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WHAT ARE THE FACTORS OF SUCCESS FOR PROFESSIONAL LEARNING COMMUNITIES IN HIGH SCHOOL?

BY

MICHAEL PATRICK STANTON

B.A., Secondary Education, The University of New Mexico, 1976
M.A., Special Education, The University of New Mexico, 1997

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
Organizational Learning and Instructional Technology

The University of New Mexico
Albuquerque, New Mexico

May, 2009

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DEDICATION

For my sons Bill, Eric, and Jeffrey who I love deeply.

Remember there are tools that help people transform their lives and find solutions for even the most difficult dilemmas.

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There are many people I want to recognize for contributing to my work. First and most importantly, I thank my wife for being my hero, my model of transformative learning, and a most wonderful and supportive partner in life and love for over 33 years. Ginger Blalock, my mentor during my Masters Program first planted the seed that indeed I did have what it would take to achieve a PhD. For Michael Kroth, OLIT PhD and an old friend, who introduced me to my mentor in my transformative doctoral experience, Professor Patsy Boverie. Thank you Patsy for your thoughtfulness, careful listening, and necessary challenges that have brought me to this accomplishment. Dr. Mark Salisbury, Dr. Allison Borden, and Dr. Bruce Noll, I have learned a lot from you and appreciate the many hours you have spent meeting with me outside of your classrooms, reading and providing thoughtful feedback on my work, and caring in the most productive ways. I want to thank the students I have learned with and from especially Happy Miller, of whom I have much in common including the Miller-Stanton Collaborative Problem Solving Model we produced during our Adult Learning Class. Mark Smith, Denny Lister, Mark Pugsly and many other students have been with me on this journey. Thanks and good luck to you in your dissertations. I want to thank the researchers and pioneers in adult learning, school redesign, and collaborative problem solving. I have been able to meet personally in the last five years for more than a handshake at conferences with: Mike Klonsky, Hallie Preskill, Deborah Meier, Deborah Heath, and the folks from Linda Darling-Hammonds Stanford redesign network. Finally, thanks to Winston Brooks, Superintendent of Albuquerque Public Schools, Al Sanchez and Tim McCorkle, principals at Rio Grande and Albuquerque High Schools, and all of the teachers that

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ABSTRACT

High schools suffer from poor performance in attendance, achievement, literacy development, and postsecondary outcomes. Teachers cannot redesign schools by trying harder; new models of collaboration and problem solving are key to transforming their schools. Professional learning communities (PLCs) with professional development in transformative learning, constructivist adult learning theories, and collaborative problem solving may provide the best answer for school change. What are the best processes and methods for high school teachers to transform their frames of reference to solve their common difficult dilemmas while changing their approach to problem solving to improve schools and student proficiency in standards? I collected data in a grounded theory study using interviews, observations, and interview/questionnaire from teachers within four professional learning communities in two low performing high schools in a large urban district. I interviewed 22 participants while making observations of 9 PLC meetings part of a small learning community framework. Participants completed short responses to a

three-item questionnaire at the end of the study. I noted three transformative experiences of participants within the PLCs. The majority of teacher participants believed that the most effective characteristics and components of PLCs was the opportunity to work together for the best learning experiences for their students. Nearly all of the teacher participants believed that the PLC could be a structure for critical reflection to occur for themselves and others. The results did show evidence of transformative learning and collaborative problem solving. Members of a learning community learned new frames of references through their participation in a modestly developed problem solving process and as a result of their own readiness and openness to changing their frame of reference developed from insights that evolved from shared group experiences. Without a clearly developed and maintained process, PLCs demonstrated less evident or developed elements of collaborative problem solving. Without strong direction and effective facilitators, teachers did not consistently and broadly use a collaborative problem solving process. A theoretical model of transformative learning and collaborative problem solving emerged that principals and leaders of high school redesign can use to better facilitate the changes being asked of their teachers.

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CHAPTER 1

INTRODUCTION

The crisis in today's U.S. high schools demands a response that is directed to organizational change and transformation of the learning culture rather than expecting teachers to work harder to improve teaching and learning. Nationally, barely 30 percent of rising freshmen can read at grade level (Lee, Grigg, & Donahue, 2007, as seen in Wise, 2008) while more than 1.2 million U.S. high school students drop out every year (Editorial Projects in Education, 2007). When outcomes are particularly problematic, as these and many other recent statistics demonstrate, a change is demanded that requires more than teachers trying harder under traditional bureaucratic constraints. "Such a shift typically requires new organizational structures" (Darling-Hammond & Friedlaender, 2008). One of the new organizational structures recently being implemented in large comprehensive urban high schools is redesign into smaller learning communities of teachers and students. A recent U.S. Department of Education report, *Implementation Study of Smaller Learning Communities (2008),* states that one of the most widely implemented redesign initiatives, Smaller Learning Communities (SLCs), points to increases in promotion rates from 9th to 10th grade in the average SLC school (Bernstein, Millsap, Schimmentis, & Page, 2008). Other results of note in the study were reduction in violence, increase in attendance and graduation rates, and increases in students attending 2- and 4-year colleges.

These redesigning schools also create opportunities for relationships so that every student in the school is known well by at least one caring adult. Schools implementing SLCs provide more favorable conditions for learning that connect classrooms to the real

world. Such schools provide occasion for more rigorous standard-based teaching and learning in every classroom. For teachers, these redesign efforts with SLCs provide interdisciplinary professional learning communities (PLCs) of three-five teachers who examine student work and collaborate on delivery of learning strategies, mastery of standards, and delivery of curriculum. In addition, these professional learning communities are empowering teachers to collaborate on problem solving and assist in the planning and implementing of the redesign of their schools in order to become more effective. According to Darling-Hammond, "Collaboration has a positive influence on teacher morale" (p. 18). Given these results, these schools surprisingly remain anomalies rather than harbingers of the future.

One of the major problems that affect more widespread and successful implementation of SLCs is the fact that teachers today receive limited and inadequate professional development. According to the SLC Report (Bernstein, Millsap, Schimmentis, & Page, 2008), one goal of the SLC legislation provides professional development for school staff in innovative teaching methods that challenge and engage students, a key strategy used by schools for bringing about school change. Schools in this study reported providing a wide range of professional development activities for their teaching staff, including tailoring instruction to individual student needs (95 percent of schools), subject matter content and curriculum (95 percent), problem solving and reasoning (93 percent), and strategies for helping low-achieving students (90 percent). However, SLC teachers received a little more than three days of professional development per year. According to Darling-Hammond (2008), the schools providing the best results in transforming their organizational structure and improving student

achievement dedicate more than double that time during the year and provide weekly sessions as well.

My premise for this study is that three days of professional development is not enough. A major resource and structure for carrying out the teacher development and learning is within the professional learning communities that meet more frequently throughout the year. This research study will examine existing professional learning communities in redesigning high schools with SLCs and identify the strategies and components contributing to their effectiveness and success. The lens I use in my analysis identifies elements of transformative learning theory, collaborative problem solving methodology, and constructivist learning.

Background of the Study and Definitions of Key Terms

Most education reform leaders agree that schools must change in fundamental ways if they are to accomplish the goals society has for them: teaching our diverse student population for higher order thinking and deep understanding (Darling-Hammond, 1997). In addition, the US Department of Education has directed a major overhaul of the nation's schools. By designating expectations for schools to meet the goal of all students proficient in math and reading standards by 2014, it has identified the Adequate Yearly Progress (AYP) for schools to meet this goal. Those schools that do not meet AYP are under a mandate and often the direct supervision of their school district and state public education department to redesign their curriculum, structure, and culture. Furthermore, a growing number of educators believe that the existing large, assembly-line schools inhibit our students' and teachers' potential. Many feel that such schools should be replaced by smaller schools or ones that are redesigned to have groups of teachers and students

organized within small learning communities. Evidence suggests that small schools produce higher achievement, lower dropout rates, greater attachment to school, and more participation in the curricular and extracurricular activities that prepare students for productive lives (Bernstein, Millsap, Schimmentis, & Page, 2008; Heath, 2004). A number of school districts, especially those in large urban areas, are closing old neighborhood schools that have seen population dwindle along with increasingly low student achievement. They are being reopened as small schools with from 400-800 students, populations that provide opportunities for personalization of teaching and learning, innovation of curriculum, and a safer and more individualized environment in which all students are known well by at least one caring adult (Klonsky, 2002).

Although SLCs can take a variety of forms—career academies, house plans, and strategies such as block scheduling—they all share the common goal of making the high school experience for all students more personalized. SLC structures, considered by the SLC Report as comprehensive restructuring, include the following:

A) Career Academies, a type of school-within-a-school that organizes curricula around one or more careers or occupations. They integrate academic and occupation-related classes.

B) Freshman Academies, also called Ninth Grade Academies, are designed to bridge middle and high school. They respond to the high ninth-grade dropout rate in some high schools.

C) House Plans are composed of students assembled across all grades or by grade level (e.g., all 11th- and 12th-graders) with their own disciplinary policy, student activity program, student government, and social activities.

D) Schools-Within-a-School break large schools into individual schools, which are multiage and may be theme-oriented; they are separate and autonomous units with their own personnel, budgets, and programs.

E) Magnet Schools generally have a core focus (e.g., math and science, the arts). They usually draw their students from the entire district. (Bernstein, Millsap, Schimmentis, & Page, 2008)

SLC strategies, seen as complementing structures or implemented alone, include:

A) Block Scheduling: Class time is extended to blocks of 80–90 minutes, allowing teachers to provide individual attention and to work together in an interdisciplinary fashion on a greater variety of learning activities.

B) Career Clusters, Pathways and Majors: These are broad areas that identify academic and technical skills students need as they transition from high school to postsecondary education and employment.

C) Adult Advocates or Mentors: Trained adult advocates meet with students individually or in small groups on a regular basis over several years, providing support and academic and personal guidance.

D) Teacher Advisory Program: The homeroom period is changed to a teacher advisory period, assigning teachers to a small number of students for whom they are responsible over three or four years of high school.

E) Teacher Teams: Academic teaming organizes teachers across subjects so that teacher teams share responsibility for curriculum, instruction, evaluation, and discipline for the same group of 100 to 150 students (Bernstein, Millsap, Schimmentis, & Page, 2008).

Personalization takes a variety of forms in redesigning schools (Bernstein, Millsap, Schimmentis, & Page, 2008): (a) teachers serve as advisors/mentors; (b) students are taught by the same cluster of teachers for multiple years; (c) student evaluations of teachers are being used; (d) individualized assessments are used; and, (d) each teacher teaches a smaller number of students than before. Innovation of curriculum in which teaching is geared to high state content standards and state student performance standards is evidenced in a variety of ways: (a) cooperative learning; (b) problem based learning; (c) technology integration; (d) career-specific curriculum integrated in content areas; and (e) integrated thematic units across several disciplines. I am concerned in my study with the collaborative and transformative process used by teachers to change from past ways of thinking and doing to the strategies of SLCs and school redesign.

Large high schools with 1400 to over 5000 students are being organized into small learning communities of students and teachers following the federal guidelines described above. These schools organize the 9th graders into Freshman "Academies" in which no more than 150 students are shared by three-five of the same teachers. For the upper grades, students and teachers often self-select themselves into themed smaller learning communities based on career clusters and pathways such as Health, the Arts, Engineering, and Business (Kemple, 2008). Concerned experts believe that, when all students are known well by at least one caring adult, such as in the teacher advisory program strategy, and the teaching and learning opportunities are developed with student needs and interests in mind, the goals of higher order thinking and deep understanding take place (Cotton, 2001).

Can the training teachers need to support and carry out these new strategies take place in the three days a year described in the U.S. Department of Education Study? According to Darling-Hammond and Friedlaender (2008), effective redesigned schools allocate seven to 15 days to shared professional learning time throughout the year and include several hours throughout the week for teachers to plan and problem solve. Many traditional schools moving into redesign struggle to provide more than the three days and an hour a week for their teachers to collaborate and increase their knowledge and skills of their profession. This being the case, the precious time currently allotted must be used effectively. I am concerned in my study with finding the strategies that are already working and the models that can be used as a framework for teams of teachers.

One key strategy described for SLCs in the report is teachers working in teams rather than alone in their classrooms. Often referred to as professional learning community among teachers, they contribute to the improvement of schools. One study reports that how teachers interact with each other outside of their classrooms may be critical to the effects of restructuring on students (Louis, Marks, & Kruse, 1996). In the traditional factory model of education, students go from one teacher to another throughout the day. While in the confines of a single classroom, that teacher is in charge and the dominant force that drives teaching and learning. Given our more diverse and complex society, many educational researchers (Darling-Hammond & Friedlaender. 2008; Wiggins and McTigue, 2008; Wise, 2008) believe this is no longer the most effective way to teach the majority of our students. The school's organizational culture must change to one of collaboration on a regular basis, not just within departments as in the past, but in interdisciplinary teams (DuFour, 2005). The low morale and

dissatisfaction among teachers, especially of those within the older model, prompt new studies that show that teacher interaction within a larger context influences teacher professional satisfaction. Furthermore, studies of the relationship of school context to teachers' work suggest that the interpersonal and structural conditions that characterize teachers' work will also affect the impact that they have on their students (Konstantopoulos, 2005; Lee, 1985). Given this research, I examine professional learning communities to see what prompts teacher satisfaction, excites their passion, and can transform their practice.

In the small schools and small learning communities described above, teachers are expected to work collaboratively across disciplines to better design lessons and strategies that address individual student needs. In addition, they must provide the interventions necessary to bring students to proficiency in the core subjects. Teachers in these redesigning schools work together across disciplines to provide more comprehensive student support and opportunities for engaging students in more exciting interdisciplinary lessons that develop higher-order thinking and deeper understanding (Levine, 2002; Louis, Marks, & Kruse, 1996). I wanted to learn if these very difficult problems can be addressed in professional learning communities. If so, what are teachers saying and doing within their teams to work collaboratively?

Since 2000, the driving force behind high school redesign has been the federal mandates found in *No Child Left Behind*, the nation's education plan that provides directives and policies for districts to achieve the goal of having every child proficient in standards in reading and math by 2014 (U.S. Department of Education, 2000). The core of this plan changes teaching and learning so that it is driven by student acquisition of

proficient or higher skill levels in standards in math and reading identified by each state's public education department. Thus, any redesign effort must be aimed at this prime directive from the U.S. Department of Education. The framework of a professional learning community as described by DuFour (2004) and others inextricably links to the effective integration of standards, assessment, and accountability that are the key components of *No Child Left Behind* (Reeves, 2005).

The term "professional learning community" has grown to mean different things across a variety of school settings. Many practitioners in schools accept the model of professional learning community for schools as the structure that contributes to instructional policy, curriculum development, and staff development (DuFour,2005; Reeves, 2005; Schmoker, 2005; Sparks, 2005). Understanding that professional learning communities (PLCs) do look differently depending on the setting and participants, DuFour (2005) has set out big ideas that represent core principles for PLCs. First, he suggests that PLCs ensure that all students learn, a divergence from the historical stance that schools are a place where students are taught. This principle coincides with *No Child Left Behind* in which "every state has made a commitment that it will no longer turn a blind eye when schools are not meeting the needs of every student in their care" (No Child Left Behind: A Tool Kit for Teachers, 2004, p. 2). Second, employ a culture of collaboration for school improvement while removing barriers to successes. Third, focus on results; working together to improve student achievement becomes the routine work of everyone in the school.

The important role of professional development in the redesign of schools makes significant demands on the development of professional learning communities. Rather

than an emphasis on top-down training, teachers in PLCs strive to initiate their own professional development opportunities for learning what they need most to help their students. Recent research and resulting models on collaborative learning provide tools and insights for more effective professional learning communities. Dillenbourg (1999) found, in the broadest view, collaborative learning thrives in "a situation in which two or more people learn or attempt to learn something together" (p.1). Individual cognition is not suppressed in collaborative learning according to Dillenbourg, but the interaction among subjects generates extra activities that trigger extra cognitive mechanisms. He goes on to examine three features of collaborative interactions. The first is interactivity; a collaborative interaction must be quite interactive, not by frequency, but by the extent to which these interactions influence the peers' cognitive processes. Synchronicity, another key feature, encourages doing something together, preferred over cooperating. Finally, Dillenbourg describes collaborative interactions as being negotiable. Instead of collaborative interactions being hierarchical, partners will argue for each other's standpoint, justify, negotiate, and attempt to convince. The work of Dillenbourg and others (Dillenbourg, 1999; Holland, 2002; DuFour, 2002; Conner, 2002; Seashore Louis, Marks, and Kruse, 1996) offers guidance for changing delivery methods of professional development. Does evidence exist of group learning as described by Dillenbourg and others in the weekly collaboration meetings of the professional learning communities? If so, what do these meetings look like? These are important questions to this study.

Yet another promising new development is built around tools and models that develop and support collaborative problem solving. In schools, scores of large, complex problems face teachers who may have several different plausible solutions or might not

have found a fully satisfactory one. Teachers as independent learners must make and defend judgments of the nature and scope of problems, possible solutions, impacts of solutions, and evaluation criteria. The problems that teachers face are often the very same ill-structured ones that are frequently vague and unpredictable. Tackling these as a small group in a collaborative setting, teachers can more efficiently and effectively make and defend their judgments of the nature and scope of the problem, the possible solutions, the impacts of their solutions, and the evaluation criteria of their process and the solution (Jonassen, 1997). A model using these principles could help school practitioners learn from the challenges that they face on a daily basis. A theory of action that drives this study is to determine the essential elements that could improve the professional knowledge and practice of school practitioners within professional learning communities that could then lead to improving the learning outcomes of their students.

The most significant problems regarding effective PLCs in high schools are best summarized by the quantitative study by Luis, Marks, and Kruse (1996). High schools that scored lower on professional community had low consensus about goals and language of reform. Faculty meetings and other interactions frequently revealed pockets of resistance. The study revealed other tensions as well. The move away from departments and specializations toward broader school-wide goals and collaboration within small interdisciplinary learning communities challenges many teachers. The scheduling of common planning time for teachers to meet within PLCs challenges the school administration. High schools have difficulty matching up schedules for common meeting times when some teachers protect their personal space and preparation periods as their own and not to be shared with their colleagues. In addition, oftentimes a strong and

vocal minority of teachers does not “buy in” to the redesign plans. Other important questions I raised in this study are: How have certain schools tackled this problem? What solutions have they found?

The emergent leadership concept within professional learning communities causes concern and has received little attention as far as preparations and skill development. Teacher leaders are often the most overly committed, hard working members of the faculty and are identified for their strong classroom practice and less for facilitation and leadership skills (Marzano, 2003). The teacher leader works with the school administration to create a learning environment that helps the collaborative problem solving process among his or her peers. According to Marzano, the school administration needs to share leadership in order to empower the PLCs to experiment with solutions. He goes on to state that the administration needs to allocate and protect resources such as time and funds. The teacher leader also works with the administration to provide access and training on the technology resources that support the collaborative environment.

Unfamiliarity with consensus decision-making causes concern for redesigning schools implementing PLCs. Most of the practitioners in our public high schools came out of teacher preparation programs that emphasized curriculum, teaching and learning strategies, and human growth and development (Glickman, 1998). They have spent little time in collaboration, communication, and adult learning skill building. Today’s professional development for teachers in professional learning communities can improve school capacity according to a study by King, Newmann, and Youngs (2003). Their findings focused on three dimensions that seemed especially susceptible to improvement through professional development. The first dimension continues to be the knowledge,

skills, and dispositions in which staff members must continue to be professionally competent in the classroom. Another dimension concerns program coherence in which a school's instructional capacity improves when its programs for student and staff learning are coherent, focused on clear learning goals, and sustained over a period of time. However, the third dimension, professional community, suggests that teacher's individual knowledge, skills, and dispositions must be put to use in an organized, collective enterprise. The ability of professional learning communities to be the setting for professional development is a key area of growth. Most professional development still takes place in the large setting of an entire staff (Bernstein, Millsap, Schimmentis, & Page, 2008).

Yet another area of concern results when the principal and district leadership have trouble facilitating, encouraging, and supporting PLCs as part of their redesign efforts. Many focus on the immediate task at hand of raising test scores without regard to a more holistic approach to the problem. As a result, some PLCs are set up for teachers without clear expectations and common understanding of models and theories for collaboration, problem solving, and transforming schools (Heath, 2004; McPartland, 2008). In particular, transformative learning theory has not been explicitly included within many of the redesign models for high schools. This adult learning theory states that an individual is transformed when he or she changes one's taken-for-granted traditional ways of thinking about issues, problems, and dilemmas. This transformation of thinking also includes one's perspective of major definitions and key concepts in their life and work, also called one's habits of mind. Mezirow, the founder of this learning theory (2000), goes on to say that the transforming adult filters his or her sense of their part of the world

that relates to the dilemma to make more inclusive and discriminating standards used for judging or deciding. The transformed adult uses these new standards of thinking to become more open and emotionally capable of change. The transformed adult becomes more reflective, so he or she generates beliefs and opinions that prove more true and justified to guide action.

In essence, high school teachers in redesigning schools are being asked to transform their standards, frame of reference, and habits of mind to solve difficult dilemmas. If elements of transformative learning theory were found in effective PLCs, a model could emerge that has not often been included in the current body of knowledge. Such a model may provide the tools and processes for a school leader to better lead the change for his school, develop the strategic design for each small learning community, and implement the action plans leading to the transformation of parts of his school and on to school-wide change based on current research on the most effective theories and methodologies.

Purpose and Rationale

In summary, high schools today suffer from poor performance that has been widely reported in attendance, achievement, literacy development, and postsecondary outcomes. Teachers themselves cannot redesign their schools by just hard work; new models of collaboration and problem solving are keys to transforming the organization. Research suggests that teams of teachers in professional learning communities can be a major component of school improvement. Professional learning communities with elements of professional development, collaborative learning, collaborative problem solving, and instructional and curriculum development may provide the best answer for

school change. In essence, society is asking our teachers to radically change their thinking and approach to viewing their basic assumptions of teaching and learning, to change their "habits of mind" (Mezirow, 2000) and approach to problems to improve schools and their student's progress toward proficiency in the standards.

The questions this study will attempt to answer are: "What are the transformative experiences of teachers within professional learning communities? What indicates a fundamental change in the participants' habits of mind?" These overarching questions lead to the following sub-questions:

1. What do teachers believe are the most effective characteristics and components of professional learning communities?
2. What do members of a professional learning community in a high school do to solve problems?
3. What are the reflective practices of members of professional learning communities in redesigning schools?

This study is important because it will contribute to the literature that examines the redesign of schools. The grounded theory that results from this study could be included into an effective model for high school redesign that can be shared with other similar schools. Such a model for high school redesign that involves professional learning communities should show significant evidence of transformative learning theory, collaborative problem solving, and constructivist learning. The grounded theory derived from this study should have an impact on a program framework and model that supports transforming and redesigning schools. Results found in this study could provide a model for schools. It could give the tools and process for a school leader to begin the change for

his school, develop the strategic design for each small learning community, and implement an action plan leading to the transformation of his or her school to a more effective learning community for both students and teachers.

CHAPTER 2

THEORETICAL REVIEW OF THE MAJOR THEORISTS AND METHODOLOGIES

Introduction

In my study of professional learning communities and the transformative experiences of teachers within them, I connect existing research, theories, and methodologies (Mezirow, 2000; Erickson in Merriam and Caffarella, 1999; Jonassen, 2004). I want to know if collaborative problem solving and transformative learning theory was evident in redesigning high schools. I have discovered detailed work in these fields in the business and organizational community. I have also discovered a growing body of research focused strictly on the learning communities in the educational setting (DuFour, 2005; Yorks & Marsick, 1999). However, little direct connection seems to exist between organizational learning, transformative learning, and collaborative problem solving to secondary education. This study bridges the gaps between adult learning theory and collaborative problem solving while clarifying the connections between research and practice in the educational setting. My review of the literature identifies theories and models that could be considered effective for small learning communities in high schools.

In approaching the question "What are the transformative experiences of teachers within the professional learning communities involved in redesigning of schools?" I am choosing to examine the literature in several key areas. First, I will examine professional learning communities within the small learning community model of high school redesign and their theories and methodologies as it relates to public education. The

challenges of redesigning schools require new ways of solving problems for educators. Therefore, I am reviewing work in the area of collaborative problem solving and constructivist learning. A look at Action Learning as a process for groups of teachers to examine problems and explore and implement solutions will follow. Next, I will examine transformative learning theory and methodology. I conclude this chapter with a detailed look at critical reflection and fundamental change in habits of mind as a component of transformative learning. A major outcome of this review of the literature for my study is "The Matrix of Theories and Methodology Investigated in the Study" (Appendix A). The Matrix served as a rubric and became a visual model of what I hypothesized were the key theories and methodology of transformative learning and collaborative problem solving that could be seen in my study of professional learning communities.

Redesigning High Schools for Collaboration, Problem Solving, and Transformational Learning

Gilbert and Driscoll (2002) state in their research that schools need to be restructured to support collaborative problem solving. Doing so creates an organization wide focus on knowledge and the advancement of knowledge rather than on tasks or projects. Teachers should be directed and enabled to focus on problem solving, not performance of routines. This dynamic adaptation of an entire learning community out of the advances of various professional learning communities leads to change in the knowledge conditions requiring other members to readapt resulting in continual progress for the entire school. The intellectual collaboration as members pool intellectual resources makes it possible for communities to solve larger problems than individuals.

Structural Changes

Prerequisites at the system level in schools has been developed by Leithwood and Lewis (1998) in their review of educational redesign literature and the Maltese secondary schools case study (Bezzina, 2004). Before professional learning communities are established, certain prerequisites including genuine belief in the benefits of decentralization and the various forms it can take should be prevalent across the school. Development of a clear strategic plan should allow all stakeholders to change, adapt, and develop appropriate attitudes, values, and dispositions to take on more responsibility at various levels of the educational system. The result will be an appropriate infrastructure that allows the processes of transformative learning, collaborative problem solving, and constructivist learning to be introduced.

Another noted researcher in school redesign is Linda Darling-Hammond of the Stanford Redesign Network. Darling-Hammond (1997) believes that school leadership must support new teachers by providing an environment that maximizes collaborative problem solving in a variety of ways. These include: having the school structured in its physical workspaces for collaboration, common planning time for groups of teachers, and alignment of curricular and teaching arrangements that enable teachers to easily collaborate. Common space, time, and work frame should support learning for new teachers in the company of their colleagues. Common planning time enables teams of teachers to plan curriculum together, jointly assess student work, interact with colleagues, and consult with parents and students in a group setting.

Darling-Hammond and her colleagues Alexander and Prince (2008) at the University of Stanford Redesign Network have developed 10 features of good small

schools from their research of high schools. They list collaborative planning and professional development as their eighth feature. Specifically they suggest joint planning and collective perspective as critical for vision, goals, teaching and learning, curriculum and assessment, guidance, and instructional plans. Scheduled time within the school day is key to carry out all of these components.

Often these environmental changes allow for spontaneous conversations for collaborative problem solving outside of structured collaboration time. Yorks and Marsick (1999) believe that for transformative learning to occur in learning organizations the school must function effectively as a liberating structure that is productive and educates members toward self-correcting awareness. A parallel structure within the traditional school organization supporting professional learning communities must dissolve back into the organization after the transformation takes place.

Conceptual Changes

The learning community model combines both centralized and decentralized elements. In order to have system-wide improvement, a clear, universal expectation must be shared throughout the system. Common mission, vision, and values are integral to a learning community (Fullan, 2001). Indeed, DuFour (1998) states that, "what separates a learning community from an ordinary school is its collective commitment to guiding principles that articulate what the people in the school believe and what they seek to create. Furthermore, these guiding principles are not just articulated by those in positions of leadership; even more important, they are embedded in the hearts and minds of people throughout the school" (p.24). While all members are committed to moving in the same direction, the action path varies among small teams within the school.

One of the early reformers of high schools, Deborah Meier (1993), believed schools should put a special effort into providing caring relationships in order to improve schools and student performance. Schools must provide examples of the kinds of personal relationships between and among the teachers and staff. "We expect the behaviors we intend students to exhibit when they are adults. The way that happens is for all those persons who are in the schools to live and work that way in their schools." Her work with The Coalition of Essential Schools (CES), founded in 1984 and now led by Ted Sizer, was deemed by many to be unrealistic and utopian for suggesting that America abandon large, comprehensive high schools for more intimate, focused academies. Yet, the coalition attracted more than 1,000 schools to its banner in fairly short order.

Meier and CES have a long documented list of successful small schools. The most famous is Meier's Central Park East. The students attributed their success to the fact that at Central Park East, they had close relationships with interesting, *empowered* teachers. And with only 500 students in all, Central Park East was small enough for everyone to know everyone. Since the early 1990s Meier and others in CES have carried the banner of school reform:

> Shouldn't all educators join together to bring the advantages of a powerful school composed of powerful adults to all children regardless of where they start from? Shouldn't this be a common task for all educators ranging from kindergarten teachers to college professors? The impulse that makes us teachers—love for our subject matter, love for our students and high regard for the intellectual demands of democracy—are not so different. We have more in common than we usually imagine. (Meier, 1999 p. 21)

The challenge of enabling empowered and powerful adults is the core of high school redesign and a focus of this study.

Teaming of Teachers within Small Learning Communities

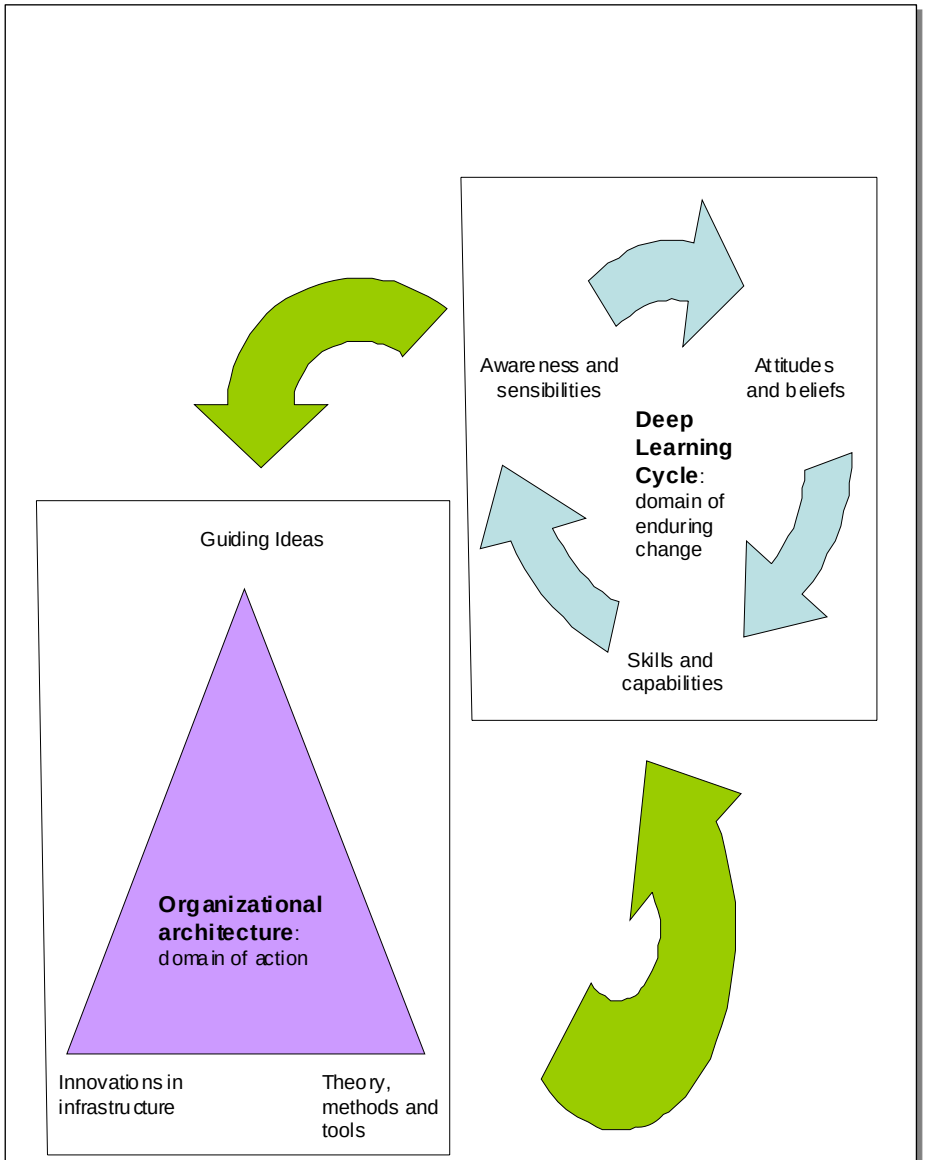
Different teams within a school redesigning with small learning communities may focus on different issues, but they all follow a common process of collective inquiry. Ross, Smith, and Roberts (1994, as quoted in DuFour) identify four steps to the collective inquiry process. First, members of a team reflect publicly by talking about their assumptions and beliefs and relentlessly challenging each other gently. Secondly, the team arrives at common ground with shared insights. Thirdly, the team jointly plans action steps to test their shared insights. Finally, the team carries out the action plan, either jointly or independently.

This process enables team members to benefit from the deep learning cycle, "the interrelated capacity for change inside individuals and embodied in the group culture," as shown in Figure 1 (Senge, et al., 2000). The focus of team activity, "the domain of action", is in the triangle. However, the "domain of action" and the "domain of enduring change" continuously influence each other. When new skills and capabilities, new awarenesses and sensibilities, and new attitudes and beliefs reinforce each other, profound learning can take place. Hence, collective inquiry can lead to a different worldview for team members and a shift in the school culture.

From Teaming to Professional Learning Communities

The core structure of learning communities is a group of collaborative teachers that share a common purpose. Collegiality, caring, and respect are paramount qualities of successful collaborative teams (Fullan, 2001). However, DuFour (1998) states that team

learning goes beyond these team-building characteristics because team learning focuses on organizational renewal and continuous improvement. The collaborative learning process is important because members are able to learn from each other creating a momentum that can fuel continued improvement. Furthermore, it takes shared expertise, not individual learning, to drive instructional change (Fullan, 2001).



From: Senge et. al. (2000). Schools that Learn. NY: Doubleday, p. 26.

Figure 1: **The Deep Learning Cycle.**

At the national level of redesign of secondary education, the National Association of Secondary School Principals' *Breaking Ranks II* (as found in Cotton, 2001) developed an action plan for school-wide change in which learning communities are critical. This work details the use of shared planning time for teachers to do the following: develop units; learn from one another by watching teaching; collectively study student work; share articles and other professional resources; talk with one another about what and how one teaches; provide moral support; jointly explore a problem; attend professional development workshops together and help implement what they learn; participate in continual quality improvement activities; use collective decision making to reach decisions for collective action; and. provide support for help-seeking and help-giving. The Association's recommendation clearly states that a high school will regard itself as a community in which members of the staff collaborate to develop and implement the school's learning goals. Of the many strategies detailed in the text are found the following: create and implement interdisciplinary teams of teachers; ensure everyone has voice; redesign time spent during the school day to support collaboration; get teachers together at least one hour per week; and, develop protocols that facilitate discussion.

Collaborative Learning and Professional Learning Communities

An underlying belief in this study is that professional learning communities provides the setting in schools that facilitates collaborative learning and that could encourage and create transformation of teachers in redesigning schools.

Adult Learning Theories

Social constructivism, one of the primary adult learning theories examined for this study, is considered a foundation principle for professional learning communities.

Teachers form professional learning communities to create knowledge. This purpose matches that of social constructivists who view knowledge as constructed when individuals engage socially in talk and activity about shared problems or tasks. Making meaning, exchanging ideas in a dialogic process, involves persons-in-conversation. Learning becomes a process for introducing individuals to culture by more skilled members (Driver, et al., 1999). Often professional learning communities are made up of a diverse group of peers in an educational setting such as a small group of teachers. However, often a first among equals is known to emerge as lead teacher in an education setting for example. In some PLCs that person facilitates for at least one or more issues that the group faces that he or she is more comfortable or established in.

Another adult learning theory that is a part of professional learning communities and its related activities is collaborative learning. Dillenbourg (1999) found, in the broadest view, collaborative learning to be "a situation in which two or more people learn or attempt to learn something together"(p.1). He goes on to examine the variety of scales and focuses his design around the "small scale" end of the continuum. He examines the collaboration between two or more human or even artificial agents for a well-defined learning or problem-solving task. A situation is collaborative if peers are more or less at the same level, can perform the same actions, have a common goal, and work together. Individual cognition is not suppressed in collaborative learning according to Dillenbourg, but the interaction among subjects generates extra activities that trigger extra cognitive mechanisms. He goes on to examine three features of collaborative interactions. One is interactivity and states that a collaborative interaction must be quite interactive not by frequency but by the extent to which these interactions influence the peers' cognitive

processes. Another key feature, synchronicity, proves that doing something together is preferred over simply working alone and bringing results together. Finally, Dillenbourg describes collaborative interactions as being negotiable. Instead of collaborative interactions being hierarchical, partners will argue for each other's standpoint, justify, negotiate, and attempt to convince each other of a solution.

Dillenbourg explains the processes of individual cognition that are characterized as collaborative through its connection to the individual learner's process in cognitive learning. The first is induction, a belief that pairs draw more correct information leading to knowledge than individuals. Another concept is cognitive load; regulating it is easier when in a group through its division of labor than the amount of processing by any one individual. Also, regulating other group members' cognitive load is easier than monitoring one's own. In collaborative learning groups, self-explanation and explanation to the group members are both important. The aspect of conflict is also considered a key factor to the process of learning in collaborative learning environments. These should all be considered in an emerging theory as a way to connect the individual learning process to collaborative learning. Dillenbourg posits a variety of meanings for learning. Joint problem solving is the one most commonly used when researchers examine collaborative learning. Learning is expected to occur as a side effect.

Constructivist Learning Theory

Jonassen (in Rigeluth, 1999) finds that making meaning or constructing knowledge is a key element of collaborative learning. Knowledge is individually constructed and socially co-constructed by learners based on their interpretations of experiences in the world. Jonassen goes on to say that since knowledge cannot be

transmitted, instructors that facilitate knowledge construction must create the learning environments and the experiences to support this outcome. Jonassen (1994) believes that learning environments that provide multiple representatives of reality may facilitate purposeful knowledge construction. By doing so, the learning environment:

1. Avoids oversimplification of instruction by representing the natural complexity of the real world
2. Focuses on knowledge construction, not reproduction
3. Presents authentic tasks
4. Provides real-world, case-based learning environments, rather than pre-determined instructional sequences
5. Fosters reflective practice
6. Enables context – and content – dependent knowledge construction
7. Supports collaborative construction of knowledge through social negotiation, not competition among learners for recognition

This environment seeks to provide a supportive atmosphere in which the learner can interpret at least a simulated reality in order to better understand that reality. Jonassen sees knowledge construction and collaborative learning as a process. Although based on adult learners in a classroom setting, his work can be used for teacher professional development within professional learning communities. This could be seen when the participants are presented with unknowable phenomena that must be socially negotiated and co-constructed based on the interpretations of experiences in the world around them. Collaborative learners need to search for three kinds of knowledge according to Jonassen. First is transitional knowing in which knowledge is mostly certain

and requires understanding using logic, debate & research. Next is independent knowing whereby knowledge is uncertain and requires independent thinking and open-mindedness. Lastly is contextual knowing where knowledge is based on evidence in context.

Social Constructivist Theory in Schools

According to Gilbert and Driscoll (2002), knowledge building communities arose from the idea that schools should be restructured as communities in which knowledge is constructed as a collective goal. Relying on social constructivist theory, some schools such as the ones based on the New Technology Schools out of Napa Valley, believe that a change must take place in which closed classrooms need to be modified into knowledge building communities that enable each student to contribute to each others' learning through social construction of communal knowledge (Lebow, 1995 as cited by Gilbert and Driscoll). At the same time, the teachers themselves must go through a similar evolution in pedagogy that enables this learning environment to take place. In most cases, teachers are also students as they work together with others in communities of practice.

Jonassen (1999) describes communities of learners as social organizations of learners who share knowledge, values, and goals. He proposes a Collaborative Learning Environment Model (CLE) that provides access to shared information and shared knowledge-building tools to help learners collaboratively construct socially shared knowledge. CLEs should support collaboration and shared decision making about how to manipulate the environment. CLEs should provide alternative interpretations of topics and problems, articulation of learner's ideas, and reflection of the processes they used.

Jonassen goes on to discuss the instructional strategies that work best in CLEs: modeling, coaching, and scaffolding.

Collaborative Learning and Communities of Practice

In most organizations today, communities of practice are the new context in which collaborative learning theory is implemented to construct knowledge both for individuals and for the organization. According to Wenger (1998), a community of practice defines itself along three dimensions:

1. What it is about – its joint enterprise as understood and continually renegotiated by its members;
2. How it functions - mutual engagement that bind members together into a social entity; and,
3. What capability it has produced – the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, etc.) that members have developed over time.

A community of practice is different from a team, in that the shared learning and interest of its members are what keep it together. It is defined by knowledge rather than by task and exists because participation has value to its members. Lave and Wenger's (2001) work around communities of practice offers a useful addition for practitioners in traditional secondary education settings. It allows proponents to argue that communities of practice need to be recognized as valuable assets. The model gives those concerned with organizational development a way of thinking about how benefits could accrue to the organization and how value does not necessarily lie primarily with the individual members of a community of practice.

Gilbert and Driscoll (2002) draw on the research of Leinhardt (1992), who states that a constructivist collaborative knowledge-building environment must follow three principles to be successful: learning is an active process of constructing knowledge; knowledge is a "cultural artifact"; and, knowledge that is distributed among group members or communities is an aggregate of knowledge that is greater than the knowledge of any individual within the community. The last principle provides one of the greatest reasons why collaborative learning environments are so important to adult learning. Distributed knowledge among a group leads to greater knowledge for each individual while the community's artifacts of learning grow.

When so much is said today of lifelong learning, Bielaczyc and Collins (1999) suggest organizations should have clear goals fostering a culture of learning through learning communities. These learning communities should provide a means for the following: both individual development and collaborative construction of knowledge; sharing knowledge and skills among members of the community; and, making learning processes visible and articulated. Just as these strategies promote more effective learning within the secondary education classroom, they represent the key features of the professional learning community of the teachers and staff, especially ones involved in the major work of reform in the high school.

Collaborative Problem Solving

Collaborative problem solving, which evolves from collaborative learning, appears to be an ideal way to implement instruction based on constructivist learning values for adult learners. Nelson's model (2004) of an integrated set of guidelines creates authentic learning environments that stimulate critical thinking, creativity, complex

problem solving, and social interaction skills. Although designed specifically for adult learners in a specific learning environment, several key principles carry over to the work of professional learning communities.

Nelson's five principles of collaborative problem-solving include involving the relevant stakeholders, building consensus phase by phase, designing process maps, designating a process facilitator, and harnessing the power of group memory. Nelson's Collaborative Problem Solving Instructional Design Theory includes processes that overlap with elements of transformative learning and may be relevant to this study: build readiness; form and norm groups; determine a preliminary problem definition; define and assign roles; engage in an iterative collaborative problem-solving process; finalize the solution or project; synthesize and reflect; assess products and processes; and, provide closure (Nelson, 2004). In my study, it would be important to know what elements, if any, of collaborative problem solving are being used in a professional learning community setting or if a new theory emerges from the participating PLCs.

Collaborative Models

Stahl (2000) has built a collaborative knowledge-building model based on the premise that learning is a social process incorporating multiple distinguishable phases and constitutes a cycle of personal and social knowledge building. It begins with what Jonassen also described as personal construction or a cycle of personal understanding. During this phase, learning starts on the basis of tacit pre-understanding by the individual. Stahl states, "it is when our understanding breaks down that we repair our understanding by reinterpreting our meaning structures to arrive at new comprehension" (p.70). To successfully reinterpret our meaning structures requires some feedback from

the world. This can at times be managed cognitively with internally derived repair or personal understanding. Other times one must enter into an explicitly social process and create new meaning collaboratively. At this point, the learner enters into the cycle of social knowledge building. Stahl (2000) defines social knowledge building as when someone's personal belief is articulated in words and this public statement is taken up in a social setting and discussed from the multiple perspectives of several participants. This theory is based on the social epistemology in which individuals generate personal beliefs from their own perspectives, but they do so on the basis of socio-cultural knowledge, shared language, and external representations. These beliefs become knowledge through social interaction, communication, discussion, clarification and negotiation.

The National Association of Secondary School Principals has taken these principles of collaboration and built a model in their report *Breaking Ranks II* (2004*).* The Association supports a continuous cycle of improvement driven by every collaborative team constantly examining student work. Teachers in the schools collaboratively examine results, celebrate strengths, and engage in collaborative inquiry with teammates regarding best practices. In addition, teachers within their professional learning communities should be trying out new practices using the process of Action Research also know as Action Learning.

Action Learning for Adult Learning

Rothwell (in Egan, 2006) describes action learning as a process of problem solving and staff development. It aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework of research. It includes 7

steps: recognizing situations suitable for action learning; selecting and organizing an action learning team; briefing the team and setting constraints; facilitating team interaction; empowering the team to identify and experiment with solutions; evaluating results; and setting future directions. Marquardt (2004), a leader in this field, goes on in his work to form the basis of questions that can serve as guidelines for teachers when selecting the most appropriate problem case for action by the team.

This method of collaborative inquiry creates structures of a very rigorous process of learning through experience and constructing answers to questions that are highly significant to the inquirers. Just as collaborative inquiry is a research practice that removes the separation of researcher from the subject, it is also a practice of fostering learning that denies that research is a form of learning reserved for specialists. Both collaborative inquiry and action learning are formal research methods that can emerge from some professional learning communities as a way to detail their gained knowledge, analyze the results of their research into their problem, and report to themselves and to the body of knowledge in the field.

Transformative Learning Theory

I believe that within small learning communities in redesigning schools that both collaborative problem solving and learning along with transformative learning can and should be present. Jack Mezirow, the major theorist in transformative learning, also defines it as explaining a process of how understandings and beliefs are more dependable when they produce interpretations and opinions that are more justifiable and true for the adult learner (Mezirow, 2000). This concept pertains directly to epistemic cognition relating to knowledge and reflection on the limits of knowledge. Mezirow includes one's

certainty of knowing and the limits of knowledge as a key to transformative learning. Although his work is focused on the adult learner in general, a direct connection has emerged to educators in our public schools who are constantly engaged in professional development and career long gathering of new knowledge and skills. Mezirow's work can be used to explain how teachers themselves can monitor their own and their peer groups' problem solving when they are engaged in solving the ill-structured problems of improving and redesigning their own classrooms and consequently their school. Some examples of these ill-structured problems could be improving low reading scores of a cohort of students, personalizing instruction to meet the needs of diverse learners, or improving attendance of a particular group of freshmen.

Mezirow goes on to explain transformative learning as changing one's taken-for-granted meaning structures of his or her frames of reference, which includes meaning perspectives, habits of mind, and mind sets. He goes on to say that the adult learner filters sense impressions to make more inclusive and discriminating frames of reference that he or she uses to become more open and emotionally capable of change. The transformed adult is then more reflective, so he generates beliefs and opinions that prove more true and justified to guide action.

Transforming Perspectives

Transformative learning theory states that adults have certain meaning schemes that become their specific beliefs, feelings, attitudes and value judgments that they use in making meaning of their world (Mezirow, 2000). However, Mezirow is also concerned with one's moving from these narrow meaning schemes to liberating and free perspectives that are broad and generalized. One then orients his personal inclinations

towards a particular disorienting dilemma or problem. When an individual undergoes such a perspective transformation, he or she becomes more inclusive, discriminating, permeable, and integrative with his world. A transformed adult learner is a more motivated individual that better understands the meaning of experiences. Mezirow believes we need to understand the meaning of our experience to gain greater control over lives as socially responsible, clear thinking decision makers, and the key to transformative learning.

Characteristics of a Transformed Individual

A further look at the characteristics described by Mezirow (2000) is important in examining teachers in professional learning communities. Such an examination could uncover evidence of transformative learning methodology in practice, and of finding individuals who have undergone the perspective transformation. A transformed individual or group must elaborate existing frames of reference, learn new frames of references, transform points of view, and/or transform habits of mind with new structures for engaging a system's identity (Brookfield, 2000). Brookfield goes on to describe how "the transformation of the content of consciousness occurs when two processes are engaged interactively, critically analyzing underlying premises of a dilemma and accessing and receiving the symbolic contents of the conscience." Additionally, the individual as well as the group will experience a transformation of structure of consciousness when the learner is confronted with his complex cultural environment. This becomes true because effective engagement with that environment requires change in the learner's relationship to his or her or the group's identity. Therefore, with one's group, described here as a professional learning community or community of practice,

development of the individual is inherent in, and an outcome of, the transformational process.

Among the other transformative learning theorists, Freire elaborates on the emancipatory philosophy described by Mezirow (Brookfield, 2000). Freire (as cited in Merriam, 1999) describes his emancipatory philosophy as a conscientization of the individual, becoming truly governed by his sense of what is right. To him, transformation leads to radical social change with personal empowerment and social transformation. It is seen as intertwined and inseparable processes. Conscientization, consciousness raising, and empowerment are significant contributions to transformational learning theory. When one uses critical reflection, a key element of transformational learning theory, one becomes aware of both structures that oppress us in society and of internal structures and myths that direct our behavior. To Freire, transformation is the same as conscientization.

Another element to examine for evidence of transformative learning grows out of the work of Tennant. He believes that experience stimulates learning; the meaning learners attach to experiences may be subjected to scrutiny and can become transformative (as cited in Mezirow, 2000). This has implications for groups of people who share the same cultural memory of an organization. A professional learning community's careful and measured reflection of past experiences could lead to transformation of not just individuals, but of a whole group and organization.

Reframing Points of View

Mezirow believes that adult learning occurs in four ways: elaborating existing frames of reference; learning new frames of references; transforming points of view; and,

transforming habits of mind. He names critical reflection as a component of all of these (as cited in Brookfield, 2000). The two central elements of transformative learning, objective and subjective reframing, involve either critical reflection on the assumptions of others (objective reframing) or on one's own assumptions (subjective reframing) of a system, an organization, one's feelings and interpersonal relations, and of the way one learns (Mezirow, 2000).

Group Transformation and Adult Learning

Moving from the individual elements of transformative learning to the components necessary for a group transformative experience or processes begins with a look at constructivism and constructive developmental theory. The central assumption of constructivism is that learners actively form, elaborate, and test mental models as they attempt to make sense of their experiences. Therefore, knowledge is a personal interpretation of the world (Merriam, 1999). Conceptual growth occurs as learners reflect and elaborate on their conceptions, share multiple perspectives, and negotiate meaning through collaborative learning in realistic settings (Merrill, 1991). Constructivism and constructive developmental theory invite transformative learning theorists to consider that the form of knowing always consists of relationships or temporary equilibrium between the subject and the object in one's own knowing. Constructivism also emphasizes learner autonomy and encourages learner inquiry while emphasizing the critical role of experience. Constructivism works best with advanced learning and provides conceptual power to deal with complex problems such as the disorienting dilemmas that begin the process of transformative learning.

Post-modernism is another major adult learning theory with implications for transformative learning. Post-modernism calls on adult learners to gain some distance from his or her own internal authorities, so an adult learner is not completely captive of his or her own theories. It is important that individuals recognize their incompleteness and embrace contradictory systems simultaneously (Kegan, 2000). Transformative learning in post secondary education, where Kegan focused his research, showed that most intellectual disciplines are ideological procedures for making meaning for others. Instructors working with adult learners could benefit in using Kegan's model of contradictory systems to provide the feeling of dis-orientation that may lead to transformative learning. Similarly, the teacher leader in the professional learning community in high schools engaging others in the process of critical reflection should consider it being acceptable to have incompleteness and contradictory systems to initiate transformative processes for the group.

Critical Thinking and Transformative Learning

Brookfield goes on to describe a model of critical thinking including five commonly experienced phases: a trigger event, appraisal, exploration, developing alternative perspectives, and integration into one's own life. His work is essential for the examination of transformation in both individuals and groups of teachers in a professional learning community. Brookfield goes on to state that critical reflection is a collaborative and a social process. "Any critical reflective effort we undertake can only be accomplished with the help of critical friends." Mezirow agrees "we need others to serve as critical mirrors who highlight our assumptions for us and reflect back to us in unfamiliar, surprising, and disturbing ways" (Mezirow, 2000 p.3).

What do individuals and groups critically reflect on? What are the kinds of knowledge that are at the focus of transformative change? Kegan (in Kasl & Elias, 2000) considers epistemological change, altering one's ways of knowing, as key for critical reflections. Transformational learning needs to be more clearly distinguished from informational kinds of learning. Kegan (2000) describes form as a way of knowing or a frame of reference that undergoes transformation and needs to be more clearly understood. The resulting epistemological change becomes more significant since it goes beyond a behavioral change. In his research on adult education, Kegan goes on to say that educators need a better understanding of their groups' students' epistemologies and to discern their needs. Transformation of consciousness includes self-authorship and self-definition. By clearly understanding one's awareness of the processes of reflection and knowing, a person will have more effective meaning-forming that is shaped from the raw material of one's consciousness and inner experiences.

At the core of the importance of critical reflection are Erickson's stages of psycho-social development (in Merriam & Caffarelli, 1999) that favor bringing about experiences in learning over self-absorption. Erickson's stages form one of the essential elements that could improve the professional knowledge and practice of school practitioners within professional learning communities. Critical reflection makes one willing to look beyond oneself and express concern about the future. Vygotsky differs from many transformative learning theorists in his belief that critical reflection is not the prime process of change. His zone of proximal development adds the further suggestion that a transformative adult learner must have a clear vision of where they are relative to where they want to be. This is often done with the aid of a mentor, teacher, or facilitator

who provides scaffolding. Daloz (1999) declares that education is a transformational journey and sees Vygotsky's mentors as guides.

The Process of Transformational Learning

Transformational learning begins with a disorienting dilemma, some experience that problematizes the current understandings and frames of reference of the individual or group (Mezirow, 2000). The transformation of the structure of one's consciousness, the evidence of a transformed individual or group, is facilitated when the learner is confronted with the complex cultural environment because effective engagement with environment and its dilemma requires changes in the learner's relationship to his/her or the group's identity (Mezirow, 2000).

Self-examination, the next stage in the process of transformative learning, includes the critical assessment of personal and group assumptions and recognizing that others have gone through a similar process. At the heart of this step is critical reflection (Brookfield, 2000) that includes three types: content reflection, process reflection, and premise reflection. During this stage, the individuals of a group examine long held socially constructed assumptions, beliefs, and values about the experience or problem that is the disorienting dilemma. A critique of presuppositions upon which one's beliefs have been built as a matter of survival helps one make sense of disorienting dilemmas. This stage generates personal and organizational benefits even before moving through transformation including an honest and open communication, challenge and excitement, and in some cases, a reduction of totalitarianism and demagoguery.

Next, exploration of options investigates forming new roles, relationships or actions that lead to formulating a plan of action (Cranton, 2000). Engaging in discourse

follows and includes several steps: acquiring knowledge and skills, trying out new roles, renegotiating relationships, negotiating new relationships, building competence, self-confidence and reintegration back into one's life based on the new, transformative perspective.

Taking action is the final step in the transformation learning process. Personal transformation leads to alliances with others of like mind to work toward effecting the necessary changes in relationships, organizations, and systems.

Connecting Theory to Practice

The Matrix of Theories and Methodology Investigated in the Study in Appendix A is the summary of the theorists and methodology that according to the literature ought to be evident in schools that are in a redesign mode. Additionally, the Matrix serves as the tool that connects the practice, the data collected from my study, to the theory and methodology for validation. Finally, it serves as a rubric to analyze the data for emerging theories of collaboration, problem solving, and transformative learning that may be in place in an effective high school redesign.

Empirical Research

In reviewing the empirical research related to this study, I discovered work related to transformative learning as well as other studies related to professional learning communities and collaborative problem solving, and an area of research related to redesign of schools. However, to date a much smaller body of research connects all three components in schools.

Elements for Transformative Learning

In a first look at the elements that need to be in place for transformative learning, Collister (2005) determined needs for: termination of existing patterns, structures and institutions; access to a deep understanding and acceptance of new information that is generated from without of the current paradigm to create new organizing principles; a critical mass of engagement to ensure the system does not revert to established norms and more; and, the creation of new structures and webs of interconnectedness around new organizing principles (p. 2). Collister goes on to say that a new paradigm is needed in an organization to: emphasize the validity of an experience through living in the moment; facilitating acknowledgement and appreciation of the interconnected nature of our existence; allowing space in one's daily existence in order to undertake activities which nourish the soul; and "both allowing and validating the experience of "awe" in all that surrounds and connects with us" (Collister, 2005, p.4).

Critical Self-reflection in the Research

Critical self-reflection as a part of transformative learning is examined in two relevant studies. Cranton (2000) discovered that individuals who undergo transformative learning do so in different ways. The movement from critical self-reflection to transformative action is most clearly related to psychological preferences according to his research. In examining the triggers of transformative learning, Clark (in Mezirow, 2000), who explored the impact of context on the process of perspective transformation, found that integrating circumstances could initiate transformative learning as well as disorienting dilemmas. Encountering a missing piece that provides the integration of knowledge that is necessary for transformative learning experiences may follow an

earlier stage of exploration. For example, an individual member of a learning community may begin his own personal process of transformation when a missing piece of a key perspective is illustrated or provided by another member of the learning community.

Continuing on in the area of critical reflection, the role of imagery and contemplative practices was explored by Lennox (2005). His research showed that imagery and contemplative practices were effective in fostering positive self-change at the physical, psychological, and spiritual level. Doing so involves an effort to detect and become free of conditioning, compulsive functioning of the mind and body, and habitual emotional responses. Gladwell (2000) studied "tipping point epidemics" and discovered that transformative ideas are a function of people who transmit them, from the idea itself, and from the environment in which an infectious and transformative idea is operating.

Transformative Learning and Constructivism in the Research

A researcher who connected transformative learning with constructivist theory, Conner (2005) found that knowing comes through participating in activities with community and making meaning from experience. The meaning making developed as an outcome of this process helps shape transformative learning for individuals as well as groups. This dialectic approach causes people to be uncomfortable and requires new ways of understanding the world. In addition, diversity within the learning community often causes cognitive disequilibrium or disruption of a sense of self as found in relations within the community and in their assumptions of the world. This disruption itself leads to reestablishment of order through social meaning making, and the accompanying individual internalization results in personal transformation. The disruption caused by

participating in the group may lead to entering the process of transformative learning for individuals.

Transforming Habits of Mind in Individuals and Groups

One of the key studies (Yorks and Marsick, 1999) related to my research question involved learning community members being interviewed with results indicating a fundamental change in the participants' habits of mind that led to personal and organizational transformation. The researchers assessed the viability of the practice of transformational learning theory with professional learning community contexts. They made important conclusions that identify successful and effective transformation of organizations and form the basis of the questions being used in my study. First, they determined that members of the learning community develop critical engagement with the organization as a whole. Members realize that the existing state of an organization does not exhaust all possibilities and arrive at viable alternative courses of action. Next, professional learning communities develop an increasingly critical account of the cultural conditions on which their own habits of mind are based. Additionally, professional learning communities develop commitment to a continuing critical reexamination of its own points of view and habits of mind. Critical examination by professional learning communities make more members of the organization aware of how past experience with the culture, programs, and policies of the organization influence existing habits of mind. Professional learning communities confronted with alternative interpretations of experience within this model act in a way that makes visible both their good and bad points and reasons behind blind spots and misunderstandings.

The capacity is enhanced for professional learning communities to incorporate insights during participation in the process of this model into a more inclusive and permeable habit of mind. In examining Yorks & Marsick's conclusion based on organizations in general, one can make a case for high schools becoming learning organizations seeking to transform themselves. This would be evidenced through a combination of dimensions including: the changing nature of daily tasks in the environment; the mission and vision of the organization; the product it produces as seen by the quality of student learning accomplished; the forms of the organization's administrative system; and how all stakeholders of the organization conceptualize and carry out their roles and behaviors.

Teacher Collaboration

The area of collaboration of teachers as a part of school improvement has been examined by a noted researcher is school redesign. Linda Darling-Hammond (1997) designed a model for redesign and then studied the effects of school systems that included self or peer reflection and examining the effectiveness of teaching and student learning. Her model and data collected demonstrates that organizing high schools into effective learning communities enables teachers to change their view of effective models of practice and creates a process of transformational learning for teachers. Lortie's study of instructional practices in the institutional etting (in Cobb, et al., 2003) adds to the contention that, in the absence of leadership supporting change, teachers more often work in isolation, "hobbling the ethos of improvement" (p.13). The study declared that most teachers are hesitant and uneasy about their work resulting in reluctance by most to work

with their peers because it may show some seemingly weaker and embarrassing methods and performance.

Bezzina (2004) looked at the self-managing nature of improving schools. His research showed that schools become more effective when the organizational nature of the teachers working with the administration can take control and determine ways of addressing local and national agendas while being aided by the external support of their District. Bezzina's study supports the autonomous nature of professional learning communities and communities of practice working throughout the school.

Professional Learning Communities in Schools

Three studies of professional learning communities in public education settings are of importance to my study. Schmoker (2004, cited in DuFour, Eaker, & DuFour, 2005) has stated, "[there is] a broad, even remarkable concurrence among educational researchers and organizational theorists who have concluded that developing the capacity of educators to function as members of professional learning communities is the best-known means by which we might achieve truly historic, wide-scale improvements in teaching and learning" (p.18). His research took place in a New York City high school in which only 47% of the students passed the Regents Exam for competency in Math. The teachers sharing these students met regularly within their professional learning communities, collaboratively designed quarterly assessments of progress toward proficiency, examined the data together, and designed and implemented interventions from within their learning community. In a single year, 97% of their students succeeded on the Regents Exam (Schmoker, 2005). Another study by Schmoker and Little (2005) concluded that true learning communities in schools are characterized by disciplined,

professional learning collaboration and ongoing assessment. Teachers learn best from other teachers.

Continuing the theme of teachers learning from their peers, Stoll and Fink (in Bezzina, 2004) discovered that establishing relationships between teachers helps extend morale and encourages development of a clear and shared sense of purpose, greater collaboration, and collective responsibility for student learning. They went on to state that collegial relations and collective learning among teachers are at the core of building capacity for school improvement. However, establishing relationships between teachers who more often are comfortable within the four walls of their own classroom requires time, practice, and assistance from administration. Establishing those collaborative and collegial relationships is fundamental to counter the natural isolation of teachers and at the same time improve curriculum and instruction. Stoll and Fink's study helps us appreciate that direction and leadership are essential for teacher collaboration that removes teacher isolation. These researchers also concluded that schools that do improve and generate capacity and capability to sustain improvement become small learning communities.

Leadership and Transformation of Schools

Additional insight into the impact of leadership in redesigning schools implementing communities of practice has been brought forth from Sergiovanni (in Bezzina, 2004) who studied the context for collaboration and generation of shared meaning among teachers. The researcher concluded that such learning communities hold the key to transforming schools. Schools can sustain improvement through capacity building and equipping teachers to lead innovation and development. The message is

unequivocal according to Sergiovanni: sustaining the impact of improvement requires the leadership capability of many rather than of few, and improvements in learning are more likely to be achieved when leadership is instructionally focused on teaching and learning (Sergiovanni, 2000). As schools achieve a balance between individual autonomy and collaborative work, they can harness all intelligence, creativity, and leadership to solve problems and be successful. Bezzina goes on to state that schools that are teacher centered naturally find communities of practice emerging as a result of teachers realizing on their own the need to cooperate. Therefore, professional learning communities become the supporting structure for schools to continuously transform themselves through their own internal capacity. Commitment to critical and systematic reflection on one's own practice as the basis for individual and collective development is at the heart of today's professional teacher in effectively redesigning schools with professional learning communities. Finally, a case study by Little, Horn, and Bartlett (2000) suggests teachers do have the capacity to invent solutions to persistent problems of high school reform when it is based on a voluntary, locally initiated program of whole-school design.

Value of Learning Communities

Other researchers have looked at collaboration and learning communities from the teacher's perspective. Leonard (2003) asked to what extent do teachers value collaborative practices in school and to what extent do teachers perceive collaborative processes are actually happening? The research reported primarily speaks to data received in a follow-up survey addressing aspects of professional collaboration in North Louisiana schools. The most frequent forms of collaborative practices cited by the 56 responding teachers included faculty meetings, departmental meetings, grade-level or

subject area meetings, and special education meetings. They also noted curriculum meetings, team teaching, lesson planning, and faculty workshops. Their reported results described teacher dissatisfaction with the prevailing collaborative conditions. However, resounding support emerged for the notion that teacher collaborative practices can have a direct and positive impact upon student learning. Leonard and Leonard concluded that for the 45 high schools that had teachers return surveys, the schools themselves did not adequately provide conditions for high levels of professional involvement. The teacher's work was based on individualism and competition. Teachers were dissatisfied with scheduling and the time made available to them not directly related to mandatory professional development and department meetings. Leonard and Leonard suggest that collaborative cultures become more deliberately designed, initiated and supported by leaders from above.

Learning Communities and Teacher Leadership

Roland Barth, a noted education researcher examining school change, believes that reflection is a precondition for generating craft knowledge among teachers in schools. Reflection leads to change not only through conversation with critical friends but also through trusted colleagues who have teaching plus leadership ability and interpersonal skills. From this reflection should emerge a culture of embracing differences that does not avoid a dissonance free environment but instead leads to a community of learners. Barth (2001) believes that teacher performing as leader greatly improves teacher morale and student learning. He discovered from his studies of numerous high schools that teacher leadership must be supported by school-wide culture. With more educators as part of the decision-making of the learning organization, the

greater is their morale, participation, and commitment to carrying out the goals of the school. According to Barth sharing leadership with others as part of a team offers some "safety in numbers for the cautious, companionship for the gregarious, and greater hope for all of making significant difference through combined strength" (p.59).

Organizational Learning in Schools

Mitchell and Sackney (1998) sought to obtain empirical evidence of the effects of organizational learning practices in schools. They utilized an Action Research approach to test concepts of organizational learning because they felt the goals of Action Research, to improve practice and generate knowledge, were consistent with organizational learning practices. Mitchell & Sackney used six different types of data collection to see how teachers created their own concept of organizational learning: theoretical information, individual interviews, large-group reflection meetings, interaction observations, verbatim transcripts, and data summaries. They concluded from their data that cognitive processes of reflection and professional conversation along with the affective processes of invitation and affirmation were very important to successful learning among teachers. Conversation analysis revealed that the teacher's process went through three phases: naming and framing, analyzing and integrating, applying and experimenting.

Professional Learning Communities and School Improvement

One of the most noted writers and researchers of professional learning communities in schools, Rick DuFour of the Center for School Restructuring, studied over 1500 schools at all grade levels over a five-year period. He concluded that the most effective schools operated as professional learning communities (DuFour, 1998). The Southeast Department of Education Laboratory (SEDL) has been conducting research on

professional learning communities for the U.S. Department of Education. The SEDL (1998) review and synthesis of literature in on learning communities represents the work of highly reputed educational researchers in fields of teaching and learning as well as school change processes. This organization's conclusion states that significant outcomes are produced by professional learning communities: greater academic gains in math, science, history, and reading than in traditional schools, and smaller achievement gaps between students from different backgrounds. Ultimately, this improved teaching and learning is what all of the work going into the development of theory, best practices, and processes of transformative learning, collaborative problem solving, and constructivist learning within professional learning communities aims to achieve.

The following chapter outlines the method I chose to use in my examination of professional learning communities to find evidence of transformative learning, collaborative problem solving, and constructivist learning.

CHAPTER 3

METHODOLOGY

Overview

In approaching the question "What are the transformative experiences of teachers within the professional learning communities involved in redesigning of schools? What indicates a fundamental change in the participants' habits of mind?" I collected data using qualitative methods from teachers within four professional learning communities in two local high schools. I used an inductive process to analyze the data to build the patterns of the themes that emerged. This bottom up method was based on a bi-weekly gathering of data from the teachers, an analysis for emerging themes, and a re-focus and refining of the questions for the next data gathering session. In this way, the participants' meanings of effectiveness and success within the professional learning communities was emphasized and not the researcher's.

Each of the four professional learning communities was given explicit instructions from their respective principal at the beginning of the study to effectively use their time and expertise within their groups to improve instruction and learning. This directive was considered one of the key concerns of the school district and the State Public Education Department considering the fact that each of these schools was labeled a Restructuring 1 school. This refers to the fact that both schools have not met Adequate Yearly Progress (AYP) toward their NCLB goals for the previous six years in a number of categories including reading and math proficiencies as well graduation and attendance rates. At this point, the concern of all programs in such schools relate to curriculum and instruction focused on improving literacy. The influence this holds on the study is in presenting for

the professional learning communities a specific disorienting dilemma. As noted in the research of transformative learning (Mezirow, 2000) a disorienting dilemma discovered by the group or given directly to them can be the starting point of a transformative process. This study was designed to examine the teachers and discover their natural or instinctive process of collaboratively solving this and other natural problems that occur.

The research design was an emergent one that included multiple sources of data from the members of the learning communities taken from interviews, observations, and interviews/questionnaires. Initial data gathering from the teachers in the study was based on the following key questions.

1. What do members of a professional learning community do to solve problems and construct knowledge?
2. Is evidence found of repeated episodes of reflection and action through the professional learning community as members strive to answer questions of importance to them over an extended period of time?
3. What are the ways that learning is fostered by guided and directed critical reflection on the organization's part?
4. What data indicate a fundamental change in the participants' habits of mind?

To assist in the identification of factors related to collaborative problem solving and transformative learning theory as well as guide the emerging theory, I designed a rubrik called the "Matrix of Theories and Methodology" (See Appendix A). Part of the framework for the rubrik is based on Yorks and Marsick's (2000) interpretation of Calhoun's (1995) work. It assesses the viability of the practice of transformative learning theory within the professional learning community contexts:

1. Do the members of the learning community develop a critical engagement with their small learning community as a part of the school as a whole? Do they realize that the existing state of the school does not exhaust all possibilities and arrive at viable alternative courses of action?
2. Do members of the learning community develop an increasingly critical account of the cultural conditions on which their own habits of mind are based?
3. Do members of the learning community develop a commitment to a continuing critical reexamination of their points of view and habits of mind?
4. Does the critical examination by members of the learning community make them more aware of how their past experiences with the culture, programs, and policies of the school influence their existing habits of mind?
5. Are members of the learning community confronted with alternative interpretations of their experience within the PLC in a way that makes visible both their good and bad points as well as the reasons behind their blind spots and misunderstandings?
6. Is capacity enhanced for members of the learning community to incorporate their insights during their participation in the process of the Model into more inclusive and permeable habits of mind?

I anticipated at the beginning of the study was that a majority of the above questions would be answered positively. The analysis of these data could lead to an emerging theory or process for transformative learning and collaborative problem solving. This

study could lead to further research in which one or more models could be implemented as an intervention.

My theoretical lens as a researcher is based on my own experience as a member and facilitator of a professional learning community in one of the schools and facilitator of the development of the teams in the other. My study looked at two Professional Learning Communities (PLCs) from each school. Although several of the members of the PLCs were known and familiar to me, I made every effort not to become directly involved in the professional learning community dialogue and communication.

The methodology chosen for this research was based on grounded theory to discover the key elements of successful PLCs that could lead to an effective theory and methodology for school leaders to follow in similar schools and circumstances. Appreciative interview questions (Preskill, 2007) were used throughout the research study. Data gathered from the participants in the research experiencing their own process could lead to the development of a theory that might help explain their practice in a more direct and replicable way.

Context and Access

I collected data from teachers within four professional learning communities in two local high schools. Albuquerque High School (AHS) and Rio Grande High School (RGHS) in Albuquerque, NM were chosen for this study for several important reasons. I spent nearly 17 years working in AHS as a teacher and as a key developer and facilitator of small learning communities (SLCs). My prior knowledge of the programs and the teachers involved in the professional learning communities provides an element of ethnographic study in which the researcher is gathering information where the group

works (Leithwood, 1998; Louis, 1996; Seashore, 1996). Albuquerque High had been deeply involved in its redesign since 1999. The principal at the time and I as teacher leader wrote a plan and received funding from the US Department of Education for development of Small Learning Communities and the first 9th grade SLC was created. The new principal in 2000 took the early pilot to more school wide implementation for 9th grade SLCs that evolved into the teams that participated in this study. The school had reported improvement in attendance rates, transition of more students to 10th grade, and fewer behavior issues up to 2006. Then, the principal became concerned at the teachers' lack of adherence to the model and provided some coaching and professional development. In 2007, the current principal was assigned with admittedly minimal hands on experience of SLCs and high school redesign. He confessed that his learning curve was steep and he was choosing his Dean and SLC teacher leader carefully to provide support.

Albuquerque High's tradition of excellence in academics had seen some changes recently as well. Drawing from an older middle class neighborhood for half of its student population, enrollment had shrunk over the past 10 years. However, its reputation of effective and successful Advanced Placement courses and teachers spurred the second largest transfer-in rate in the district. While AP offerings and student participation drooped slightly from retirement of teachers, student diversity also had an impact. It continued to fall slightly below the reported minimal level of free and reduced lunch students to be able to receive Title I funds. The latest reported statistics show a definite achievement gap at AHS: SY 2006 scores show District Math Proficiency was 43%, all AHS was 41%, and Hispanics at AHS, nearly 70% of the school population, was 26%;

District Reading Proficiency was 57%, all AHS was 56%, and Hispanics was 42%. Therefore, a difficult and ongoing challenge has been keeping the higher performing students enrolled and motivated while delivering successful interventions to improve reading and math to a growing population.

RGHS was chosen for the second site of learning communities to study due to my placement there, during the actual gathering of data, as an administrator and my involvement in the development of the school's redesign initiative. RGHS PLCs were newly resurrected in SY 2008. This provided me a broader perspective to examine how individuals and teams experience the PLC and helped identify the steps in their process. This school resides in the center of one of Albuquerque's most transient and lower overall socio-economic areas. The South Valley is a mix of rural, immigrant, and older Hispanic families blended with more middle class property and housing development neighborhoods. The school's feeds-to list numbers over 2300 students. However, each Fall no more than 2000 students actually report to the school. The principal of seven years admitted "many of the better students choose to go to Charter schools, transfer to a 'Heights' school, or attend parochial school."

Rio Grande had been involved in SLCs beginning in early 2000 but chose a more radical approach to their redesign. After two years of school wide 9th grade SLC, it broke itself into a school-within-a-school as described in Chapter 1. There were four Academies each with its own principal and one principal of operations. Two years later this model disbanded when the superintendent of schools driving the redesign was tragically killed. Without his backing, the operations principal was assigned as principal and the schools became Academies. It was here where two of the PLCs involved in this

study were formed. In recent years, the career academies had been less supported by the administration and focus was centered on the development of the effectiveness of the 9th grade SLCs.

Rio Grande is a Title I school and chooses to use much of the additional funding for a Parent/Family Center and a full time staff. Some reading intervention courses had been recently added to the curriculum. In the Fall of 2008 when I began this study, RGHS had been moved into Restructuring II, meaning that unless the school dramatically improved its performance, changes could be forced upon it from the possibility of reconstituting the entire school to a change of leadership. The faculty and staff were aware of this designation but it was unclear in my data if the ramifications of this situation were clear. As it turned out, in January as I concluded my study, the principal mutually announced his retirement allowing the associate superintendent to move more quickly in the more involved and pressing redesign of the high school.

RGHS is 90% minority and nearly that many on free or reduced price lunches. The school was very proud of its remarkable jump in 2007-2008 from 21% to 46% proficiency in Reading among all students. Math proficiency stayed at the 23% mark. Other than the recent improvement in Reading, this school had been at or near the bottom in the district in test performance, graduation rates, and attendance.

These details on the nature of the two schools indicated challenges that could affect the groups. At AHS the fact that there were extreme high and low groups of students with a middle ground might have had the effect of some teachers focusing on their gifted and talented students while neglecting the more difficult challenges of the lower group. It also might have skewed the time spent in discussions to commiserating

on the low end while skipping over the silent middle student. At RGHS, the teachers could very easily have been more negative and defeated because the focus was not on supporting them as much as the 9th grade SLCs. In addition, the recent successes of the improvement in Reading scores could cloud the continuing serious issue of achievement in areas such as attendance and graduation rates while overlooking the Math performance deficit.

The study was conducted during the Fall Semester of 2008. I spent eighteen days, one day a week, at each site during the study to gather the data. A preliminary presentation and request to the school district's Research, Development, and Accountability Department resulted in an early guidance to this sampling and methodology. The process to gain approval to carry on the actual research coincided with the IRB application for the University. Early requests to district leadership as well as to the two school principals were favorable in allowing access to the teachers.

Participants

I chose to use theoretical sampling (Creswell, 2007) to provide participants that could contribute to the development of the theory that emerges at the end of the study. The participants at AHS included 12 teachers comprising 2 PLCs or "houses" of their Freshmen SLC. In the model this school was following, a house was expected to include three-4 teachers from different disciplines who shared nearly all of their 150 students. The students went from math, to science, to English, to Health or New Mexico History with their cohort of peers and within the same group of teachers. The teams were formed as part of each school's efforts to redesign their structure and improve outcomes for students. Several of the teachers at AHS remembered me as an expert in small learning

communities and a resource person that helped provide guidance 18 months prior to the start of the study upon the request of the principal. At that time, SLC teams had been together for several years, but had lost focus and effectiveness and had stopped meeting on a regular basis. I had provided some guidance and supports that helped get them back to collaborating and problem solving on a regular basis. This prior experience became a concern for validity in the study. I offset this prior experience with a careful ethnographic view, credibility with authentic results, authenticity in sharing the voices of 22 participants, and a critical appraisal of all aspects of the research (Cresswell, 2007).

Description of the Participants

The theoretical sampling at RGHS included 2 teams totaling 10 teachers at the 10^{th} grade level who were part of two newly formed professional learning communities within two different career academies, or theme-based SLCs. These PLCs were similar to the freshmen SLC houses with the added feature of sharing the common interest of the SLC themes: Business and Entrepreneurships, and Engineering and Technology. All of the teachers at RGHS knew me as an expert in setting up the structure of their small learning communities. I had met with them previously to provide guidance and facilitation of the framework of their program. Professional learning community as a methodology had been described prior to the beginning of the study as a way to help solve problems and collaborate during the course of the school year.

Rio Grande High School, located in the South Valley of Albuquerque, NM was the site of two of the professional learning communities in this study. This community is a mostly moderate to low socio-economic area of the city that was suffering through a continuing seven-year decline in test results, drop outs, and attendance that was leading

to possible state or district intervention. RGHS one of seven high schools that had been awarded a $9 million Smaller Learning Community Grant in July just prior to this study to jump-start its reform of the school. The principals were hopeful that the data collected from this study would help guide the development in the next year of a fully supported 10th grade small learning community. However, the school leadership admitted that their focus this year was on developing the 9th grade SLCs.

The Engineering Academy at Rio Grande High School was a small learning community comprised of seven veteran teachers of at least three years together in the team. They represented multiple disciplines including English, Social Studies, Math, Special Education, and Career-Technical Education. This learning community was also involved in a grant from the State of New Mexico focused on developing stronger interdisciplinary career-technical education programs. They each had a designated common free or prep period in which they could meet weekly or more often as needed. One key element or structural component of small learning communities in high schools is sharing a common group of students among most of the teachers. This group only shared a minimum number of students (approximately 50), far below the plan developed during the previous summer of scheduling.

The second Rio Grande professional learning community in the study was a group of five teachers in the Business and Entrepreneurship Academy, an SLC focused on the business cluster. This team had also been created several years ago during a previous effort to begin the redesign of the school. Math, Special Education, Career and Technical Education, and Social Studies were represented. This team had not been successfully or properly scheduled by the curriculum assistant due to an oversight and conflicts within

the master schedule of the school which could not be fixed. Therefore, the team did share a common prep period each week but had few students in common.

Albuquerque High School (AHS), the oldest high school in the city, included a wide spectrum of students from the surrounding downtown area with both moderate to low socio-economic students and a solid middle class neighborhood surrounding the University of New Mexico. The school principal had just completed his first year of leadership and admittedly was on a fast learning curve for small learning communities and school redesign. AHS had also been part of the Smaller Learning Communities Grant and hoped that results from the study could assist the leadership team in developing more effective learning communities for teachers and students. This school had also been one of the first in the District beginning in 2000 to implement 9th grade small learning communities. The structure of the current program is based on those first models. AHS had recently assigned a new Dean of Students to the 9th grade Academy and had hired a new lead teacher for the SLC Grant both with experience in administration in school redesign. They expressed a strong desire to improve the effectiveness of the teams.

The first team in the study from AHS included five teachers from Math, English, Special Education, and Science. The leader of this team was in her first year in this role but had been a member of previous learning communities. Demonstrating the school's commitment in theory to small learning communities and collaboration among teachers, it had built a schedule around several common times for meetings for the teams. This 9th grade team was scheduled to meet once a week during a common planning or prep period as well as every other week during a late arrival time for students in the morning. This team included one new teacher to the high school unfamiliar with small learning

communities but experienced in middle school families, a similar type of team. The other four teachers had been involved in other teams in the past, but this was the first year with these particular members all together on the same team. Although the teachers seemed well organized in their learning community structure, they expressed concern that in truth they shared less than 50% of the same students.

The second AHS team included seven members from Math, Language Arts, Gifted Education, Special Education, Health, and Science. The leader of this team had been part of learning communities for the past nine years and quietly and professionally organized the teams for their weekly meetings along the schedule described previously. However, this well-meaning and dedicated teacher leader and the leaders in the first group had never received leadership training for PLCs. A larger team of teachers, this group did not seem to share as many students as originally intended by the SLC model they were implementing. Again, it seemed that due to turnover of teachers and changes in scheduling over the previous summer, the makeup of this team was new. This team included a brand new teacher to high school, two others in their second year at this school, and the remaining four veterans to teaching at AHS with previous experience in the learning communities.

Having been known by all members at RGHS and many of the staff at AHS, I made a clear effort to not engage in cross-talk regarding advice within the small learning community group meetings. It did happen that I was asked on three occasions for advice with a particular dilemma each of which related to the SLC structure. These questions were not focused on collaborative problem solving processes or of transformational learning components. I did not provide any intervention to the professional learning

communities other than the indirect interference provided from the questions asked in the interviews (Cresswell, 2007). I believed that my presence as an observer in the collaboration sessions served as a catalyst to keep members on task. It may have provided a more streamlined opportunity for rich gathering of data.

I received permission from the Albuquerque Public School's Research, Development, and Accountability Department to begin the study and for use of my protocol and instruments in August, 2008. I asked for and received final approval from the Superintendent and the Principal of each of the schools by September 1st. I then approached the members of three teams of teachers making up professional learning communities as part of freshmen academies at AHS and two career academies at RGHS. This was done in person at a collaborative meeting for each team. I explained my wish to observe their collaboration and process of problem solving throughout the semester. I explained that this was not an evaluation as to their effectiveness but rather an opportunity to collect data and document the work that teachers do through their professional learning communities. A permission form (see Appendix B) was provided that detailed the data gathering described in my methodology as well as the fact that the data would not be linked to individuals in the report. They were told of the risks of the study: the possibility that, despite precautions regarding anonymity, certain comments could be linked to individuals by those reading the report that also knew the participants well. They were told that if a member of the learning community chose not to participate in the study, the team would be dropped from the study. The consent forms were collected by the team leaders and returned to me shortly after this meeting. This being

done, I discovered one of the three SLC teams at AHS had to be excluded from the study when one member refused to participate.

During this first meeting, I determined each team's regular schedule for collaboration and provided the specific dates at which I planned to attend. I observed eight of these regular meetings beginning in early September to note any elements of transformative learning, collaborative problem solving, or constructivist learning by the group as a whole. In addition, I conducted individual interviews beginning in September with each participating member to note any of the elements of transformative learning by the participating teachers as well as their recollection of elements of collaborative problem solving. Appointments were made shortly after the first meeting with the PLCs. The end of study interview/questionnaire was completed during the first two weeks of January 2009. I hoped that these data gathering activities would provide a significant amount of data to support an emerging model of transformative learning and collaborative problem solving in PLCs.

Instrumentation

Observations

My role was one of an outside observer with the intent to scrutinize everything that happened during the forty-five minute professional learning community planning meetings. Following Glesne (2006), I took note of the following:

1. The participants in the setting, in particular, what they do and say, who interacts with whom, and noting the conversations;
2. The actions and interactions within the meetings including the greetings, what they informally talk about, and the kinds of questions they ask;

3. The gestures and body language observed during the meetings; and,
4. The talk that goes on within the group during the "working" parts of the meeting time.

The note-taking within these categories followed the strategies suggested by Wolcott (1981) to guide observations:

1. Observation by a broad sweep;
2. Observations of nothing in particular;
3. Observations that search for paradoxes; and,
4. Observations that search for problems facing the group.

Glesne goes on to say these observations would raise questions for interviews and would support or challenge the interview data. The observation form can be found in Appendix C.

Observations of the four teams at the two different high schools took place in late September, October and November. The schedule was as follows:

A) RGHS Technology Academy – 9/24/08, 10/1/08, 10/15 and 10/29 cancelled by leader due to non-attendance, no reschedule made
B) AHS 9th Grade Team 1 – 10/22/08, and 11/19/08, 11/13/08 cancelled by teacher leader, no reschedule made
C) AHS 9th Grade team 2 – 10/29/08, 11/5/08, and 11/19/08
D) RGHS Business Academy – 10/23/08, 11/13/08, 11/25/08

The RGHS Technology Academy had scheduled meetings weekly if they had something to discuss according to their teacher leader. They took place on Wednesday mornings during their common planning period. I attended four of the meetings but only two

actually took place and one of those ended early. Both AHS 9th grade teams were given a schedule along with the school to meet every other Thursday morning from 7:30-8:20 for "Collaboration Period." On the off weeks, the teams met during a common planning period for approximately 45 minutes. Finally, the Business Academy at RGHS did have a common planning period available to them, but did not have a regular schedule of meetings. I discovered after I began the study, that even though the teachers were given a common period to meat, the lead teacher only called a meeting when they had something important to discuss. I discovered that on the weeks they did not formally meet, they met informally at the snack bar during lunch to talk.

My job as Assistant Principal did interfere in my attending two additional sessions at RGHS. It seemed that being on-site meant that I was on-call and kept me from attending those additional meetings. At each of my observation sessions I recorded my data on the "Observation Form" (Appendix C) and recorded the entire meeting on my digital recorder. I sat off to the side from the group so as not to interfere with the physical setting of the interactions. In my weekly coding of the data, I discovered very similar categories and classifications and by the end of November my time was running out as we got near the end of the semester and no new data categories emerged.

Interviews

The interview questions were taken from Patton's (2002) recommendations including experience/behavior questions, opinion/value questions, feeling questions, and knowledge questions. Maxwell (2005) uses the term realist questions "to guide researchers to frame them in terms of what the respondents say or report rather than in terms of inferred beliefs, behavior, or causal influences" (p. 72). This method was

intended to help me treat these unobserved phenomena as real and their data as evidence to be used critically. The resulting data collected could possibly be used to develop and test ideas about the existence and nature of the phenomena, a process of collaborative problem solving that also supports transformational learning. The questions were categorized from process theory that was more suited for qualitative research and involved an open-ended, inductive approach. The intent was to discover what the meanings and influences of current and recent events and feelings of the members within the groups were and how they personally were involved in the professional learning communities. The interview questions can be found in Appendix D. To provide a more comfortable and familiar setting, the interviews were conducted at the teacher's classroom lasting from 30 to 45 minutes during his/her prep or planning period. Using the methodology described above, the questions were divided into three categories: (a) questions about the meanings of events and activities for the teachers in the professional learning communities; (b) questions about the influences of the physical and social contexts for the professional learning communities; and (c) questions about the process by which these events and activities in the professional learning communities and their outcomes occurred. By using the constant comparative method of the responses, the questions were updated before each new session based on the ongoing coding of the data.

Members were asked at the completion of the study in late December to reflect on their experiences and process. These questions, found in Appendix E, included the following: Describe your peak experience within your learning community? What did you value most about your learning community discussions? What are three wishes for the work or outcome of the learning community in the future? By keeping track of

responses from these appreciative questions I hoped that it could include thoughts and reflections on the professional learning community process and effectiveness as well as the impact of the PLC on their own process. The purpose of collecting these data was to help triangulate the data collected from interviews and observations during the course of the study throughout the Fall Semester. Thirteen responses were returned.

Data Collection

Each interview was conducted as a semi-structured interview that was audiotaped and transcribed. I used a digital audio format that was copied to a hard drive after each interview. At the end of the study and when all data were analyzed, the data files were destroyed through the built in erasing process. At no time in writing the results in Chapter 4 was a specific name used to directly identify a particular teacher's remarks. Every effort was made to protect the anonymity of the participants in this area. The protocol used was five open-ended questions that were generated from the central question and sub-questions described above. However, with each set of interviews, changes were made to the questions to refocus, refine, and better understand the emerging theory being studied.

I conducted the observations from the perspective of being an outsider. I was known on a professional level by virtually all of the participants as one of the local experts in the field of small learning communities and career academies of which professional learning communities are a component. It seemed that an open atmosphere of comfort from these prior professional relationships lead to an effective revelation of the elements and process of the PLC. Both descriptive and reflective notes were made during the course of the observations.

Data Analysis

The methodology I used for data analysis was based on Cresswell's model for grounded theory study (2007). Cresswell's model describes six major components of data analysis and representation that the study followed as described in Table 1.

Table 1.

Data Analysis Design

Data managing	Create and organize files for data
Reading, Memoing	Read through text, make margin notes, form initial codes
Describing	Describe open coding categories
Classifying	• Select one open coding category for central phenomenon in process • Engage in axial coding for context, intervening conditions, and strategies
Interpreting	• Engage in selective coding and interrelate the categories to develop a proposition • Develop a conditional matrix
Representing, Visualizing	• Present a visual model of the theory • Present propositions

This research study was an emergent design; data analysis was an ongoing process during the weeks that data were being gathered. The examination of the data, managing and reading transcripts, and memoing took place after each week of interviews and observations. The open coding categories generated from the data in this ongoing process lead to new and more relevant questions for the next interview or provided better points of importance for the next observation.

In the describing phase, I used open coding to examine the text for salient categories of information that were supported within the "Matrix of Theories and Methodology Investigated in the Study" (see Appendix A). Using the constant comparative approach, I had an abundant supply of categories that provided a better look at the data connecting to a component of an existing theory within the Matrix. I examined each interview or observation for evidence of a step in a process or component of a theoretical model from a number of theorists. I noted the links on the Matrix and on the interview or observation notes page. Continued observations and interviews during the course of the study soon provided new information being obtained from the participants that no longer provided further connections to other components in the Matrix. I linked the categories of analysis to a step in a process or component of a theoretical model, properties that represent multiple perspectives about the categories. This process reduced the database to a small set of themes or categories that characterized the process of collaborative problem solving and transformational experiences within the professional learning communities being studied.

In the classifying phase, I identified the most significant categories from the open coding as the central phenomenon of interest and connected it to the "Matrix of Theories and Methodology Investigated in the Study" (see Appendix A). I labeled the significant steps in a process or component of a theoretical model on this Matrix with a higher number of category links from the data. This phase uncovered a particular process that was common to all four of the learning communities. These links to the Matrix formed the basis of an emerging theory that impacted the interviews and observations. Questions for interviews were modified based on these emerging categories. This process of axial

coding not only led to an emerging model, it also uncovered a theme that stood out that was repeated frequently and became a central part of the learning community process. These items included causal conditions within the SLCs, strategies used in the learning communities, the context and intervening conditions that shape the strategies used by the team members, and the consequences of undertaking the strategies within the team.

In the interpreting phase, I used selective coding to analyze the data that were gathered. Then, I organized the results into a model representing the theory that emerged from the study of the professional learning communities found in Chapter 5.

Summary

This chapter has explained the methods used in this qualitative study of four professional learning communities and their characteristics both as a group and as individuals that link to transformative learning and collaborative problem solving. The next chapter represents the results obtained by this methodology.

CHAPTER 4

RESULTS

Introduction

As stated in Chapter 1, the study reported here examined the transformative experiences of teachers within professional learning communities and indications of a fundamental change in the participants' habits of mind. I wanted to know what teachers believed were the most effective characteristics and components of professional learning communities, what members do to solve problems, and the reflective practices of members of professional learning communities in redesigning schools. This chapter is organized in terms of the data-gathering instrument and the particular focus of that instrument within the research questions. It first reports the response of the teachers in interviews related to the meanings of events and activities for the teachers in the professional learning communities, the influences of the physical and social contexts for the professional learning communities, and the process by which these events and activities in the professional learning communities and their outcomes occurred. The chapter goes on to report on the observations of the group meetings. This section examines what members of a professional learning community did in solving problems and constructing knowledge. It goes on to discuss the evidence related to groups, learning as discrete entities in a way that transcends individual learning. To conclude this section, I look at evidence of Action Learning.

Finally, Chapter 4 will examine the most significant categories from the open coding as the central phenomenon of interest and connect these categories to the "Matrix of Theories and Methodology Investigated in the Study" (see Appendix A). This

classification step allowed me to label the significant stages in a process or component of an emerging theoretical model for collaborative problem solving and the beginning steps of transformative learning from this Matrix.

Results from Interviews and Questionnaires

Meanings of Events and Activities

Teachers in this study were divided in what they perceived were the most meaningful and rewarding experiences of the learning community. For some, it was experiences that directly affected themselves or their relationships with their peers. For others, it was more about the students and how their work or discussions in the SLC impacted them. However, some data collected from interviews did relate to collaborative problem solving and some to transformational learning (see Table 2).

The data in Table 2 from interviews and questionnaires describe teachers who believed that the learning community was a forum for solving basic problems or dilemmas that were meaningful to students and to their practice as educators. Although not self identified as such, three of their responses also were related to components of the process of transformational learning, if only at a basic level.

Problems That Changed Perspectives of Teaching and Learning

The data collected in this question gave little indication that the group had a broad impact on changing perspectives of teaching and learning. When responses were forthcoming, they indicated that no processing occurred within the group on serious issues during the time period of this study. One teacher reported of his team's brainstorming last year of ideas and consensus of suggestions that were given to administration on a schedule for advisories. Of note is that only one other team member

reported this as significant and that it occurred the prior school year. A possible reason for the lack of change in points of view generated through the PLC is a reported conflict by participants toward the administration around a mandate to work together that is made increasingly difficult without pure teams of students. SLC Teams of students are pure when at least 90% of the students in the classes are shared by a group of teachers and are identified as belonging to the same SLC. No data indicated that teachers had worked the problem of advisories through and several interviews included comments that it was up to the administration to fix this problem.

An example of a change in perspective of teaching and learning was noted. Several members of one of the PLCs at RGHS reported that one time in the past they did share more than 50 students and it was "magic, kept students in school, and teachers felt like they were doing something because they dealt with student problems together."

Teachers Becoming More Comprehensive and Wide Ranging with Ideas

The data suggest that involvement in the learning communities up to this point had little or no impact regarding new practices and ideas for teachers. Neither did it provide more appreciation of good quality in teaching and learning. Also no reports ensued of teachers becoming more open and inclusive to new ideas and ways of teaching as a result of the professional learning communities. Six different teachers reported a heightened awareness of other teachers outside of their department or discipline and becoming more helpful to those who were members of their team.

Three newer teachers also reported that they sometimes would take back to their own classroom practical classroom management ideas other teachers talked about in meetings. One special education teacher modeled more of a general education teacher's

curriculum raising the level of rigor for her students following several meetings in a previous year. However, four teachers reported no impact on their practice and no talk in team meeting about curriculum. Three teachers reported that they often go back and do their own thing this year in 9th grade SLC at AHS. These same teachers felt that interdisciplinary thematic units that the new SLC Grant was expecting were "really contrived for the sake of the administration and requirements of the grant and were too difficult with so much to teach."

Table 2.

Exciting and Rewarding Experiences within the Professional Learning Community

Coding related to …	**Number and Percentage of Reported Examples**		**Total Comments**
Solve Problems	6	13%	48
Examples: "When we got our feet on the ground with classes and made good use of our common prep time – conversations became curricular in nature" "Talking with team about interventions and strategies to motivate students"			
Transformative experiences	5	10%	48
Examples: "Sharing questions about students and school issues with others in the group so as to not flounder on own" "Comaraderie among teachers; Comfort among teachers through longevity and consistency of the team" "Working with Special Education teachers and students" "Seeing the positive attitude of other teachers and how Pathways can make a difference" "I'm a newly rededicated person – I'll do whatever it takes"		

Influences of the Physical and Social Contexts of Learning Communities

Examination of Past Experiences within PLCs

The data indicate little formal and direct discussion regarding past experiences of the culture, programs, and policies of the school. Five participants who had been involved in the SLCs in past years responded that they knew about and had talked about these areas but in their concern over current issues did not formerly recall this prior organizational knowledge. One indication of this came from two teacher responses that described how past general conversations led to more relating to other teachers and to the students. Two of the newest teachers reported getting support from others in the group that caused them to feel more connected to other members of the PLC. Prior knowledge of cultural conditions led to a more general awareness within the 9th grade teams of their student's socio-economic status. Five of the RGHS teachers reported that they were well aware of the "South Valley perception of mediocrity" by the larger community and held close their loyalty to the students who wanted to be helped. However, data collected during the course of this study indicated that throughout the current semester examination of grades, behavior, and attendance was not done on a regular or systematic basis.

Changes in Basic Assumptions

Twelve important changes were reported in teachers' assumptions that related to particular areas of their practice of teaching (see Table 3). The data described in this table indicates changes in assumptions that were more positive and progressive in nature. A fact of interest are the minimal data collected related to professional development or other knowledge creation opportunities. However, four of the responses described a change of one's relations with other teachers or with students. Newest teachers received

no insights because they were “still learning the basics of computers, absences, and class sizes.”

Table 3.

Changes in Basic Assumptions Reported

Coding related to …	**Number and Percentage of Reported Examples**		**Total Comments**
Changes in assumptions of system of teaching and learning	2	6%	34
Coding: General ed teacher turned around their attitude and assumptions about special ed students through interaction within team			
Changes in assumptions of the organization of the school	1	3%	34
Example: “More accountability for own activities as part of a group through needs of a grant”			
Changes in assumptions in one’s feelings about job	3	9%	34
Coding: Frustration builds currently with teachers when the structure of SLC is not as efficient as in the past			
Changes in assumptions in one’s interpersonal relations with other teachers and students	4	12%	34
Example: “Working as a team made me relate to others on a more meaningful level, through their support I became connected and not alone”			
Changes in assumptions on the way one learns in the professional development programs in the past year	1	3%	34
Coding: Professional Development would be best if connected more to the team but rarely is allowed by administration or thought of or asked for by teams			

Process by Which Events, Activities, and Outcomes in PLCs Occurred

How Members Reexamine Their Points of View

Data collected from interviews described numerous ways participants examined their points of views towards issues, problems, cultural conditions, and the teaching practices (see Table 4). The data indicates a lack of a specifically stated process of

Table 4.

Reported Changes in Frames of Reference and Habits of Mind

Coding related to …	**Number and Percentage of Reported Examples**		**Total Comments**
How members reexamine points of view towards issues	3	8%	38
Coding: Formally within the CTE meetings as a team discussing test scores and graduation of students – when it's time to report on the grant			
How members reexamine points of view towards problems	5	13%	38
Example: "With all the diverse opinions in our group we talk it out and then come together."			
How members reexamine points of view towards cultural conditions	5	13%	38
Example: "We look at the barriers of the culture of our school community and don't see positives – no real change."			
How members reexamine points of view towards teaching and learning practices	1	3%	38
Coding: POV change through the activities with students that the teachers create as group or individually			

addressing problems. At least one member from each learning community stated that reexamination occurred within the comfort of the group where they try to "talk it out and come to compromise".

Results from Observations

What Members of a PLC Do Differently in Solving Problems and Constructing Knowledge

The observations made of the professional learning community meetings did include parts of the discussions that can be connected to the collaborative problem solving process developed by Jonassen (2004). These observation points were coded by Jonassen's step of making and defending judgments on problems as well as exploring possible solutions. The October 23rd meeting of an SLC at RGHS (Appendix F) is one good example of the group dialogue working through these two steps. I coded the data in each observation I believed were connected to the "Matrix of Theories. In Appendix F, I circled in marker the coded data and then wrote the number of the theory and the appropriate stage or process. In this case, I labeled "identifying and scheduling", "Should we gather our students to our electives?" and "What do we do?" as related to Jonassen, number 1 on the Matrix and step a and b, making and defending judgments, and exploring possible solutions. The discussion began with the teacher leader suggesting that they should all make a plan to identify the students who they actually shared among themselves and thus were part of the SLC. They began by saying that "it is up to us" to identify students that we share among each other. A look at the class lists revealed more boys than girls and the conclusion that "we need a plan to let our students know they are part of the our SLC." Although not classified as an ill-defined problem, this issue was

typical of the kind of detail work that took up collaboration time for 90% of each observed session.

An SLC team from AHS (Appendix G) illustrated another example of a professional learning community clearly working within Jonassen's stage 1 and 2 of collaborative problem solving. The lead teacher began the discussion with a suggestion that they pick a literary strategy from the district's collection of reading comprehension interventions to implement across the SLC team. Two team members offered suggestions to the group, but before consensus and a plan could be finalized, the 9th grade Dean of Students entered. The conversation quickly turned to what he wanted the PLC to discuss and to know. These were two of 10 incidents where the four teams did spend time specifically engaged in Jonassen's first two stages of collaborative problem solving.

In these and the other 17 data entries of steps in collaborative problem solving, the next stage - discussing the impacts of solutions and developing evaluation criteria - was taken over by the administration, the teacher leader, or an individual member of the team. Some examples of topics the PLC addressed in the initial stages of collaborative problem solving include: getting 20 students from the SLC to take the Accuplacer (community college placement exam) at RGHS; developing an interdisciplinary unit on the surrounding school community, a historic district of the city; five incidents of particular students that a teacher was concerned about looking for ideas to get improved student performances; planning for SLC Grant visits; plans for looping for next year in which the 9th grade PLC team stays intact with their same students and teach all their 10th grade curriculum, a strategy seen to have good success with this population at AHS; planning an SLC field trip to Central New Mexico Community College at RGHS; the

pros and cons of changing freshman science offering from Biology to Environmental Studies at AHS; and, agreeing on a mission statement, team color, and identity for the AHS 9th grade teams. Each of the observed AHS PLCs at the minimum discussed concerns about student achievement. However, clear and specific steps in a process to problem solve and explore solutions were not observed.

Some of the data of collaborative problem solving were revealed through the interviews. As discussed here, often the simple problems when solved can be important. One member of a PLC at RGHS reported:

> The potential of the group is incredible! At times, I have had almost a cathartic experience even over simple things. Like the time I struggled with a pen and pencil problem with my special ed kids. They just weren't bringing their stuff. One team member saw I was so frustrated and suggested the simple solution of providing the materials myself so I can get right to teaching.

Observations of the PLCs only revealed one discussion that led the team to the next stages of true collaborative problem solving. My conclusion after examining the coding of the data to the "Matrix of Theories and Methodologies" is that no true evidence of critical reflection coincided with these discussions in the PLCs that I observed. There was just the one data coding of exploring options within the team. Numerous data were collected related to this conclusion; no specific ill-defined or ill-structured problem was discussed. Neither of the AHS teams spent time during my observations on ill-defined problems; everything discussed was short answer or specific solution-related issues. Another common observation was that of a problem that would come up and a quick realization that it was up to the administration or the District to solve. Teachers did not

often spend time providing recommendations. Finally, all but two team meetings that I observed at AHS included the Dean of Students or Lead Teacher of SLCs. Their presence changed the dynamic dramatically. A common occurrence was one member offering an awareness of a problem and the team leader or program director making decisions or acting on the simple solution. Little development of problem solving discussion was noted.

Table 5.

Comparison of Observations with and without Administrative Presence

	AHS Team 1 – 10/22 observation without Dean	**AHS Team 2 – 10/29 Observation with Dean**
# of codings	26	19
# of classifications connected to Matrix	5	3
Codings	"What do we do with test scores?" "They want us to use test scores to teach? Ridiculous!" "As a group can we look at other better assessments?" "The administration should …" "Anyone interested in a global warming cross-curricular unit?"	Dean goes over points from SLC site visit Three students with problems brought up – no one else had this student The dean: "Any interest in an interdisciplinary unit?" Answered with his own suggestion of making a book about the surrounding community The dean: "How do we prepare our students for 21st century skills?" Response: "Too many failures." "The issue is absences." "Nobody doing anything about referrals."

Four learning community meetings I observed at AHS became dominated by one-way report out to members from the Dean or Lead Teacher with little collaboration noted. They simply provided information to the members regarding basic school needs such as

schedules for short cycle assessments, site visits from Stanford University's technical support for the SLC grant, and parent conferences. My analysis of the impact of the Dean of Students on the PLC is illustrated in Table 5.

The illustration provided in this table leads me to conclude that the administrative involvement did have a negative impact on the amount and the type of interactions by the PLC members. The coding listed in Table 5 represent less emphasis on what the Dean was describing versus a broader and deeper range of thought visible in the responses among the members of the other meeting.

Evidence that Groups Can Learn as Discrete Entities in a Way that Transcends Individual Learning

Many examples of group learning could be seen at the basic knowledge level in the PLC meetings. One AHS team meeting started with the leader questioning how "we can best prepare students for the 21st century." However, this promising start to a discussion was tabled quickly with a suggestion by the Dean of Students to work with this team in the future on this very topic. No further observations saw this discussion picked back up during the study. Another discussion centered around exploring ways to improve turnout for the parent teacher conferences at AHS where again ideas were presented with unclear follow up or next steps. Yet another conversation was over the serious issue of improving the actual counts of free and reduced lunches so that the school could qualify for Title I funding. No next steps followed. Therefore, based on these data, I cannot fully determine that the group learning process transcended individual learning.

One example of critical reflection was observed in a RGHS PLC meeting (Appendix H). The discussion began with the group's deep concern over the lead teacher announcing her resignation. She announced that since the administration still was not supporting the SLC with pure scheduling of students, she would leave. In an effort to have her stop and think of what the team had accomplished even without the full support of the administration, one member recounted the story of a student from last year who had been truly supported in a most unique way by the connection of this same team of teachers and how he was able to break away from the "vicious cycle of the South Valley for many of our families." This reflection was clearly seen as a common and powerful experience that is in the group's memory and connects to Brookfield's process stage 2 of subjective reframing. As it turned out, the lead teacher stayed on board.

Four of the AHS PLC meetings had a similar dynamic of group learning. Here is a section from one data coding:

> SLC Teacher Leader: "(the school's assistant principal for curriculum) wants ideas from you guys – what do we offer for science next year?" one second pause "I was thinking …" And, in fact no one else really joined in the discussion to go any further with the collaborative problem solving process.

These examples demonstrate how the data did not show group or individual learning beyond the basic knowledge stage or level. The first AHS team maintained discussions at the early stage of exploring of different points of view than the administration, but did not follow through or discuss next steps. One issue I did observe revolved around a problem that the members felt strongly about - relating to short cycle assessments, tests given three times a year to measure progress toward goals. This

discussion occurred at the time of year when the first assessment of students was being done. One member hoped that as a group they could look at other assessments, but no commitment was made of how that would happen or which member or members would work a solution out. One particular AHS team meeting started out with some meaningful observations of an ill-defined problem being presented and the early stage of possible solutions being discussed. However, when the Dean soon came in, all discussion stopped and the meeting became dominated by his SLC details and issues. In fact, on three different occasions in the same meeting he presented the issue and the solution at the same time.

The biggest dilemma of one RGHS SLC during the study was in regards to increasing enrollment in electives and identifying their students in the program. There was no group learning evident beyond reacting to basic information provided by the lead teacher at the small detail level with no big ideas or ill-structured problems. One PLCs meetings were much more loosely handled with members often coming late, leaving early, and having their own side bar discussions. There was no evidence during observations of any of the groups of action learning being discussed, used currently or in the recent past.

After eight observations of the PLC meetings a pattern emerged as described previously in this section. One particular observation of a PLC at AHS provides a good example of these typical meetings (Appendix I). The lead teacher began with an agenda of information from her recent meeting of lead teachers with the Dean regarding the upcoming site visit from the SLC consulting team from Stanford University. When the lead teacher stated how the site team wanted to see the SLC in a coordinated discussion

and lesson, three members responded with comments of how difficult that would be without pure teams. Further problem solving beyond this point dropped when the team turned to another concern of how student elective choices were getting fewer and causing an impact on student morale. One teacher stated that he had given up expecting homework from students. In each case no emerging process or discussion developed. At this point the 9th grade Dean of Students entered the learning community and the dynamic of discussion and atmosphere changed. I noted that for the rest of the meeting the communication pattern went from teacher back to Dean to teacher and back to Dean. Little evidence of crosstalk among the team members and the teacher leader was visible. The Dean then described an idea he had to loop students and teachers next year in a pilot program within one SLC team that began one serious and engaging discussion. The Dean described this as a practice in which a current team of teachers and students would be scheduled again together in the 10th grade for their English, Science, Math, and World History classes. "There is some research in SLCs that this practice can improve student outcomes," he said. Some positive response to looping was offered by the teachers, but the pattern was primarily communication between one teacher and the Dean. I noted in my coding of this part of the meeting that the data were related to Jonassen's stage a, b, and c on the Matrix: making and defending judgments on the nature and the scope of the problem, exploring possible solutions, and discussing the impacts of solutions.

The discussion turned to another issue on the Dean's agenda regarding discipline in which he told the team members of his new behavior rules and consequences. He had visuals of failures and absences for the first grading period. No copies were made for the team members, but he promised to print them up for them. The Dean went on to suggest

the idea of an interdisciplinary project that each teacher in the PLC could have his or her students participate in. He went as far as providing an example of one such project from another school that he had brought back from one of his district SLC leadership meetings. Teachers responded moderately interested with no further steps discussed at that time.

The discussion went on to the third part of the Dean's agenda which was a discussion of ways to improve the stated numbers for free and reduced lunches so that the school could qualify, as they believe it should, for additional support through Title I funding. At this point he did ask for and received four different ideas from the teachers including changes in process at registration, extending registration into the evening to get more parents to attend and fill out the paper work, and changes to the registration packet given to students in August. I coded this discussion as directly related to stage 1 and 2 in the Miller-Stanton Collaborative Problem Solving Process: members identifying an ill-defined problem for action and set goals, and beginning the next stage of investigating the issue and identifying the stakeholders.

This particular PLC meeting demonstrates how much ground can be covered at the informational stage of the problem solving process. It shows how certainly the PLCs can tackle many serious, ill-defined problems and the opportunity for future growth. It also shows that without a clearly stated process that the team follows, moving to the more developed and evident stages of the problem solving process does not easily happen. In addition, the presence of an administrator to a PLC meeting in these teams shifts the dynamic of constructing knowledge to the most basic levels of informative presentation of data and some brainstorming. With the Administrator there, the teachers were less willing to provide new ideas and volunteer to create an action plan for tentative solutions,

leaving that up to the Dean or teacher leader. What began as a PLC emerged into a traditional teacher meeting receiving information and providing feedback at the level of brainstorming.

Results from Questionnaires

The intent of the end of study interviews/questionnaires was to gather data that could be linked to transformative learning. The data would indicate that only two out of the twenty-two participants reported an experience that could be considered connected to transformative learning (see Table 6). The majority of these self-reported peak experiences revolved around student experiences and not around their own learning or problem solving process or experience.

In addition, when asked what members valued most about the learning community discussions during the period of this study, a number of connections could be made to the collaborative problem solving process. However, only one of those connections was at the action planning and implementation stage by the end of the semester (see Table 7). The number of teacher responses that varied from the topic of collaborative problem solving could very well be an indication of a lack of understanding of the concept as it relates to their own small learning community framework.

The Wishes for the Work of the PLC in the Future

Many members reported a desire to continue to meet regularly as a team, collaborate on projects, and address more student problems. However, the majority of the teachers' hopes focused on areas less related to the team and more centered on the basic areas of their own teaching practice.

Table 6.

Self-reported Teacher Peak Experience Within the Learning Community During Study

Experience	**Transformative**
Newly rededicated person – I'll do whatever it takes	Yes
When we got feet on the ground with classes and made good use of our common prep time – conversations became curricular in nature	
Knowing that support is available from my team, admin, and SLC coordinator	
Talking with team about interventions and strategies to motivate students	Yes
Seeing positive attitude of other teachers and how Pathways can make a difference	
Not effective without same students in SLC team	
Meeting with a small group of peers to discuss improvements to pathway	
CNM Field Trip	
Working with students as they researched careers, resumes and cover letters	
Student interdisciplinary projects and their enthusiasm	
Spec Ed students going with others on CNM trip	
Planning for students being assigned	
Have students do well on 6 week test	
Working with program director 1:1 on two problem students	
Watch students bring in products made in other classes and connected to history	

Classifying the Data

To further analyze the data from interviews, observations, and questionnaires, I chose to connect the coding completed from the steps described above and connect it directly to the "Matrix of Theories and Methodology Investigated in the Study" (see Appendix A). Examining the most frequently coded categories allowed me to determine the emerging central phenomenon leading to a "Conditional Model of Transformative Learning and Collaborative Problem Solving" described in Chapter 5. This classification step allowed me to label the commonly occurring steps in a process of a theoretical model derived from the "Matrix of Theories and Methodology."

Table 7.

What Members Valued Most about Learning Community Discussions as Self-reported During Study as They Relate to Collaborative Problem Solving Process

Identify ill-structured problems and set goals
• Sharing the difficulties we face and the solutions we share
• Discussions on next year's freshman academy
• Team diversity made it possible to collaborate more effectively regarding individual student needs
Make and defend judgments of nature and scope of problem
• Honesty of discussions – team members straight to the point on many school issues
• Hearing and comparing specific students conduct and performance in other classes
Members explore possible solutions
• Working together for the best of our students and meeting standards
• Good source of ideas through brainstorming – insight about kids
• We all had common goal of working together as a group
Members discuss impacts of solutions
• Discussions that we realized the need for pure team of students
Members create an action plan, implement solution, gather data
• Working with other teachers to implement the curriculum for pathway into the classroom
Not directly related to Problem Solving Process
• Going to conference with team that were effective
• The community is very receptive to working together
• Thing I experience in classroom or shared by others and learning how they deal with them – new strategies make all the difference
• Having a more personal and intimate group with which to share ideas, concerns, and questions making me more comfortable to ask and seek clarification on school and system related issues
• Opportunity to meet with colleagues and brainstorm ideas
• Know I am not alone – others share vision – together we can influence and improve student achievement
• Supportive and enthusiastic members that aren't depressive

The Matrix was designed prior to the gathering of data as a visual model of what I hypothesized were the key theories and methodology of transformative learning and collaborative problem solving that could be seen in a study of this kind. My belief was that if transformative learning and collaborative problem solving were seen in professional learning communities such as those at RGHS and AHS, then it would not follow one particular model but would be a blend from two or three. Therefore, this step in the analysis of data allowed me to determine what were the stages or components of theories and methodologies that these PLCs illustrated.

Critical Reflection in PLCs

For transformative learning and collaborative problem solving to be a factor in groups and its individuals, evidence of critical reflection should be evident (Brookfield, 2000; Kasl and Elias, 2000). The data from this study show at least 35 activities, incidents, or group processes in which critical reflection was observed or reported. However, of these occurrences of critical reflection, only four were in a more evident or developed part of the process or methodology (see Table 8).

The interviews produced evidence of 33 examples of critical reflection. Three members of an SLC at RGHS described the annual process tied to the demands of the Carl Perkins Grant for their SLC as the time and place for critical reflection on their program.

> We meet each year in a workshop for our Perkins Grant and have to look at test scores and graduation rates. This helps us with planning our activities for next year. Informally, we often talk about what a tough place it is to work here.

Table 8.

Classifying Occurrences of Critical Reflection in Professional Learning Communities

Author	Stage or Process	Self reported Interview (n=22)	Observed (n=7)	Self-reported End of Study Questionnaire (n=13)
Brookfield Less Evident/Developed ↓ More	Objective reframing occurs: members are involved critical reflection on assumptions of others	2	0	0
	Subjective reframing occurs: members are involved in critical reflection on own assumptions	1	1	0
	Members reflect on the content of the communication	0	1	0
Kasl and Elias Less Evident/Developed ↓ More	Members critically reflect on the assumptions of others	12	0	0
	Members critical reflect on their own assumptions	10	0	0
	Members demonstrate epistemological change, altering one's ways of knowing	5	0	0
	Members clearly understand one's own ways of knowing the processes of reflection and knowing	2	0	0
	Members transform one's own consciousness by their self-authorship and self-definition	1	0	0

One special education teacher of this same learning community described how he personally had done a lot of reflection on the difference in the learning culture between special education and general education teachers and students:

> As a new young special education teacher that had taught nothing but learning disabled students, I probably had my expectations set pretty low of what my kids

> could do. As I started listening to the elective teachers talk about all that my students were doing in their classes, I changed my mind, and started teaching more and expecting more from my students.

This teacher followed Kasl and Elias's (2000) process to the point of transforming his own consciousness of his personal definition of a special education teacher. However, 22 of the critical reflection elements reported in the interviews stopped at the point of reflection of their own assumptions. One teacher at RGHS described his concern about the lack of success of the students in test scores and graduation rates. He simply said he had thought about this with his team and came to the conclusion that "some students just aren't going to get it … that's what we have to deal with." AHS teams on the other hand, reported very little critical reflection at all in their interviews. There was no evidence of critical reflection in any of the group observations.

Changes in Habits of Mind

For transformative learning to occur, changes in one's habits of mind or frame of reference as they relate to one's practice in their lives or in their work must be evident. The data gathered from interviews showed 26 incidents of activities, processes, or situations in which one or more element of the process of change in habits of mind occurred or were reported according to the model of Yorks and Marsick (1999). Similar to the examination of critical reflection, these incidents tended to be in the less evident or developed end of the stages developed by these authors (see Table 9).

Table 9.

Classifying Occurrence of Changes in Habits of Mind

Author	Stage or Process	Self reported Interview (n=22)	Observed (n=7)	Self-reported End of Study Questionnaire (n=13)
Yorks and Marsick Less Evident/Developed ↓ More	Members realize that the existing state of the school does not exhaust all possibilities and arrive at viable alternative courses of action	13	0	0
	Members develop an increasingly critical account of the cultural conditions which their own habits of mind are based	10	0	0
	Members develop a commitment to a continuing critical reexamination of their points of view and habits of mind	1	0	0
	Members critically examine and are more aware of how past experience with the culture, programs, and policies of the school influence their existing habits of mind	2	0	0

One teacher in an SLC at RGHS did disclose in interview a transformative experience in her change of basic assumptions over a long period of time.

> When I first joined the Academy, I discovered that the general education teachers had strange ideas about special education – what we as teachers really did, and what our students needed by way of help. The more I met with and shared with the group, I began to see that the others were changing in some of their attitudes toward me – I wasn't just a teacher with easy small classes. And, my kids could learn.

I coded incidents of changes towards habits of mind that emerged from participant response in the interviews. One SLC team at RGHS had four members who described learning to work within interdisciplinary units with other teachers successfully as a major change for them. The change was to begin to turn away from their old point of view of teaching in which they only concentrated on working within the four walls of their own classroom and not share beyond it:

> The team made us a community. We developed affection towards one another. We helped each other with discipline by sending difficult students to time out in another teacher's classroom.

However, 23 of the 29 descriptions of instances in the coding of the data that related to Yorks and Marsick (1999) model did not include members arriving at viable alternative courses of action. It seemed that many of the conversations within the team were simply looking at the school and its culture and processes of education that weren't working and going right to a critical account of those conditions without a clear action plan being developed.

Yet, members described coming away from their PLC with an idea that they could put into place on their own:

> One team meeting, the science teacher talked about a successful way she got her students to learn vocabulary. I was struggling to get my kids to learn some of the words in 'Romeo and Juliet.' So I tried her idea and it worked!

Evidence of Transformative Learning

Mezirow (2000) and Mezirow and Cranton (2000) provide clear steps in a process leading to transformation that were applied to this study. There appeared evidence of a

connection to an early stage in the development or process of transformative learning with 10 of the 22 participants. These data span from the general to the most basic levels of Mezirow and Cranton's paradigm. Three participants not only elaborated their existing frames of reference and learned new frames of reference through involvement in the PLCs, but they transformed their points of view and changed elements of their teaching practice as a result (see Table 10). This according to Mezirow (2000) is evidence of transformative learning.

Table 10.

Classifying Occurrences of Transformative Learning Theory Process and Evidence

Author	Stage or Process	Self reported Interview (n=22)	Observed (n=7)	Self-reported End of Study Questionnaire (n=13)
Mezirow and Cranton Less Evident/Developed ↓ More	Group becomes involved in self-examination - critical assessment of assumptions	2	0	2
	Members explore options	1	0	0
	Members engaging in discourse - developing alternative perspectives	1	1	0
	The group plans a course of action that leads to integration of change into the individuals and/or organization	1	0	0
Mezirow Less Evident/Developed ↓ More	Members elaborate their existing frames of reference	8	0	0
	Members learn new frames of references	7	0	0
	Members transforms their points of view	3	0	0

Two of the three participants who can be described as having transformed their points of view regarding a part of their practice of teaching came from one particular

SLC of RGHS. Both were elective teachers and admitted that for a number of their early years of teaching they saw their role as working with students in their labs in only a hobby based way. Through their participation with the PLC, their points of view changed, and both now see themselves as industry based programs with a heavy emphasis of academics integrated within their curricula:

> The big change for me came as my team was working with this grant and I realized I needed to be accountable for high standards just like the English and Social Studies guys. I needed to stick to the standards and it made me a better teacher.

One incident described by two members of an SLC at RGHS can be classified with elements of group transformative learning (Mezirow & Cranton, 2000). It had to do with the same PLC five years ago grappling with realities of the community. The members had all come to the school from different backgrounds and perspectives that had high expectations as far as homework, testing, and a more traditional method of teaching. Together, they reflected on the cultural conditions of most of their students in which the reality of families and the community had needs at the most basic level of living:

> Coming from a middle class background, I was pretty shocked at what I really found in my students as far as their grades, attendance, and behavior. We always believed in different things as far as high expectations of what our kids could do. That hasn't changed, but we take a different approach with this Academy model and more projects.

The group soon agreed that they would work to become more hands-on and project-based teachers and strive to make personal connections with each of their students.

Evidence of Collaborative Problem Solving

I chose to use two methodologies in the Matrix related to a process of collaborative problem solving espoused by Jonassen (2004) and Miller & Stanton (2005). I believed at the start of the study that evidence of collaborative problem solving would be related to transformative learning of groups and of individuals. The data showed that only 11 times could participants genuinely describe a specific effort to follow a process of problem solving. The incidents reported were classified with the basic process as described by Jonassen (2004). The more complex Miller-Stanton Model (2005) had a very minimum connection to the data (see Table 11).

A simple discussion and solution of a problem related by one 9th grade team member illustrates how not all significant breakthroughs require great and deep thought:

> Our first year, several of us were having trouble connecting with our students. Lots of discipline problems and stuff. We did some brainstorming and one idea was maybe to go to some of the kids extra-curricular things – football games and cheerleading. You know, word got around, the students loved us being there, and things got a little better in the classroom.

Several interesting details merit examination in these data coded with collaborative problem solving. First, of the problems that I noted in the group observations, none could be described as ill defined, an important stage in moving

Table 11.

Evidence of Collaborative Problem Solving Process

Author	Stage or Process	Self reported Interview (n=22)	Observed (n=7)	Self-reported End of Study Questionnaire (n=13)
Jonassen Less Evident/Developed ↓ More	Members make and defend judgments of the nature and scope of the problem	5	5	1
	Members explore possible solutions	5	5	6
	Members discuss the impacts of solutions	2	1	0
	Members develop Evaluation criteria	0	0	0
Miller-Stanton Less Evident/Developed ↓ More	Members identify ill-structured problems for action and set goals	2	5	0
	Members investigate the issue, identify stakeholders and perspective of the issue and solutions, gather information, form tentative hypothesis for solution and the constraints	1	1	0
	Members create an action plan for tentative solution, implement solution, gather data about the implementation	0	0	0
	Members analyze data and reflect, modify the solutions, implement the refined solution, gather data about the new implementation, reflect and dialogue, draw conclusions and report to stakeholders	0	0	0
	Members self-evaluate and integrate the solution into their standard of practice; identify other emergent ill-structured problems	0	0	0

towards transformative learning. Second, of the more precise short-term problems that did come up in the learning community meetings at RGHS, none moved past the

exploration of possible solutions noted or reported during the time of the study. In four different cases, the lead teacher would offer to develop or implement the solution on her own.

Discussing the impacts of solutions and the evaluation criteria rarely occurred. Another example was in one AHS team. They started one meeting talking briefly about the poor reading skills of their group of students in the 9th grade. They felt that it was related to comprehension problems and not with decoding. After they explored a couple solutions of how to address this in each of their classrooms, they agreed to use a strategy from the recent District professional development and use it team wide. However, no discussion took place regarding examining the impact of this solution or developing evaluation criteria to see if it was working.

Summary

The results presented above might indicate the beginnings of transformative learning and collaborative problem solving was evident in the data collected. However, these methodologies were found in their least developed and evident stages or processes. A more detailed summary and a description of the emerging theory developed from the findings are presented in the next chapter.

CHAPTER 5

CONCLUSIONS AND DISCUSSION

As an aid to the reader, this final chapter of the dissertation restates the research problem and reviews the major methods used in the study. The major sections of this chapter summarize the results and discuss their implications.

The Problem

High schools today suffer from poor performance that has been widely reported in attendance, achievement, literacy development, and postsecondary outcomes. Teachers themselves cannot redesign their schools by just trying harder; new models of collaboration and problem solving are key to transforming the organization. It has been suggested that teams of teachers in professional learning communities can be a major component of school improvement. Professional learning communities with elements of professional development, collaborative learning, collaborative problem solving, and instructional and curriculum development may provide the best answer for school change. In essence, society is asking our teachers to radically change their thinking and approach to viewing their basic assumptions of teaching and learning by changing their "habits of mind" (Mezirow, 2000) and approach to problems to improve schools and their student's progress toward proficiency in the standards.

In essence, high school teachers are being asked to transform their standards, frames of reference, and habits of mind to solve difficult dilemmas. If elements of transformative learning theory were found in effective PLCs, a model could emerge that has not often been included in the current body of knowledge. Such a model could provide the tools and processes for a school leader to better lead the change for his

school, develop the strategic design for each small learning community, and implement the action plans leading to the transformation of parts of his school and on to school-wide change based on current research on the most effective theories and methodologies.

The questions this study attempted to answer were: "What are the transformative experiences of teachers within professional learning communities? What indicates a fundamental change in the participants' habits of mind?" These overarching questions lead to the following sub-questions:

1. What do teachers believe are the most effective characteristics and components of professional learning communities?
2. What do members of a professional learning community do to solve problems?
3. What are the reflective practices of members of professional learning communities in redesigning schools?

The Methodology

Within a grounded theory study, I collected data using interviews, observations, and an interview/questionnaire from teachers within four professional learning communities in two local high schools. I completed interviews with 22 participants in the early weeks of the Fall 2008 semester while making observations of nine learning community meetings spread among the teams. The study was completed in January 2009 by having participants complete short responses to a three-item questionnaire.

The Results

I noted from my research three transformative experiences of participants within the professional learning communities included in the study. None were observed during the course of the study but were disclosed through the interview process from past experiences. These transformative experiences were of members of the same team of teachers and began from a very critical reflection of the culture of their school and examining the ill-defined problem of improving student graduation rates within their programs. All three used the collaborative atmosphere and process of the learning community for their personal transformation regarding the meaning of their teaching goals and objectives. Any other data categorized in this study as part of transformational learning theory stopped at the point of critical reflection without examining alternative points of view.

The majority of teacher participants in this study believed that the most effective characteristics and components of professional learning communities were the opportunities to work together for the best learning experiences for their students. The data collected from the interviews and questionnaires describe teachers who believed that the learning community was a forum for solving basic problems or dilemmas that were meaningful to students and to their practice as educators. However, according to Jonassen and Miller-Stanton models of collaborative problem solving used in the categorizing of the data, no incidents of the group completing an entire problem solving cycle were either observed or self-reported in interviews.

I noted, in my analysis of the data, that the professional learning communities were given a minimum direction in their process, their mission, and their outcomes.

Given these conditions, it seemed that little was done truly differently in collaborative problem solving compared to any other group of teachers that might meet at the school. Although my analysis of the interview coding indicated three teachers had learned new frames of reference regarding teaching and learning, evidence of only one group transformation was found. One SLC had actually reduced their academic expectations of their students based on their critical reflection of the culture of their students. Their changed point of view did not seem to have a direct or a real impact on the overall culture of the school. Left to their own devices, teachers did discuss issues and concerns that were usually simple to discuss and solve like any other small group of teachers. When faced with more broad and ill-defined issues, the teams stopped short of seeing a process through to examining alternative courses of action, placing a solution into action, evaluation, and reflection of that solution. They often left the next steps up to the teacher leader or simply said that the administration would have to make that change or would not allow a certain change to occur.

The reflective practices of members of professional learning communities were supported in each of the learning communities by the structure of the school. Each school allowed common time for teams to meet on a regular basis. However, it was noted that for two of the teams an outside influence from school leaders often disrupted the group process of collaboration and problem solving. The data from this study show at least 35 activities, incidents, or group processes in which critical reflection was observed or reported. However, of these occurrences of critical reflection only four were in a more evident or developed part of the process or methodology according to my research. These data seem to indicate, in the absence of strong leadership and of a clearly stated

process, that true fully developed critical reflection as described by adult learning theorists did not occur during this study.

Other results emerged that were not ones I looked for at the beginning of the study. The aspect of leadership in the high school PLCs becomes a critical component of successful problem solving and transformative practices. I noted that each of the four teacher leaders were doing the best they could given their own leadership skill development and the minimal time made available to them for this task outside of a full load of teaching. They seemed to be well-meaning professionals with an understanding of the SLC model but with little experience and understanding of leadership in PLCs.

I learned that, when an administrator becomes involved in team meetings, he or she must be extremely skilled and careful to become engaged with the PLC and not dominate. I did not anticipate prior to the beginning of the study how involved the Dean of Students at AHS would be in the meeting time. His presence and communication changed the PLC to a group of teachers meeting, receiving information, and providing feedback at the level of brainstorming. I believe that for PLCs to be successful, the leader needs to fall somewhere in between from the well intentioned, ill-prepared teacher leader, and the well intentioned, dominating presence of an administrator.

Insights

The first fact of importance emerging from this study is that nearly all of the teacher participants joined an SLC with the belief that it could be a structure for critical reflection to occur for themselves and others. A majority of the teachers participating in this study demonstrated in observations in the group or reported through interviews and questionnaires some benefit to meeting and collaborating with their peers. At the

national level of redesign of secondary education, the National Association of Secondary School Principals' *Breaking Ranks II* (as found in Cotton, 2001) developed an action plan for school-wide change in which learning communities are critical. The results of this study support this major structural component.

The results show that transformative learning and collaborative problem solving were evident in the data collected, which provides the second major insight, I derived from the study. However, these methodologies were found in their least developed and evident stages or processes. A researcher who connected transformative learning with constructivist theory, Conner (2005) found that knowing comes through participating in activities with community and making meaning from experience. The meaning making developed as an outcome of this process helps shape transformative learning for individuals as well as groups. This dialectic approach causes people to be uncomfortable and requires new ways of understanding the world. Conner's work connects with one of the emerging elements of my conditional model of transformative learning and collaborative problem solving from this study: members critically assess school culture and policies. Yorks and Marsick (1999) also suggested this as a key early stage in a collaborative problem-solving step that could lead to transformative learning.

A third major insight from this study relates to how members of the teams easily shared their points of view on issues that were brought up in interview or within the group observations. I recorded 30 incidents of teachers offering their opinion on topics related to their own students or that impacted their own classroom teaching. Some benefit emerges to this interaction and sharing especially for the newest teachers still

learning their craft, teachers not feeling alone, and teachers leaving PLC meetings with their own nuggets of gold that could help their own teaching practice.

Although I found little evidence of the group following the same reflective practice, I believe a critical next component of a conditional model of transformative learning and collaborative problem solving must include members elaborating their existing frames of reference. Self-examination includes the critical assessment of personal and group assumptions and recognizing that others have gone through a similar process. At the heart of this step is critical reflection (Brookfield, 2000) that includes three types: content reflection, process reflection, and premise reflection. During this stage, the individuals of a group examine long held socially constructed assumptions, beliefs, and values about the experience or problem that is the disorienting dilemma. The three members who changed their frame of reference and took action on their change reported premise reflection. Their reflection on the premise of whom they were teaching and their assumptions of what they could and could not do in the classroom led to a change in their points of view toward their students and a different approach to teaching.

A fourth emerging insight that belongs in this study's conditional model of transformative learning and collaborative problem solving is that some members of a learning community learn new frames of references through their participation in even a modestly developed problem solving process. I noted evidence of new frames of reference from data collected in interviews with eight participants. Six of these changes were from members of the same SLC at RGHS. Only three members acted on their changed habit of mind, but they were from that same PLC at RGHS. Mezirow (2000) explains transformative learning as changing one's taken-for-granted meaning structures

of his or her frames of reference, which includes meaning perspectives, habits of mind, and mind-sets. He goes on to say that the adult learner filters sense impressions to make more inclusive and discriminating frames of reference that he or she uses to become more open and emotionally capable of change. The transformed adult is then more reflective, so he generates beliefs and opinions that prove more true and justified to guide action. Therefore, this step in the model becomes critical for transformative change to occur of the group or of individual members.

A fifth emerging insight to the model has to do with the dialogue and process of sharing one's new point of view. Although only noted in a few instances in this study, members felt it was important to make and defend their own judgments of the nature and scope of the problem being addressed by the group. This connects the model to a more systemic process of collaborative problem solving by members communicating with each other and sharing deeper, more meaningful perspectives toward problems. One example gathered in the data are the conversations within a particular SLC at RGHS in a prior year when both elective teachers and others started talking about the emergence of academics as a more integral part of their elective classes. In schools, scores of large, complex problems face teachers who may have several different plausible solutions or might not have found a fully satisfactory one. Teachers as independent learners must make and defend judgments of the nature and scope of problems, possible solutions, impacts of solutions, and evaluation criteria. The problems that teachers face are often the very same ill-structured ones that are frequently vague and unpredictable. Tackling these as a small group in a collaborative setting, teachers can more efficiently and effectively make and defend their judgments of the nature and scope of the problem (Jonassen, 1997).

Finally, exploring the possible solutions within the group becomes the last component of the emerging model out of this study. Again not well developed, the data made evident that this step was common to each of the reported or observed incidents of true collaborative problem solving and transformative learning. In fact, 16 incidents were reported through interview, observation, and questionnaire of this step that is directly related to Jonassen's (1999) collaborative problem solving process. However, that is where the process of collaborative problem solving stopped. It becomes clear in analyzing the data from the teachers in this study that, in my observations and teacher reflections, rarely had any group worked through a truly ill defined problem from beginning to end. The data classified with the Matrix of Theories did not reflect the more developed and evident stages of collaborative problem solving or transformative learning.

Theoretical Implications of the Study

Several implications can be derived from this study. First, without a clearly developed and maintained process, learning communities left to their own devices will demonstrate less evident or developed elements of collaborative problem solving. Although not a direct focus of the study, I learned that the leadership of professional learning communities can be an important area to develop and support with tools and processes for the facilitation of true collaboration and problem solving that lead to both individual and group transformative learning. I also believe that, for groups to successfully collaborate, problem-solve, and transform, clear expectations of mission and outcomes, along with training in a process, must be provided.

I described both of the schools as being at the last stages of corrective action as far as the state coming in and guiding the redesign of these schools to improve student

outcomes. My data gathering did not identify instances of specific problem solving directly linked to this large disorienting dilemma. It seemed that the teachers did not make their own connections of their PLC work as it related to school and classroom performance in a more serious and involved way. School and team leadership must remember to keep the disorienting dilemma to the forefront of each PLC meeting. A major lack of data for these teachers to use in their meetings impeded the focus on the dilemma of improving student outcomes in regards to literacy, attendance, achievement, and behavior. The only evidence I observed in any of the groups of the use of data was by the Dean of 9th Grade at AHS bringing a list to a meeting with promises to provide copies later. Data on their students should be easily available to all members of the PLC.

Second, some individuals may have a transformative learning experience as a result of their own readiness and openness to changing their frame of reference developed through insights that evolve from shared group experiences. It may be either as a result of deeply rooted frustrations or critical reflections, but teachers may have transformative experiences with a minimum of elements in place that support the steps. I learned that the teachers involved in this study were not knowledgeable of adult learning theory and of transformative learning in particular. PLCs may need professional development at the beginning of a school year or the formation of a new team in the direction of learning on the basics of constructivist learning, collaborative problem solving, and transformative learning. Greater self-awareness may lead to a focused effort within the PLCs to move into more evolved and evident stages of these theories.

A third major implication is that for PLCs to be seen as successful as related to the theorists in terms of following processes and methodologies, one cannot assume that

teachers will naturally on their own or in a group consistently and broadly use collaborative problem solving processes. I made the assumption that either by prior group experience, coaching provided to the group and its leader, and previous professional development to some of the participants, I would see more evidence. That was not the case and leads me to believe that a model more customized to the needs of these high school PLCs is called for.

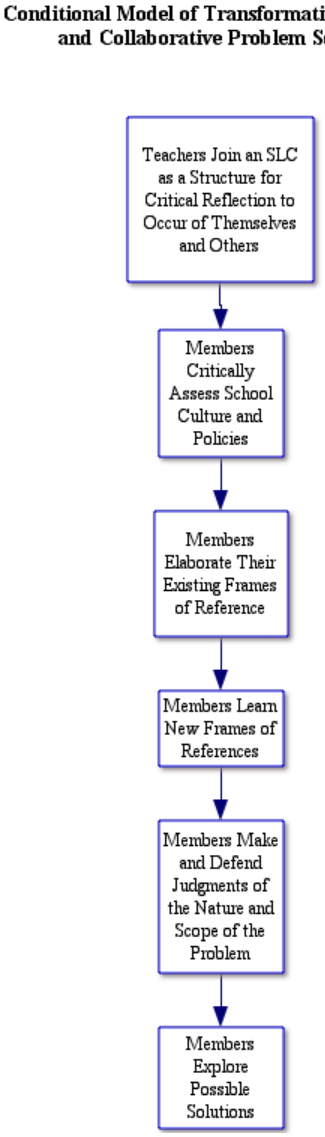


Figure 2. **Conditional Model of Transformative Learning and Collaborative Problem Solving**

The beginning of a model is the grounded theory that emerged from this study. It represents the categories of phenomena that linked directly to the "Matrix of Theories and Methodology Investigated in the Study". The "Conditional Model of Transformative Learning and Collaborative Problem Solving" (Figure 2) represents the emerging insights and categories from the data. The process, as offered in this model is a linear one resulting from the data and its correspondence with the linear "Matrix of Theories." First, teachers join together in a learning community that is promoted through the redesign of the high school, typically a small learning community. Based on best practices and current research small learning communities of teachers and students are key to redesigning high schools. This structure becomes the expected location for teachers to critically reflect on themselves and others. Second, members of the learning community critically assess the school culture and policies. This becomes the way that a disorienting dilemma or ill-defined problem can emerge within the group. Third, members share and elaborate within their learning community their frame of reference or point of view regarding the problem or dilemma. Fourth, through the early stage of this collaborative inquiry and problem solving process, members learn new frames of references from each other or from outside research or investigation. Fifth, members of the learning community come back to the group to make and defend their judgments of the nature and the scope of the problem. At this point, as observed in this study, one or more members will come up with possible solutions for other members or the leader to complete, or simply turn over the problem to the administration with their recommendations to solve.

Implications for Practice

While this grounded theory study did provide a basis for an emerging conditional model of transformative learning and collaborative problem solving, it is not complete given the results of the study compared to the research of the theorists included in the Matrix. I anticipated that my research could provide a model that a leader of a redesigning high school could follow to facilitate a fully developed process of collaborative problem solving leading to transformative learning for individuals and for groups. The results do lead to a solid understanding of the professional learning communities in these two high schools that the principals and district leadership can learn from. They will discover that some important work is being done in their teams by their teachers but will also learn that much more can and should be accomplished.

Given the fact that I did not completely find what I was looking for, I would like to discuss what did surface from this study. The ideas lie in the following narrative that evolved from what did and didn't happen. Training must take place at the beginning of each school year for the teams. I learned that each team had members come and go from year to year especially at the 9th grade PLCs at AHS. I would suggest a training or in-service day prior to the beginning of school to include the following for the PLCs:

A) Clear direction from administration of the dilemma(s) facing the school that the PLC needs to consider.

B) Clear expectations as far as attendance and participation.

C) A simple presentation with examples of constructivist and transformative learning including using critical reflection from theorists such as Mezirow (2000) and Kasl & Elias (2000).

D) A simple presentation with examples of collaborative problem solving from theorists such as Jonassen and Yorks and Marsick (1999).

E) Examples from successfully redesigning schools in the Stanford Redesign Network directed by Linda Darling Hammond.

F) Time for PLCs to generate their own outcomes for their teams with guidance from the administration.

I would suggest for the administration the following:

A) Provide common meeting times each week for the PLCs.

B) Be sure there is access to meaningful student data at every PLC meeting.

C) Find other means of delivering information to members of the PLC instead of interrupting those meetings.

D) If feedback or recommendations of solutions to problems are needed, work with the lead teacher to facilitate that process, and another member to take notes.

E) Provide autonomy. Wait to be invited in by the PLC on their terms for questions or their needed feedback.

F) Provide coaching and professional development to the teacher leaders in the skills of facilitating groups and leading the problem solving process.

I found critical reflection to be a common link between collaborative problem solving and transformative learning. Particular attention should be paid to providing professional development on this for participants of PLCs. It was obvious that most teachers in the study would speak their mind and have strong opinions on issues related to school culture, administration, and teaching and learning. However, most were

unaware or unable to go beyond the stage of expressing basic and simple ideas. I would suggest the following strategies for facilitating effective critical reflection within PLCs:

A) Facilitators begin with having each member individually, or together as a group, identify what they know about the dilemma they are facing.

B) Facilitators then ask members what they need to know to help work on this particular dilemma.

C) Members are asked to share individually or within the group what surprised them about the assumptions they had of the comments of others in the group.

D) Members are asked to share individually or within the group what surprised them about their assumptions they had of the own comments.

The original premise I had in Chapter One is important to me. For school redesign to successfully occur, teachers cannot be asked to work harder as much as they need to transform their point of view regarding teaching and learning. I learned that teachers do change their points of view and act on their changes in positive ways even in the most basic of conditions. I have learned from this study that one could get meaningful transformation within groups if the following were implemented:

A) Keep PLCs focused on the difficult and disorienting dilemmas. Reserve the basic informational knowledge to other methods and formats.

B) Follow the strategies for facilitating effective critical reflection within PLCs described above.

C) Think of, and provide resources and support for the teacher leaders of PLCs to utilize the skills and methods of a mentor as described by Daloz (1999)

D) Provide greater opportunities for autonomy for PLCs and for members to seek out and experience alternative methodologies and elements of their practice through shadowing, conferences, and other resources.

I would do several things differently given the opportunity. First, I would change the end of study questions to a journaling activity. Of the 13 responses I did receive of the questions, the majority were shallow responses that did not provide any greater insight to what teachers really went through during the semester within their PLCs. For journaling I would develop a ladder similar to the appreciative questions used in this study on a web based format such as SurveyMonkey. I would send out email reminders every three weeks reminding participants with the link to the site. This would occur after the initial interviews were completed and before the end of the observations.

Another change in my research approach would to be more clear and specific with the school leadership on expectations they had of the PLCs. I had assumed that clear direction and guidance was given to the teams as far as working on the disorienting dilemmas related to improving student outcomes related to Adequate Yearly Progress (AYP). Since meetings were dominated with more simple problems to be solved that were not as connected to these school wide outcomes, I believe that my teams needed more guidance at the beginning and throughout the semester. That should come from the teacher leader.

Finally, I would integrate more of Darling Hammond's research on redesign school strategies in the "Matrix of Theories and Methodologies". Her Ten Point framework for redesigning high schools includes elements related to PLCs and both their structural elements and their process.

Recommendations for Further Research

Additional research is needed on different professional learning communities that have experienced other development and facilitation processes. By looking at other schools and their learning community teams using the same lens of the "Matrix of Theories and Methodology Investigated in the Study," I could possibly see more developed and evident elements of the theories and processes of collaborative problem solving and transformative learning that could complete the rest of the Model that emerged from this study.

I would like to create a more specific PLC intervention and process for high school that includes emphasis on the findings and implications of this study and that starts with the "Model of Transformative Learning and Collaborative Problem Solving" that emerged from this study. I would go on to include special emphasis on the work of Brookfield (2000) and Kasl & Elias (2000) on critical reflection. I would also make appropriate modifications from the findings of this study to the Miller-Stanton Model of Collaborative Problem Solving (2007) using more of the work of Jonassen and collaborative problem solving.

While numerous researchers have worked in these areas of adult learning and organization learning, few have connected these theories and methodologies to professional learning communities in high schools. I have that opportunity to uniquely experience that further research in the Fall 2010 when as principal, I open a new small high school of 400 students with a team of 20 teachers. With a clean slate of a brand new developing school culture with creative, ready to go teachers, and these changes to my

research study, a much more complete and effective model of collaborative problem solving and transformative learning could emerge.

APPENDICES

APPENDIX A

MATRIX OF THEORIES AND METHODOLOGY INVESTIGATED IN THE STUDY

Table A-1. ***Matrix of Theories and Methodology Investigated in the Study***

Topics of Interest Based on Evidence From Data	**Research Question: What do members of a professional learning community do differently to solve problems?** **Less Evident** ⟵ ⟶ **More Evident**				
1. Collaborative problem solving Process (Jonassen)	A) Members make and defend judgments of the nature and scope of the problem *Inter: 5 Obs: 5 Resp: 1*	B) Members explore possible solutions *Inter: 5 Obs: 5 Resp: 6*	C) Members discuss the impacts of solutions *Inter: 2 Obs: 1*	D) Members develop evaluation criteria	
2. Collaborative problem solving Process (Miller-Stanton)	A) Members identify ill-structured problems for action and set goals *Inter: 2 Obs: 5 – 2 no goals*	B) Members investigate the issue, identify stakeholders and perspective of the issue and solutions, gather information, form tentative hypothesis for solution and the constraints *Inter: 1 Obs: 1*	C) Members create an action plan for tentative solution, implement solution, gather data about the implementation	D) Members analyze data and reflect, modify the solutions, implement the refined solution, gather data about the new implementation, reflect and dialogue, draw conclusions and report to stakeholders	E) Members self-evaluate and integrate the solution into their standard of practice; identify other emergent ill-structured problems
3. Action Learning (Rothwell)	A) Members recognize a situation suitable for action learning; select and organize an action learning team	B) Research leader briefs the team and sets constraints; facilitates team interaction	C) Research leader empowers the team to identify and experiment with solutions	D) Members evaluate results	E) Members set future directions

Table A-1. Matrix of Theories and Methodology Investigated in the Study (Continued)

Topics of Interest Based on Evidence From Data	Research Question: What do members of a professional learning community do differently to solve problems? Less Evident ⟵ ⟶ More Evident				
4. Nelson's model of collaborative problem solving	A) The group involves the relevant stakeholders	B) The group builds consensus phase by phase	C) The group designs process maps	D) The group designates a process facilitator	E) The group harnesses the power of group memory
	F) Members form and norm groups *Inter: Obs: 3*	G) Members define and assign roles *Inter: 0 Obs: 1*	H) Members engage in an iterative collaborative problem-solving process	I) Members finalize the solution or project	J) Members synthesize and reflect; assess products and processes; and, provide closure

Table A-1. Matrix of Theories and Methodology Investigated in the Study (Continued)

Topics of Interest Based on Evidence From Data	**Research Question: What are the transformative experiences of teachers within professional learning communities? What do teachers believe are the most effective characteristics and components of professional learning communities?** **Less Evident** ⟷ **More Evident**				
5. Transformative learning theory Process (Mezirow and Cranton)	A) Group becomes involved in self-examination – critical assessment of assumptions *Inter: 2 Obs: 0* *Resp: 2*	B) Members critically assess the dilemma *Inter: 1 Obs: 0*	C) Members explore options *Inter: 1 Obs: 0*	D) Members engaging in discourse – developing alternative perspectives	E) The group plans a course of action that leads to integration of change into the individuals and/or organization
6. Critical reflection (Brookfield)	A) Objective reframing occurs: members are involved critical reflection on assumptions of others *Inter: 2 Obs: 1*	B) Subjective reframing occurs: members are involved in critical reflection on own assumptions *Inter: 1 Obs: 1*	C) Members reflect on the content of the communication *Inter: 0 Obs: 1*	D) Members reflect on the process of the group	E) Members reflect on the premise of the communication

Table A-1. Matrix of Theories and Methodology Investigated in the Study (Continued)

Topics of Interest Based on Evidence From Data	**Research Question: What are the transformative experiences of teachers within professional learning communities? What do teachers believe are the most effective characteristics and components of professional learning communities?** **Less Evident** ⟷ **More Evident**				
7. Fundamental change in habits of mind (Yorks and Marsick)	A) Members realize that the existing state of the school does not exhaust all possibilities and arrive at viable alternative courses of action *Inter: 13 Obs: 0*	B) Members develop an increasingly critical account of the cultural conditions which their own habits of mind are based *Inter: 10 Obs: 0*	C) Members develop a commitment to a continuing critical reexamination of their points of view and habits of mind *Inter: 1 Obs: 0*	D) Members critically examine and are more aware of how past experience with the culture, programs, and policies of the school influence their existing habits of mind *Inter: 3 Obs: 0*	E) Members of the learning community are confronted with alternative interpretations of their experience. Members of the learning community incorporate their insights during their participation in the process into more inclusive and permeable habits of mind *Inter: 2 Obs: 0*
8. Critical reflection (Kasl and Elias, 2000)	A) Members critical reflect on the assumptions of others *Inter: 12 Obs: 0*	B) Members critical reflect on their own assumptions *Inter: 10 Obs: 0*	C) Members demonstrate epistemological change, altering one's ways of knowing *Inter: 5 Obs: 0*	D) Members clearly understand one's own ways of knowing the processes of reflection and knowing *Inter: 2 Obs: 0*	E) Members transform one's own consciousness by their self-authorship and self-definition *Inter: 1 Obs: 0*

Table A-1. Matrix of Theories and Methodology Investigated in the Study (Continued)

Topics of Interest Based on Evidence From Data	**Research Question: What are the transformative experiences of teachers within professional learning communities? What do teachers believe are the most effective characteristics and components of professional learning communities?** **Less Evident** ⟷ **More Evident**				
9. Evidence of transformative learning (Mezirow)	A) Members elaborate their existing frames of reference *Inter: 8 Obs: 0*	B) Members learn new frames of references *Inter: 7 Obs: 0*	C) Members transforms their points of view *Inter: 3 Obs: 0* *Resp: 1*		

APPENDIX B

CONSENT FORM

CONSENT TO PARTICIPATE IN RESEARCH

- **INTRODUCTION**
  You are invited to participate in a research study conducted by Michael Stanton, Candidate for the Doctorate, from the College of Education Department of Organizational Learning and Instructional Technology at the University of New Mexico. The results of this research study will contribute to my dissertation. You were identified as a possible volunteer in the study because you are a member of a small, professional learning community at your school.

- **PURPOSE OF THE STUDY**: The study is designed to observe your collaboration and process of problem solving during your common planning time of your small learning community team. The questions this study will attempt to answer are: "What are the transformative experiences of teachers within the professional learning communities? What indicates a fundamental change in the participants' habits of mind or fundamental ways of looking at areas important to our work and daily life."

- **PROCEDURES AND ACTIVITIES**
  The study will be conducted during the Fall Semester of 2008 at your school. I will spend as many as eighteen days, one day a week to gather the data. Given the nature of this emerging theory research study, there may be several reasons in which the study may be terminated early. I will observe your weekly common planning time meetings and keep records of your conversations beginning the first week of September through the first week of December. In addition, I will interview you once during the first half of the semester and again at the end. These interviews will be done during one of your preparation periods and scheduled by the second week of the semester to meet your needs. Each interview will take no more than 45 minutes each and will be audiotaped. There will be no monetary compensation for your participation in this study.

- **POTENTIAL RISKS AND DISCOMFORTS**
  Giving up two of your preparation/planning periods to allow me to conduct my interviews may inconvenience you. There should be no further risk from the recording and sharing of your thoughts either in interviews or observations beyond those already being experienced within and by the members of your group. All responses that will be quoted in the dissertation or any other report or summary to the District will be held anonymous to minimize the personal risk associated with certain comments that may be made. However, despite precautions regarding anonymity, certain comments could be linked to individuals by those reading the report that also know the participants as well.

- **POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY**
  There will be no direct benefit to you as a result of this study. However, it is anticipated that during the semester you will gain insight into your group and its dynamics while contributing to work that could help other similar schools involved in

the redesign of its school through small, professional learning communities. The results from this study could be included into an effective model for high school redesign that can be shared with other similar schools.

- **CONFIDENTIALITY**
  Any information obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. I will use a digital recorder to assist me in my data gathering along with hand written notes. This will be done using a digital audio recorder that will be transcribed by myself to my personal computer at my home office. Data will be stored on an external hard drive and locked in my home. At no time will the raw data be available to school officials or the public. The raw data will be used solely for the purpose of this study and will be destroyed after the study has been completed and results written within the dissertation. Every effort will be made to maintain confidentiality of members who choose to leave the study given the fact that team members are told up front of the possibilities of early termination of the study within the emerging theory nature of the research.

- **PARTICIPATION AND WITHDRAWAL**
  You can choose whether to participate in this study or not. If you volunteer to participate, you may withdraw at any time without penalty or loss of benefits to which you might otherwise be entitled. If you do become uncomfortable and wish to leave the study, simply send a letter or email to me informing your wish to leave the study. If a team member does not want to continue to be a part of the study, the Primary Investigator will stop further observations of the group and compete the end of study interview questions on the remaining participant members. You may also refuse to answer any questions you do not want to answer and still remain in the study. Your participation is linked to your membership in the professional learning community; should you choose to leave the team, you will also be excused from the study.

- **IDENTIFICATION OF INVESTIGATORS AND REVIEW BOARD**
  If you have any questions or concerns about the research, please feel free to contact: Michael Stanton, 7201 Quail Springs Pl NE, Albuquerque, NM 87113, cell 400-0172, and my Dissertation Chairperson, Dr. Patricia Boverie, MSC05 3040, Hokona Hall Room 286, phone 277-2408. If you have other concerns or complaints, contact the Institutional Review Board at the University of New Mexico, 1717 Roma NE, Room 205, Albuquerque, NM 87131, (505) 277-2257, or toll free at 1-866-844-9018.

SIGNATURE OF RESEARCH PARTICIPANT

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been provided a copy of this form.

_____
Name of Participant (please print)

_____ _____
Signature of Participant Date

SIGNATURE OF INVESTIGATOR

In my judgment the participant is voluntarily and knowingly providing informed consent and possesses the legal capacity to give informed consent to participate in this research study

_____
Name of Investigator or Designee

_____ _____
Signature of Investigator or Designee Date

IRB APPROVAL STAMP

APPENDIX C

OBSERVATION FORM OF WEEKLY PROFESSIONAL LEARNING COMMUNITY COLLABORATION PERIOD

Participant's acts, talk gestures and body language	Observation by a broad sweep	Observations of nothing in particular	Observations that search for paradoxes	Observations that search for problems facing the group
What do members of a professional learning community do differently in solving problems and constructing knowledge?				
What is the evidence that groups can learn as discrete entities in a way that transcends individual learning?				
Does Action Learning become evident?				

APPENDIX D

INITIAL INTERVIEW QUESTIONS

Regarding the meanings of events and activities:

1. What if any are the most exciting and rewarding experiences you have had within your professional learning community? Has there been a problem that you and your group have worked through that has changed your perspective of teaching or student learning? How have you become more comprehensive and wide ranging regarding new practices and ideas? More appreciative of good quality in teaching and learning? Open and inclusive to new ideas and ways of teaching?
2. How have you and your professional learning community examined your past experiences with the culture, programs, and policies of the school? What changes have you had in your basic assumptions of your system of teaching and learning? Of the organization of the school? In your feelings about your job? In your interpersonal relations with other teachers and your students? On the way you have learned in the professional development programs in the past year?

Questions about the influences of the physical and social contexts:

3. As a member of the professional learning community, how have your group members been involved in activities and decisions that impact the school as a whole? What issues regarding the existing state of the school have you discovered and discussed as a professional learning community? What alternative courses of action have you discovered for your school in the past year?

4. How have you as a member of the professional learning community examined the cultural conditions of the school and its impact on how you make your own choices? On your ways of looking at issues?
5. How have your insights during their participation in the professional learning community grown or changed?

Questions about the process

6. How do you and other members of the professional learning community reexamine your points of view towards the issues you discuss? The problems? The cultural conditions? The teaching and learning practices?
7. How do you and other members of the professional learning community meet the alternative interpretations of each other's experience? How do you handle both the good and bad points that come out? The reasons behind possible blind spots and misunderstandings?

APPENDIX E

END OF STUDY INTERVIEW QUESTIONS ON EXPERIENCES AND PROCESS

Describe your peak experience this past semester within your learning community.

What did you value most about your learning community discussions in the past semester?

What are three wishes for the work or outcome of the learning community in the next semester?

APPENDIX F

OBSERVATION FORM OF WEEKLY COLLABORATION PERIOD BUSINESS ACADEMY AT RIO GRANDE HIGH SCHOOL

RGHS Bus. 10/23 11:45

Transformative Experiences of Teachers 47

Observation Form of Weekly Professional Learning Community Collaboration Period

Participant's acts, talk gestures and body language	Observation by a broad sweep	Observations of nothing in particular	Observations that search for paradoxes	Observations that search for problems facing the group
What do members of a professional learning community do differently in solving problems and constructing knowledge?	Food. congratulations pop. most agreeable. Nothing different	We've done it before. Trish leading.	Identifying Schedule. "It's up to us." "Have our hand in it." Let's just get to kids	More Boys than Girls. let students know. Semester awards. Christmas presents. accuplacer. -20 slots.
What is the evidence that groups can learn as discrete entities in a way that transcends individual learning?	Mike not engaged till CAT piece. No learning beyond basic information	Copy to all of them. Working hard	They don't know they are on the list. What do we do	It is important to [illegible] along. Should we get our students to electives?
Does Action Learning become evident? 1				

Appendix A

APPENDIX G

OBSERVATION FORM OF WEEKLY COLLABORATION PERIOD 9TH GRADE TEAM 2 AT ALBUQUERQUE HIGH SCHOOL

11/5 AHS Team 2 Observation 10:34

Transformative Experiences of Teachers 47

Observation Form of Weekly Professional Learning Community Collaboration Period

Participant's acts, talk gestures and body language	Observation by a broad sweep	Observations of nothing in particular	Observations that search for paradoxes	Observations that search for problems facing the group
What do members of a professional learning community do differently in solving problems and constructing knowledge?	6 to/elbows on table No one takes notes	Dean & SLC Coord attends	Day, make big ideas/suggest.	1a, b Pick a lit strat using Team wide Learn about the community - write a book. Mr. S. goes over points from SLC visit.
What is the evidence that groups can learn as discrete entities in a way that transcends individual learning?	Jeff on computer & Juan not partic (10:47) 2 Students brought up - no specified action plan or next step.	The Dean is trying No Team approach. How? ←	Let's work with the team ← Pull our resources together	Student concerns 3 students brought up - no one in common Preparing students for 21st century? How?
Does Action Learning become evident?		Send names to counselors.	Parents don't care Have a counselor "do it" Not a pure team	failures - 2a the issue is absences - Nobody doing anything about referrals.

Appendix A

APPENDIX H

OBSERVATION FORM OF WEEKLY COLLABORATION PERIOD

TECHNOLOGY ACADEMY AT RIO GRANDE HIGH SCHOOL

10/1 9:42 – 10:15 RGHS Tech.

Transformative Experiences of Teachers 47

Observation Form of Weekly Professional Learning Community Collaboration Period

Participant's acts, talk gestures and body language	Observation by a broad sweep	Observations of nothing in particular	Observations that search for paradoxes	Observations that search for problems facing the group
What do members of a professional learning community do differently in solving problems and constructing knowledge?	Try working within system. 6a,b,c	Kids need you "getting attention"	Elizabeth – "stressed" getting over schedule. cutting nose off to spite face. 10th Gr. in common – only 25%? 65%? shared students	Not all structural problems Transportation? call CMA, School Bus - Pathway purity - meeting more new schedule. PD needed 29 No goals set
What is the evidence that groups can learn as discrete entities in a way that transcends individual learning?		Background music Members coming in late	6a,b	Story of Michael Successastory Guy lunch – vicious cycle construction – history of houses Frazier's Rix
Does Action Learning become evident?	Work on Perking Grant Report		4g – Previously done	

9:55 – 10. Confusion but 2-3 thing happening

APPENDIX I

OBSERVATION FORM OF WEEKLY COLLABORATION PERIOD 9TH GRADE ACADEMY TEAM 1 AT ALBUQUERQUE HIGH SCHOOL

11/19 AHS 8:40 - 9:15

Observation Form of Weekly Professional Learning Community Collaboration Period

Participant's acts, talk gestures and body language	Observation by a broad sweep	Observations of nothing in particular	Observations that search for paradoxes	Observations that search for problems facing the group
What do members of a professional learning community do differently in solving problems and constructing knowledge?	Admin 10-15 minutes	9th Grade Dean enters & changes dynamic I would like it	Not peers teaching groups & teams Spec Ed team Common Prep? Good idea but what about? Teacher having to do a test 9.10	Stanford Visit Report - Handouts V, Engagement - - Student elective choices gone Looping? (a, b, c) Homework? Surveying teachers
What is the evidence that groups can learn as discrete entities in a way that transcends individual learning?	admin telling, gave new rules & consequences - visual of failures, # of absences Suggestion for total 9th Grade project	Can have Sped tch team w/ Hlth & NH Hist - most have them Gave RGHS project as example	"Learning" is at knowledge level only Didn't make #'s	Student praises, "are you giving C's" Tutoring? Title I Registration? Change
Does Action Learning become evident?	No questioning or getting ideas/advice since we are totally reforming - Can counselors have sign in log - M - has answers - not collaboration for problem solver.	Discuss	make a list of posters of nominated	admin - don't know? - extend in the evening? - 3 in room 2b - 2a, 2b - I'd come - to get more parents, what other things Title I Dilemma Mail in packet but no schedule w/o form. Have teacher sign up w/ incentives

Appendix A

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