achievement, and expectations of the next course or grade level. As a result of this collective inquiry, teachers have established the essential learning for each unit of instruction and are committed to instruct their students in the essential learning according to the team's agreed-upon pacing guide. They know the criteria they will use in judging the quality of student work, and they practice applying those criteria until they can do so consistently. They demonstrate a high level of commitment to the essential curriculum, to their students, and to their teammates.	33.3%	1
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

Does your department assess whether students have learned the essential curriculum?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: Each teacher creates the assessments he or she will use to monitor student learning. Assessments may vary widely in format and rigor from one to another. The assessments are used primarily to assign grades rather than to inform teacher and student practice. State or provincial tests are administered, but teachers pay little attention to the results.	0.0%	0
INITIATION STAGE: District officials analyze the results of state and provincial tests and report the results to each school. Principals are expected to work with staff to improve upon the results. The district may also administer district-level assessments in core curricular areas. These assessments have been created by key central office personnel, by representative teachers serving on district committees, or by testing companies who have sold their services to the district. Classroom teachers typically feel little commitment to the assessments and pay little attention to the results.	33.3%	1
DEVELOPING STAGE: Teachers have worked together to analyze results from state and district tests and to develop improvement strategies to apply in their classrooms. They have discussed how to assess student learning on a consistent and equitable basis. Parameters are established for assessments, and individual teachers are asked to honor those parameters as they create tests for their students. Teachers of the same course or grade level may create a common final exam to help identify strengths and weaknesses in their program.	33.3%	1
SUSTAINING STAGE: Every teacher has worked with colleagues to develop a series of common, formative assessments that are aligned with state or provincial standards and district curriculum guides. The teams have established the specific proficiency standards each student must achieve on each skill. The team administers common assessments multiple times throughout the school year and analyzes the results together. Team members then use the results to inform and improve their individual and collective practice, to identify students who need additional time and support for learning, and to help students monitor their own progress toward agreed-upon standards.	33.3%	1
answered question		**3**
skipped question		**0**

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Professional Learning Community Concepts School C

Does your department provide systematic interventions that ensure students receive additional time and support for learning?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no systematic plan either to monitor student achievement on a timely basis or to respond to students who are not learning with additional time and support. What happens when students experience difficulty in learning will depend entirely upon the teacher to whom they are assigned.	0.0%	0
INITIATION STAGE: The department has created opportunities for students to receive additional time and support for learning before and after school. Students are invited rather than required to get this support. Many of the students who are most in need of help choose not to pursue it.	33.3%	1
DEVELOPING STAGE: The department has begun a program of providing time and support for learning within the school day, but unwillingness to deviate from the traditional schedule is limiting the effectiveness of the program. The staff has retained its traditional 9-week grading periods, and it is difficult to determine which students need additional time and support until the end of the first quarter. Additional support is only offered at a specific time of the day or week (for example, over the lunch period or only on Wednesdays), and the department is experiencing difficulty in serving all the students who need help during the limited time allotted.	33.3%	1
SUSTAINING STAGE: The department has a highly coordinated, sequential system in place. The system is proactive: it identifies and makes plans for students to receive extra support even before they enroll. The achievement of each student is monitored on a timely basis. Students who experience difficulty are required, rather than invited, to put in extra time and utilize extra support. The plan is multi-layered. If the current level of support is not sufficient, there are additional levels of increased time and support. Most importantly, all students are guaranteed access to this systematic intervention regardless of the teacher to whom they are assigned.	33.3%	1
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

Do collaborative teams of teachers focus on issues that directly impact student learning?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no systematic plan in place to assign staff members to teams or provide them with time to collaborate. Teachers work in isolation with little awareness of the strategies, methods, or materials used by their colleagues.	0.0%	0
INITIATION STAGE: Some structures have been put into place for teachers who may be interested in collaborating. Teachers are encouraged but not required to participate. Topics tend to focus on matters other than classroom instruction and student learning.	0.0%	0
DEVELOPING STAGE: Time has been provided during the contractual day for teachers to work together in teams on a regular basis (at least once a week). Guidelines have been established in an effort to ensure teachers use collaborative time to address topics that will impact instruction. Teams are attempting to develop positive relationships and implement specific procedures, but they may not be convinced the collaborative team process is beneficial. Leaders of the school are seeking ways to monitor the effectiveness of the teams.	100.0%	3
SUSTAINING STAGE: Self-directed teams represent the primary engine of continuous improvement in the school. Team members are skillful in advocacy and inquiry, hold each other accountable for honoring the commitments they have made to one another, consistently focus on the issues that are most significant in improving student achievement, and set specific measurable goals to monitor improvement. The collaboration team process serves as a powerful form of job-embedded staff development, helping both individual members and the team in general become more effective in helping students learn at high levels. Teachers consider their collaborative culture vital to the effectiveness of their department.	0.0%	0
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

Does your department create a focus on results that impacts schools, teams and teachers?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There is no effort to establish specific district goals to impact the direction of each school. The district reacts to problems as they arise and does little to either focus on the future or promote continuous improvement.	0.0%	0
INITIATION STAGE: The district establishes multiple long-range goals as part of a comprehensive strategic planning process. Schools may create annual school improvement plans in response to district requirements, but those plans have little impact upon classroom instruction.	33.3%	1
DEVELOPING STAGE: The district has identified a few key goals. Every school then adopts goals designed to help the district achieve its targets. Every collaborative team in every school adopts SMART goals specifically aligned with its school goals. A process is in place to monitor each team's progress throughout the year.	33.3%	1
SUSTAINING STAGE: Educators throughout the district have a results orientation. Collaborative teams of teachers establish both annual goals and a series of short term goals to monitor their progress. They create specific action plans to achieve goals and clarify the evidence they will gather to assess the impact of their plans. This tangible evidence of results guides the work of teams as part of a continuous improvement process. Each member understands the goals of the team, how those goals relate to school and district goals, and how he or she can contribute to achieving the goals.	33.3%	1
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

Is your team focused on results?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: There are no processes to use results as a tool for improvement. Teachers fall into a predictable pattern: They teach, they test, they hope for the best, and then they move on to the next unit.	0.0%	0
INITIATION STAGE: District leaders analyze results from high-stakes tests such as state and provincial examinations. Data are shared with each school, and principals are encouraged to review the results and address weaknesses as part of their school improvement plans.	33.3%	1
DEVELOPING STAGE: The school has created a specific process to bring together collaborative teams of teachers several times throughout the year to analyze the results from common formative assessments. Teams identify areas of concern and discuss strategies for improving the collective results. Assessments are also used to identify students who are experiencing difficulty, and the school/department creates systems to provide those students with additional time and support for learning.	33.3%	1
SUSTAINING STAGE: Collaborative teams of teachers regard ongoing analysis of results as a critical element in the teaching and learning process. They are hungry for information on student learning and gather and analyze evidence from a variety of sources. Results from their common formative assessments are compared to results from state and provincial assessments to validate the effectiveness of their local assessments. Teachers use results to identify strengths and weaknesses in their individual practice, to help each other address areas of concern, and to improve their effectiveness in helping all students learn. Strategically linked SMART goals drive the work of each collaborative team. Analysis of the performance of individual students enables the team and school to create efficient and timely interventions. Improved results and achievement of goals are the basis for a culture of celebration within classrooms, the school, and the district.	33.3%	1
answered question		**3**
skipped question		**0**

Professional Learning Community Concepts School C

How does your school/department respond to conflict in a PLC?

Answer Options	Response Percent	Response Count
PRE-INITIATION STAGE: People react to conflict with classic flight or fight responses. Most staff members withdraw from interactions in order to avoid those they find disagreeable. Others are perpetually at war in acrimonious, unproductive arguments that never seem to get resolved. People seem more interested in winning arguments than in resolving differences.	0.0%	0
INITIATION STAGE: School and district leaders take steps to resolve conflict as quickly as possible. Addressing conflict is viewed as an administrative responsibility. The primary objective of administrators in addressing disputes is to restore the peace.	66.7%	2
DEVELOPING STAGE: Staff members have created norms or protocols to help them identify and address the underlying issues causing conflict. Members are encouraged to explore their positions and the fundamental assumptions that have led them to their positions. They attempt to use a few key, guiding principles to assist them in coming to closure.	0.0%	0
SUSTAINING STAGE: Staff members view conflict as a source of creative energy and an opportunity for building shared knowledge. They create specific strategies for exploring one another's thinking, and they make a conscious effort to understand as well as be understood. They seek ways to test competing assumptions through action research and are willing to re-think their position when research, data, and information contradict their suppositions. Because they have found common ground on their purpose and priorities, they are able to approach disagreements with high levels of trust and an assumption of good intentions on the part of all members.	33.3%	1
answered question		**3**
skipped question		**0**

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REFERENCES

Association for Career and Technical Education. (2006). *Reinventing the American high school for the 21st century*. Alexandria, VA: Author. Retrieved April 15, 2007, from phttp://www.acteonline.org/policy/legislative_issues/ upload/ACTEHSReform_Full.pdf

Bertani, A., Fullan, M., & Quinn, J. (2004, April). New lessons for district-wide reform: Effective leadership for change at the district level has 10 crucial components. *Educational Leadership, 61*(7), 42-45.

Buffum, A., & Hinman, C. (2006, May/June). Communities: Reigniting passion and purpose. *Leadership, 61,* 16-19.

Chappuis, S., Chappuis, J., & Stiggins, R. (2009). Supporting teacher learning teams. *Educational Leadership, 61*(5), 56-60.

Darling-Hammond, L., & Richardson, N. (2009, February). Teacher learning: What matters? *Educational Leadership, 66,* 46-53.

DuFour, R. (2003, Spring). If we are to call ourselves professionals, we are obligated to use the best practices. Anything less is unacceptable. *National Staff Development Council, 24,* 71-72.

DuFour, R. (2004, May). What is a "professional learning community"? *Educational Leadership, 6*(8), 6-11.

DuFour, R. (2004, Spring). The best staff development is in the workplace, not in a workshop. *National Staff Development Council, 25,* 63-64.

DuFour, R. (2006, Winter). Schools as learning communities: What is a professional learning community? *Insight: Texas Association of School Administrators Professional Journal, 21,* 16-19.

DuFour, R., & DuFour, R. (2006, Summer). Leadership is not a solo act. *Educational Leadership, 19,* 1, 4-5.

DuFour, R., & Eaker, R. (1998). *Professional learning communities at work: Best practices for enhancing student achievement.* Bloomington, IN: Solution Tree.

DuFour, R., DuFour R., & Eaker, R. (2002). *Getting started: Reculturing schools to become professional learning communities*. Bloomington, IN: Solution Tree.

DuFour, R., DuFour, R., & Eaker, R. (Eds.). (2005). *On common ground: The power of professional learning communities.* Bloomington, IN: Solution Tree.

DuFour, R., DuFour R., Eaker, R., & Karhanek, G. (2004). *Whatever it takes: How professional learning communities respond when kids don't learn*. Bloomington, IN: Solution Tree.

DuFour, R., DuFour, R., Eaker, R., & Many, T. (2006). *Learning by doing: A handbook for professional learning communities at work*. Bloomington, IN: Solution Tree.

Evans, R. (1996). *The human side of school change: Reform, resistance, and the real-life problems of innovation*. San Francisco: Jossey-Bass.

Fullan, M. (2005a). *Leadership & sustainability: Systems thinkers in action*. Thousand Oaks, CA: Corwin Press.

Fullan, M. (2005b). Resiliency and sustainability. *School Administrator, 62,* 16-18.

Fullan, M. (2005c). Turnaround leadership. *The Educational Forum, 69,* 174-181.

Fullan, M. (2006). Leading professional learning. *School Administrator, 63,* 10-14.

Fullan, M., Cultress, C. & Kilcher, A. (2005). 8 forces of leaders of change: Presence of the core concepts does not guarantee success, but their absence ensures failure. *Journal of Staff Development, 26*(4), 24-58, 64.

Gates, B. (2005, February 26). *Prepared remarks*. Speech presented for the National Education Summit on High Schools, Washington, DC.

Gay, L. R., Mills, G., & Airasian, P. (2006). *Educational research: competencies for analysis and applications*. (8th ed.). Upper Saddle River, NJ: Pearson Education.

Hall, G. E., & Hord, S. M. (2006). *Implementing change: Patterns, principles, and potholes*. Boston: Pearson Education, Inc.

Hayes, W. (2004). *Are we still a nation at risk two decades later?* Lanham, MD: Scarecrow Education.

Hipp, K. K., Stoll, L., Bolam, R., Wallace, M., McMahon, A., & Thomas, S. et al. (2003). *An international perspective on the development of learning communities*. Lecture presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Hord, S. (2004). *Learning together, leading together: Changing schools through professional learning communities*. New York: Teachers College Press.

Hord, S., & Hirsh, S. (2009). The principal's role in supporting learning communities. *Educational Leadership, 66*(5), 22-23.

Hughes, T. A., & Kritsonis, W. A. (2006, November 1). A national perspective: An exploration of professional learning communities and the impact on school improvement efforts [Electronic version]. *National Journal for Publishing and Mentoring Doctoral Student Research, 1,* 1-12.

Marzano, R., Pickering, D., & Pollock, J. (2001). *Classroom instruction that works: research-based strategies for increasing student achievement.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R., & Waters, T. (2009). *District leadership that works: Striking the right balance.* Bloomington, IN: Solution Tree Press.

Marzano, R., Waters, T., & McNulty, B. (2005). *School leadership that works: From research to results.* Alexandria, VA: Association for Supervision and Curriculum Development.

Mason, S. A. (2003). *Learning from data: The role of professional learning communities.* Lecture presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

McLaughlin, M., & Talbert, J. (2001). *Professional communities and the work of high school teaching.* Chicago: The University of Chicago Press.

National Science Foundation. (2006). *Science and engineering indicators 2006.* Arlington, VA: Author. Retrieved April 15, 2007, from http://www.nsf.gov/statistics/seind06/

Patten, M. (2004). *Understanding research methods: An overview of the essentials* (4th ed.). Glendale, CA: Pyrczak Publishing.

Pearson Educational Measurement Group. (2010). *What is a scaled score, and what does it mean?* Retrieved January 29, 2010, from http://www.pearsoned measurement.com/research/faq_2e.htm

Pink, D. (2005). *A whole new mind: Moving from the information age to the conceptual age*. New York: Riverhead Books.

Reeves, D. B. (2009). *Leading change in your school: How to conquer myths, build commitment, and get results.* Alexandria, VA: Association for Supervision and Curriculum Development.

Riley, K., & Stoll, L. (2004). Inside-out and outside-in: Why schools need to think about communities in new ways. *Education Review, 18*(1), 34-41.

Schlechty, P. (2006). Bureaucracies and learning organizations. *School Administrator, 9*(63), *62.*

Schmoker, M. (2006). *Results now: How we can achieve unprecedented improvements in teaching and learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Senge, P. (2006). *The fifth discipline: The art & practice of the learning organization*. New York: Doubleday.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., & Kleiner A. (2000). *Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who cares about education*. New York: Doubleday.

Sergiovanni, T. J. (1991). *The principalship: A reflective practice perspective*. Boston: Allyn & Bacon.

Smith, D., Wilson, B., & Corbett, D. (2009/ February). Moving beyond talk. *Educational Leadership, 66*(5), 20-25.

Sparks, D. (2001). Why change is so challenging for schools. *National Staff Development Council, 22*(3), 42-47.

Texas Education Agency. (2008). *Accountability manual*. Retrieved on May 15, 2009, from http://ritter.tea.state.tx.us/perfreport/account/2008/manual/index.html

Texas Education Agency. (2009a). *District accountability summary*. Retrieved December 1, 2009, http://ritter.tea.state.tx.us/perfreport/account/2009/index.html

Texas Education Agency. (2009b). *Accountability manual*. Retrieved on September 7, 2009, from http://ritter.tea.state.tx.us/perfreport/account/2009/manual/index.html

Texas Education Agency. (2009c). *Summary of final 2009 AYP results*. Retrieved January 30, 2010, from http://ritter.tea.state.tx.us/ayp/2009/highlights2009.pdf

Texas Education Agency. (2009-2010). *Schools in need of improvement.* Retrieved January 30, 2010, from http://ritter.tea.state.tx.us/nclb/titleia/sip/2009-2010/sip-campus.html

Texas State Board of Education. (2006). *Background information and significant issues.* Retrieved January 30, 2010, from http://www.tea.state.tx.us/index4.aspxZid=4908

The White House. (2002). *No child left behind.* Retrieved February 18, 2007, from http://www.whitehouse.gov/news/reports/no-child-left-behind.html#1

U.S. Department of Education. (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: National Commission on Excellence in Education. Retrieved March 16, 2007, from http://www.ed.gov/pubs/NatAtRisk/index.html

Wei, R., Andree, A., & Darling-Hammond, L. (2009, February). How nations invest in teachers: High-achieving nations treat their teachers as professionals. *Educational Leadership, 66*(5), 28-33.

Wikipedia: The Free Encyclopedia. (2010). Sustainability. Retrieved January 15, 2010, from http://en.wikipedia.org/wiki/Sustainability

Wood, D. E., & Anderson, J. (2003). Towards the learning profession. *Management in Education, 17*(5), 21-24.