

Running head: TEACHER LEADERSHIP IN CCSS IMPLEMENTATION

Pepperdine University  
Graduate School of Education and Psychology

TEACHER LEADERSHIP PRACTICES, SUPPORTS AND CHALLENGES IN  
IMPLEMENTATION OF THE COMMON CORE HIGH SCHOOL MATH  
STANDARDS

A dissertation proposal submitted in partial satisfaction  
of the requirements for the degree of  
Doctor of Education in Leadership, Administration and Policy

by

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March, 2015

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## DEDICATION

To Rick, my husband thank you for enduring my passion for learning. I want you to understand that supporting each other's interests and goals does not diminish our relationships but strengthens our appreciation of our individual talents and skills. I love you.

To my children, Amy and Jeffrey, who I have encouraged to serve God and to serve others and who have sustained me through my recent life experiences, as a teacher and as a learner. I hope my educational journeys have inspired you to be life-long learners and to continue to pursue your interests.

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To my sorority sister, Moira, thank you for being my forever friend.

To my mother, Phyllis, thank you for encouraging my love of learning and for asking me, “Don’t you have your doctorate degree?” Now I can answer, yes!

## VITA

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TeachersNetwork.org *Implications of Basic Math Class Required Learnings on the Graduation  
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## ABSTRACT

The purpose of this qualitative phenomenological study was to explore and describe the practices of teacher leaders in a PLC content team along with the supports they received and needed as well as the challenges they encountered during implementation of the Common Core State Standards for high school mathematics in a Southern California school district. Because research shows most change initiatives require active leadership and yet are difficult to sustain there existed a need to study and describe the experiences of the teacher leaders during this curricular change to the Common Core State Standards. The experiences described by the seven teacher leaders participating in this study strengthen the practices of using collaborative content groups lead by teacher leaders. Common themes of teacher leader practices included having updated knowledge and skills about the reform through multiple trainings, honest and trusting relationships with their peers, sharing experiences and ideas, along with a shared vision and purpose, timelines and agendas. The supports received by the teacher leaders included the support of leadership through a TOSA or coach, the structure and time of the collaborative PLC content teams and on-going professional development. The challenges experienced by the teacher leaders were the need for more time and materials.

The conclusions confirm that teacher leaders are the experts in their subject who practice building relationships through sharing of experiences and focusing on the goals for student improvement. Nine conclusions from this study confirm that the important practices of teacher leaders are knowledge of the change in curriculum to provide a common vision and purpose for student learning, using norms, agendas and timelines to stay focused on the goals, building trusting relationships and an environment of trying new

things and sharing experiences. The leadership supports required include the PLC team time and structure including stronger administrative direction at the beginning and more choice as the work continues, the support of a TOSA or coach who advocates for the teachers and teacher leaders through communication, direction and resources and the additional support through on-going and continual professional development. The needs and challenges of the teacher leaders include more time to development, assess, adjust and improve the curriculum and the need for materials for both the teachers and students.

## Chapter 1: Introduction

### Background

Schools committed to the Common Core State Standards reform of preparing all students to be college and career ready will require teachers to take on the role of teacher leader to affectively improve the learning environment (Fullan, 1996). Reform of high school mathematics education in the United States has transitioned before, from more calculators and problem solving (NCTM, 1989), to the back to the basics movement spawning the California math wars (Klein, 2007), to the current *Common Core State Standards (CCSS)* for math developed to prepare students for college and/or careers (California Department of Education, 2013a). Each of these mandated reforms required the school districts to build an effective math education program that included changes in curriculum, instruction and classroom assessments. These curricular and pedagogical changes encompassed many challenges. One such challenge has been the time it takes to implement these changes. Small reform efforts can take between three to five years to completely implement, while more involved reform such as the CCSS may take five to ten years for complete implementation (Fullan, 1991). Another challenge is that educational reform can be difficult and continual improvement is hard to sustain (Fullan, 2001). Often, after a reform begins, teaching and learning revert back to the status quo, leaving the reform effort unsustainable (Lambert, 1998). Many of the past reform initiatives revealed disappointing improvements, wasted resources and frustrated employees (Kotter, 2012). However, improving and sustaining student success in high school mathematics can be accomplished through the use of specific school reform strategies; one such strategy would be to use teacher leaders for continuous learning through collaborative groups (Crowther, Kaagan, Ferguson, & Hann, 2002; DuFour, DuFour, Eaker, & Many, 2010; Hord, 1997).

Forty-five states are endeavoring to improve student math achievement through the adoption and implementation of the *Common Core State Standards in Mathematics* or *CCSSM* (Common Core State Initiative Math, n. d.). California, one of these forty-five states, adopted these standards in 2010 (California Department of Education, 2013a). There are several implementation models being used throughout the state to align curriculum and assessments to these new standards. Some districts have attempted curricular reform in all schools at the same time, while other schools have attempted to change only a single grade or one content area at a time (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Some California high school teachers have begun incorporating the CCSS math standards and the standards for mathematical practices (SMP) into their instruction before their district's plan for implementation is completed (National Council of Teacher of Mathematics, 2013). Whichever strategies the reform undertakes, all eleventh graders in the state of California will be assessed on the CCSSM beginning in the spring of 2015 (California Department of Education, 2013b). The success of this reform effort will require a commitment from the entire math teaching community (Hord, 1997) in order to prepare all students to be college and career ready in math upon graduation.

During the CCSSM implementation process, districts, sites and teachers must modify their existing math programs. While making these changes to the curricular programs, the focus must be on instruction (Fullan, 2010) and the continuing effort to improve practice undertaken by each individual (Hord, Rutherford, Huling-Austin & Hall, 1987). The reshaping of daily curricular practices by each individual classroom teacher will determine the degree of implementation of the CCSSM. Active leadership from the principal and other curricular leaders to plan and guide the change process, help motivate each individual toward the new goals and build collective teacher capacity (Fullan, 2010) is also necessary during the change to the CCSSM. High quality

professional development programs and trainings are imperative for teachers to acquire the knowledge and skills required for implementation of the CCSSM (Firestone, 1996; Fullan, 1996; Harris, 2003; Mizell, 2007; Palacios, 2005; Stein & Kim, 2009).

More collegial and collaborative professional development in education is recommended with teachers deciding on how to upgrade their skills (Firestone, 1996). Such high quality professional learning manifests itself in behavioral changes for both the educators and the students, individually and collectively, toward higher performance (Mizell, 2007). Other behavioral changes needed to build the professional capacity in teachers include administration and teachers assuming different roles. The most important behavioral change will be the change to a more professional culture (Easton, 2008; New England Comprehension Center, 2008; Schlechty, 1997; Talbert, 2010). Lambert (1998) describes professional teachers as “reflective, inquisitive, focused on improving their crafts, and action oriented; they accept responsibility for student learning and have a strong sense of self ... they are open to learning and understand the three dimensions of learning in schools: student learning, the learning of colleagues, and the learning of their own” (p. 33). Establishing a professional culture focused on continuous learning will build capacity for change and improvement (Gronn, 2000; Hord, 1997; Leithwood, Mascall & Strauss, 2009; Stein & Kim, 2009). As part of the CCSSM implementation, changing how teachers use their planning time may include the use of professional learning communities (PLCs), specifically the content area math teams within a high school. Developing such strong professional learning communities, as a means of staff development programs in schools, can increase a school’s success in improving student achievement (Annenberg Institute for School Reform [AISR], 2004).

Professional learning communities (PLCs) have three overarching components: the commitment to help all students learn needs to be collaborative, the collaborative and collective effort needs structure such as goals, time and resources; and results must be assessed (DuFour, DuFour & Eaker, 2008). Professional learning communities perform like teams when they work toward clear measurable goals and regularly collect and analyze student data (Schmoker, 2000). High performing teams are characterized by their common goals, their commitment to collective responsibility and their work toward a common outcome that requires the investment of time and emotional energy (Lencioni, 2005). When collaborative teams of teachers develop the attitudes, behaviors, knowledge and skills to solve student-learning problems and prepare all students to be successful they are engaging in professional learning (Mizell, 2007). These professional learning communities can increase the capacity for the school community to serve the students; although, the success of the students depends on what is done with this collective effort (Hord, 1997). According to Fullan (1999), teachers need to play a greater role in professional development to continuously keep the focus, build the new knowledge base and work collaboratively to accomplish the change initiative. As teachers participate and gain influence and success in their PLCs, their professional development and leadership roles will increase (Ash & Persall, 2000).

In developing PLCs and a professional culture to improve educational organizations, many researchers have observed that strong and persistent leadership is key to continuous improvement (Schlechty, 1997). Senge (1990) notes that achievement of an organizational change, such as implementing the CCSS, will involve mobilizing the leadership capabilities of the majority of the staff, including the teachers. School principals cannot be the curricular experts for all the Common Core State Standards content areas and all the changes needed for their implementation. The math curriculum experts are the math teachers. Together, the

administrative leadership and the math teacher leaders need to use a distributive or shared leadership approach to involve a larger number of stakeholders in the work of the CCSSM improvement effort (Firestone & Martinez, 2009; Harris, 2004; Leithwood et al., 2009; Padilla, 2013). Using the approach of distributed leadership, all members of the organization will be empowered to lead others (Harris, 2004). Distributive leadership is important to instructional leadership and to improving teaching and learning (Timperley, 2005).

Distributed leadership, according to Spillane & Camburn (2006), consists of two characteristics. First, distributed leadership has a leader-plus value generated by involving multiple individuals in both formal and informal leadership roles (Murphy, 2005; Spillane & Camburn, 2006). In addition, there is the value of the practice that is produced through the interactions of the leaders, the followers, and the particular situations involving the expertise of these individuals (Spillane, 2006; Spillane, Camburn & Pareja, 2009; Spillane, Halverson & Diamond, 2004; Timperley, 2005). Distributed leadership has a positive impact on organizational leadership, teacher work and student outcomes (Mulford & Silins, 2003). Heck & Hallinger (2009) found that strong distributed leadership appears to directly improve academic capacity and indirectly improves student learning. A more favorable distribution of labor, like distributed leadership, creates the ability to build capacity on the strengths, interdependence and participation of leadership ensuring a more committed staff with more problem solving abilities to make school improvements (Leithwood et al., 2009). The planful alignment of content teams positively influences the development of distributed leadership (Murphy, 2005). With mutual respect and reciprocity from the administration, capable teachers, as part of a team, often extend their roles beyond the classroom and take on leadership functions and activities (Macbeath, 2009; Mayrowetz, Murphy, Louis, & Smylie, 2009).

Teacher leadership is essential for developing a collective purpose and effort in schoolwide pedagogical change (Crowther et al., 2002), such as the implementation of the CCSSM. While working in content area teams, the teacher takes on the tasks of keeping the content team focused on accomplishing team goals such as adapting to the CCSSM (The Center for Comprehensive School Reform and Improvement (CCSRI), 2005; Crowther et al., 2002; Katzenmeyer & Moller, 2001; Lambert, 1998; York-Barr & Duke, 2004). Through this process of guiding math teachers to meet their goals, the teacher becomes a teacher leader. It is the teacher leader who must facilitate the ongoing and relevant professional development found in PLCs that is needed for continuous learning and sustainable school change (Crowther et al., 2002; Firestone & Martinez, 2009; Padilla, 2013). For that reason, the role of the teacher leader, in collaborative content teams is vital to accomplishing the current educational reform movement, the Common Core State Standards.

The work of math departments across the state of California to implement the CCSS for mathematics has varied widely. Research on promoting a professional culture of continuous improvement and successful reform shows that both collective capacity building and individual capacity building, often in the form of PLCs, is linked to instruction as sustaining the change effort (Fullan, 2010; Mulford & Silins, 2003). The use of distributed leadership also contributes to building teacher leadership capacity (Gronn, 2002; Firestone & Martinez, 2009; Spillane et al., 2004). While studies have conceptualized and described distributed leadership (Heck & Hallinger, 2009; Spillane, 2006; Spillane & Camburn, 2006), there is little research on how leadership is distributed and the actions, interactions and influences of the teacher leaders (Leithwood, Mascal, Strauss, Sacks, Memon & Yashknina, 2007; Spillane, Halverson & Diamond, 2004; Wahlstrom & Louis, 2008; York-Barr & Duke, 2004).

**Problem Statement**

The curricular reform initiative, the Common Core State Standards, requires each teacher to adapt to these new standards. Leadership, specifically teacher leadership, embedded in the improvement effort helps achieve whole school success (Crowther et al., 2002); although, the relationship between teacher leaders and shared leadership has not been explored in depth (Harris, 2003). Consequently, the teachers, the teacher leaders and the school principals currently have little knowledge about the experiences and practices that the teacher leaders will encounter, the supports given and needed, along with any challenges the teacher leaders will experience during the first year of the implementation of the CCSS in math. Therefore, there is an opportunity and a need to study and describe the Southern California high school math teacher leaders' experiences in the implementation of the new Common Core state math standards by examining their leadership practices, perceived supports and perceived future supports along with their implementation challenges.

**Purpose Statement**

The purpose of this phenomenological study was to explore and describe the experiences of high school math teacher leaders in one Southern California school district as they worked with their content teams to implement the Common Core state math standards. More specifically, this study explores and describes (1) the leadership practices math teachers used, (2) the leadership, resources and structural supports they received (3) the future supports perceived as needed, and (4) the implementation challenges encountered in the first year of the high school math Common Core implementation process. An original qualitative instrument consisting of four broad questions was used to interview seven teacher leaders.

### **Research Questions**

There are four broad research questions that guided this phenomenological study.

1. How did high school math teacher leaders from a Southern California school district describe their leadership practices in facilitating their math content teams at their sites during the first year of implementation of the Common Core high school math standards?
2. How did high school math teacher leaders from a Southern California district describe the supports they have received at their sites during the first year of implementation of the Common Core high school math standards?
3. How did high school math teacher leaders from a Southern California district describe the supports they perceive are needed to implement the Common Core high school math standards at their school sites?
4. How did high school math teacher leaders from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards at their school sites?

### **Importance of the Study**

Teacher leaders are influential in all parts of the school improvement community whether they are coaches, mentors, facilitators, department chairs, curriculum specialists or professional learning community leaders (DuFour et al., 2010; Katzenmeyer & Moller, 2001). It is the professional learning communities that have the potential to build collaborative relationships, engage in collective learning, address problems of inequity in student learning and improve the school culture, teacher practices and student learning (Garmston & Wellman, 2009). Professional

learning communities, led by a teacher leader, where teachers solve problems collaboratively through reflective dialogue will enhance professional development and help schools improve their curriculum and instruction. Distributed leadership is considered empowering for organizational learning and giving workers a sense of ownership that leads to collaboration and capacity building (Hartley, 2007). This study is unique as it is specific to distributive leadership, in a high school, used in parallel with collaborative practices of teacher leaders to implement the new Common Core State Math Standards reform and therefore will add to the body of this literature.

The ability to be flexible and change to meet the new Common Core State Standard Smarter Balance Assessments is critical to educational organizations (California Department of Education, 2013b). Many schools are currently using the professional learning community collaborative reform model and have teachers who work as informal teacher leaders in their collaborative groups. Data shows that teachers want to collaborate, want to learn from each other, and they want to share curriculum decisions and resources (Wells & Feun, 2007). Leadership that provides positive collaborative work environments and focuses on student learning results can make a difference in student achievement (Talbert, 2010). Important practices for teacher leadership in collaboration include developing shared values and vision, collectively and creativity solving problems, having supported and shared leadership, having supporting conditions of time and resources and sharing personal practices (Hord, 1997). By studying and describing the experiences of teacher leaders working in collaborative content teams, how these practices contributed to the implementation of a new reform initiative the Common Core State Standards may be known.

The relationship between teacher leaders and distributed leadership has not been explored in depth by researchers (Harris, 2003). Gordin (2010), in her dissertation, found that training teachers to work with teams along with defined roles for teacher leaders and the administrators supported collaborative group work. This study will provide the opportunity to look more closely at the function of the teacher leaders through their practices, supports and challenges within their collaborative groups and with administration to bring about curricular and instructional change. If informal teacher leaders working in collaborative groups help the implementation of the common core state math standards, then many policy and professional development implications exist. Activities to help train teachers to become leaders of collaborative groups can be developed to help schools realize productive professional learning cultures. Improved relationships between principals and teacher leaders can be developed and more teachers can be encouraged to lead collaborative groups. In addition, this study may help both site administration and district administration better understand how to support teacher leaders as school sites transition to the Common Core State Standards.

### **Definition of Key Terms**

*Academic Performance Index (API):* The API score, measured on a scale from 200 – 1000 follows a growth model and is used in California to evaluate students' academic performance and school improvement (Executive Summary Explaining API, <http://www.cde.ca.gov/ta/ac/ap/>).

*Adequate Yearly Progress (AYP):* Adequate yearly progress is the measure of an individual school's students' achievement as measured by the progress toward specific goals including the API score, graduation rate, participation rate in testing and number of students who test proficient. The AYP is part of the national accountability measures for all states brought

about by the No Child Left Behind (No Child Left Behind Act of 2001) legislation and determines program improvement.

*Coaching:* Joyce and Showers (2002) define coaching within educational innovation as a form of implementation of new curriculum using feedback for improving or changing classroom practice (p.90). Coaches are concerned about learning and emerge as leaders during collaborative time and improve the facilitation of the group work toward implementation of the educational innovation (AISR, 2004).

*Collaboration:* Collaboration refers to “a systematic process in which teachers work together, interdependently, to analyze and impact professional practice in order to improve results for their students, their team, and their school” (DuFour et al., 2008, p. 16).

*Common Core State Standards (CCSS):* “Educational standards describe what students should know and be able to do in each subject in each grade.” The common core standards are the same standards across 45 states designed to “prepare students for success in college and the workplace” (California Department of Education, 2013a).

*Communication Skills:* Communication skills include listening, verbal and non-verbal clues, openness and empathy (Slater, 2008).

*Distributed Leadership:* Leadership that is spread to all possible stakeholders is distributed. It is the exercise of leadership by teachers, giving empowerment and agency at its core (Harris, 2003).

*Facilitator:* The skill set of effective leaders includes facilitating dialogue, posing questions, coaching, mentoring and engaging others (Lambert, 1998).

*Formal Teacher Leadership:* Formal leadership roles in education encompass responsibilities such as content area coordinator, department head, or school position that moves the teacher away from the classroom to achieve (Ash & Persall, 2000).

*Informal Teacher Leadership:* Teacher leadership that does not have a defined role within the school hierarchy is considered informal. Informal teacher leadership consists of “classroom-related functions such as planning, communicating goals, regulating activities, creating a pleasant workplace environment, supervising, motivating those supervised, and evaluating the performance of those supervised” (Harris, 2003, p. 2).

*National Council Teachers of Mathematics (NCTM):* NCTM is the professional organization for math teachers. The mission of the National Council of Teachers of Mathematics is to be the “public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development, and research” (National Council of Teachers of Mathematics, 2012).

*No Child Left Behind Act (NCLB):* This is the current law (2001) that governs the educational policy for K-12 grade levels. Included in this law is the AYP accountability measurement.

*Planful:* Planful alignment is the configuration; comparable to the holistic form that Gronn (2000) labels institutionalized practice. A planful structure includes “the tasks or functions of those providing leadership that have been given prior, planful thought by organizational members and agreements have been worked out among the sources of leadership about which leadership practices or functions are best carried out by which source” (Leithwood, Mascall, Strauss, Sacks, Memon, & Yashknina, 2007, p. 40).

*Professional Learning Community:* DuFour et al. (2008, p. 14), defines PLCs as “educators committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve better results for the students they serve. Professional learning communities operate under the assumptions that the key to improved learning for students is continuous, job-embedded learning for educators.” These groups of staff members are also referred as PLCs or learning communities. Hord (1997) reminds us that a PLC difficult to define because it is not a prescription, a model, a new program, or an innovation the thing to be implemented. A PLC is a type of framework or a method of working together that brings about the results of continuous school improvement.

*Professionalism (of teaching):* Professionalism has a strong technical culture or knowledge base; a service ethic or commitment to the needs of the client; a strong individual professional commitment with collective identities; and professional autonomy or control over classroom practices (Etzioni, 1969; Larson, 1977; Talbert & McLaughlin, 1994). Day (2002) concludes in his research that the changing operational definitions of teacher professionalism, because of the high-stakes government imposed requirements, will require working closely with teachers to determine their individual identities through trusting dialogue and respect.

*Smarter Balance Assessment:* The Smarter Balanced Assessment Consortium is developing, for the 2014–2015 school year, new assessments for the states using the common core assessments (California Department of Education, 2013b).

*Supports:* In *Second to None* (California High School Task Force, 1992), the site administration should provide teachers’ with support, time and staff development in order to establish a culture of professionalism. The district office and school board also need to support and collaborate with the entire school staff. According to the California High School Task Force

(1992) if teachers are expected to change then support is needed for experimentation, ingenuity, risk-taking and innovation along with time for implementation, training, struggling with peers, and opportunities to learn. In addition teachers also need the ability to offer input and design their own approach toward the change.

*Structure:* School structures need to change so that professional growth is part of doing school (Eisner, 2000). Structure in this study will also include systems, procedures, policies and professional development structures.

*Teacher Leadership:* “Teacher leadership is the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of the school communities to improve teaching and learning practices with the aim of increased student learning and achievement. Such team leadership work involves three intentional development foci: individual development, collaboration or team development, and organizational development” (Waite, 2005 pp. 287-288). Teacher leadership influences stakeholders to improve student learning.

*Teacher on Special Assignment (TOSA):* The word TOSA is not found in the research because it is a district specific term that changes role and function as needed and defined by the school district or site. In this study, the role of the TOSA includes providing professional development activities for the teacher leaders and the teachers for implementation of the new curriculum for the CCSS. TOSA work also includes establishing and supporting the building of leadership capacity with the site leaders, teacher leaders and the PLC/course alike teams. Additional TOSA duties include presentations about the implementation and new CCSS to parents, board members and other districts. The TOSA in this study acts as a coach for the teacher leaders and the teachers and is considered leadership support.

### **Theoretical Framework**

This study is based on the theoretical framework of distributed leadership in relationship to instructional leadership. Distributive leadership reflects the broader leadership processes that combines instructional leadership and transformational leadership that is gaining interest for researchers (Gronn, 2002; Leithwood et al., 2009). Distributed leadership is not fixed but is fluid and emerging, spread across all people with expertise (Spillane et al., 2004). The exercise of leadership by teachers, those that hold the expertise, is the core of distributed leadership (Harris, 2003). Up until now, most of the distributed leadership studies have emphasized conceptual development (Gronn, 2002) and descriptions of practices (Spillane, 2006; Spillane, Camburn & Pareja, 2009). A few studies have contributed to the empirical knowledge base related to the effects of distributed leadership (Heck & Hallinger, 2009; Mulford & Silins, 2003). These studies have linked distributed leadership to teacher learning, student learning and capacity building. In addition, Heck & Hallinger (2009) found that strong distributed leadership positively affected student growth in math. Still, there exists an untapped and unrecognized leadership capacity in teachers with no formal authority (Gronn, 2002).

Gronn (2000) suggested that distributed leadership has a different power relationship between the leader and the followers, where the lines of power are blurred and the power in the school leadership is decentralized. There is little evidence in research, though, on which situations and which leadership practices should be distributed and how the leadership should be distributed (Heck & Hallinger, 2009). Spillane et al. (2004) concludes that there is a need for more information on how leadership activities are distributed and whether this differentiation is effective in improving student learning. Currently, there exists the need for a better understanding about how distributed leadership is enacted, the interactions of the teacher leader

with the administration and followers, and the conditions or situations that lead to differentiated leadership instructional practices (Spillane, 2006; Timperley, 2005, 2009). Specifically, Wahlstrom & Louis (2008) found a need for more in-depth studies about teacher-teacher teams and collaborative groups to better understand the interactions and practices when teachers work together around instructional practices. Consequently, there is little research about distributed leadership in action and more is needed (Harris, 2004). This study will add to the research by describing the experiences of teacher leaders facilitating content collaborative teams implementing the curricular and instructional adaption to the high school math common core state standards.

### **Limitations**

This study has three limitations. First, this study focuses on the lived experiences of teacher leaders working in collaborative math groups during the first year of implementation of the high school math CCS standards, instructional practices and assessments in a Southern California district. This will limit the study to a small number of teacher leaders. Because of the small sample size, caution must be taken to not generalize results. Secondly, the in-depth self-reported interview structure limits the study to the beliefs, attitudes and perceptions of the individuals interviewed. There are many factors that may contribute to an individual's experiences and it is not possible to know all of these factors, therefore the teachers' responses will be unique to each individual. Lastly, this is a bounded study using an accessible sample dependent on specific criteria.

### **Delimitations**

This study will be delimited to a small number of participants. The researcher has purposefully limited the number of participants in order to more fully capture their lived

experiences. The delimitation is the selection criteria of informal math teacher leaders in high schools who have attended CCSS trainings and are implementing the CCS math standards, instructional practices, and assessments in PLC content groups. The participants will be from three high schools in one district in Southern California who have completed their first year of facilitating the CCSS for math implementation.

### **Assumptions**

There are several assumptions identified by the researcher that can possibly impact the validity of this study. First, the researcher is making the assumption that using content teams under teacher leadership with a distributed leadership format are well-grounded theories that will improve the implementation of the Common Core high school math standards. Secondly, the researcher is assuming that the participants are actively engaged in the implementation of the CCSS in mathematics. Third, it is assumed that the in-depth interviews require honesty and concentration. Accurate and honest answers will allow for more accurate data. Next, it is assumed that the approached teacher leaders will be willing to share their personal accounts and perceptions and answer truthfully. Lastly, it is assumed that as a high school math teacher the researcher has experiences that may influence the interpretation of the data. In order to not interfere with the interpretation of the findings, the researcher will bracket, set aside her personal experiences to see the experience with new eyes (Colaizzi, 1978), during data collection, coding and analysis.

### **Organization of the Study**

This qualitative phenomenological study will be written in five chapters. Chapter one includes the background, problem statement, purpose statement, and importance of the study, definition of terms, theoretical framework, research questions, limitations, delimitations, and

assumptions. The second chapter is a review of the literature including the historical, contextual and research studies surrounding distributed leadership, teacher leadership and mathematical reform including the variables of their practices, supports and challenges. The third chapter is the methodology of the study including the setting, subjects and instrumentation to be used to gather information. Chapter four explains the results and findings of the study. The final chapter includes discussions about the findings, conclusions, and recommendations for further research.

## Chapter 2: Review of Literature

### Introduction

Leadership is critical in successful curricular reform that results in instructional practices that improve student learning. (Crowther et al., 2002; Fullan, 1996; Hord et al., 1987; Katzenmeyer & Moller, 2001; Leithwood et al., 2004; Mulford & Silins, 2003; Timperley, 2009). But, effective leadership in education is second to teacher instructional practices when teacher leadership is embedded in the improvement efforts (Leithwood et al., 2004; York-Barr & Duke, 2004). Improvement efforts such as curricular reform initiatives in schools, often involve the teaching staff learning and implementing the new innovation (Ash & Persall, 2000; Eisner, 2000; Mizell, 2007). New school reform efforts involving teaching and learning are generally accomplished through different staff development methods ranging from workshops on inservice days, conferences, and curriculum trainings to adopting professional development models (AISR, 2004; Slater, 2008). Leithwood et al. (2004) found that the chance of any reform effort in improving student learning is remote. However, when the leaders of a school agree on the purpose and the work required in the reform initiative and can help their colleagues understand the integration of the reform into their individual efforts, a greater opportunity exists that the reform will be successful. The goal of this study is to understand and describe how high school math teacher leaders help their fellow teachers implement the current CCSS California math frameworks.

This study will capture the experiences of the teacher leaders, who have been given the goal of implementing the CCSS high school math standards into their teaching practices. In addition, this study proposes to investigate the specific practices used by these teacher leaders and the supports and challenges encountered, along with what supports are needed. The

variables, found in the review of literature and examined in this study are broadly grouped into leadership practices, leadership supports and leadership challenges. The leadership practices include setting the direction, developing relationships, developing collaborative groups and monitoring the progress. The leadership supports are: distributed leadership along with leadership characteristics and skills and leadership capacity building; time including professional development, resources and materials and the design or redesign of structures. The three main challenges of teacher leaders relate to collaboration, leadership and structures.

To better understand the complexity of teacher leadership, this literature review will provide an examination of the available research related to the intersection of three educational arenas – reform movement use of collaboration and PLCs; the complexity of math reform from procedural to problem solving; and the distribution of leadership through the interactions of the leader and the followers and the situation. The historical review starts with the context of educational reform and specifically math reform in California and then explores the role of teacher leadership and how it supports building capacity and sustaining reform efforts. The theoretical framework for distributed leadership and related research will be explained and summarized as it builds an understanding of the research variables in relationship to educational reform involving teacher leaders. The variables found in the research of leadership practices include setting direction, building relationships, working collaboratively and monitoring the progress. Leadership support variables consist of distributed and shared leadership including leadership characteristics and skills along with leadership capacity, and the supports of time, resources and structure. The leadership challenge variables encompass challenges in working collaboratively, sharing leadership and working within school structures. Furthermore, the research on each variable will be expounded using multiple resources including case studies,

literature reviews and summaries of research about reforms using collaboration and PLCs, teacher leaders and changing math curriculum.

### **Historical Background**

**Educational reform movements.** Radical educational reforms in the United States from the mid 1970s changed the way teachers and educators viewed the profession of teaching (Day, 2002). In order to integrate civil rights and advance the war on poverty, policies involving busing, affirmative action, special education and women's rights were put in place (Super & Irons-Georges, 2006). The teacher profession as a whole became more active in social issues including endorsing candidates for public office. Monitoring of students was increased in order to evaluate these policies. Reports of lower test scores in literacy raised public concern for education leading to the formation of the U.S. Department of Education. In this post-professional era, monitoring of students was centralized and the teachers' working conditions, including their autonomy and efficacy, were limited (Day, 2002).

The reform movement in the 1980s developed initiatives to increase the status of teaching. After the significant reforming report, *A Nation at Risk* (United States National Commission on Excellence in Education, 1983) was published, states adopted their own standards for curriculum and content, standardized tests and teacher education programs. Improvements in state teacher credentialing programs included more rigorous graduation requirements and an increase of teaching certification requirements. The effort to improve the quality of teaching and teaching as a profession in order to attract intellectually talented individuals brought about discussions of teacher professionalism that dominated these reforms (Leithwood et al., 2007). The teachers' professional intent of these initiatives was to promote continuous learning, validate teacher knowledge and understanding of effective teaching practices, and increase participation of

teachers in shared decision-making about school and classroom issues (York-Barr & Duke, 2004). The inclusion of teachers in the leadership of professional development and other leadership roles was part of the reform efforts of the 1980's used to advance education (Darling-Hammond, 1988). Successful educational reform efforts need effective leadership including teacher leadership (Smylie, Conley & Marks, 2002).

Successful education reform efforts, such as those that occurred in the 1980s, need effective leadership including teacher leadership (Smylie, Conley & Marks, 2002). Building staff motivation and capacity for change are tasks required of the school leadership (Fullan, 2010; Leithwood et al., 2004). Even minor reform changes, according to Fullan (1991), take three to five years to implement while major reform changes require five to ten years to complete. In that time span, the school leadership, specifically the principal, will also change positions (Leithwood et al., 2004). If reform efforts are to succeed, with the school and district leadership changing every three to four years for the average school (Louis & Velzen, 2012), the reform initiatives need more active participation of the teachers in the leadership of the change (York-Barr & Duke, 2004). Each individual in the organization, including teachers, can be a change agent helping build relationships and the capacity to affect the educational system (Ash & Persall, 2000; Fullan, 1996; Lambert, 1998). Argyris (1990) expects every member in the organization to take responsibility to help create, add to and maintain the reform implementation.

Ash & Persall (2000), Fullan (2001), and Schmoker (2000) list factors for successful change reforms. The following summary of these successful change factors demonstrates their similarity. Foremost in the research is having a clear, concise, yet ambitious vision and clear and specific goals related to teaching and learning as a primary condition for making a change (Ash & Persall, 2000; Crowther et al., 2002; DuFour & Eaker, 1998, DuFour et al., 2010; Hord, 1997;

New England Comprehensive Center, 2008; Senge, 1990; Timperley, 2005). The vision for change must include commitment and understanding of the work by the staff (Hargreaves & Shirley, 2009). Shared governance, leadership or working toward potential improvement, either as part of a guiding coalition or as part of building adult capacity, requires guidance and leadership (Ash & Persall, 2000; Fullan, 2001; Schmoker, 2000). Having teachers work with their colleagues collaboratively and taking on leadership of the reform implementation, builds capacity for change (AISR, 2004; Crowther et al., 2002; Katzenmeyer & Moller, 2001; Lambert, 1998). The final commonality in these reform factors is the use of data and results to inform practice and continually move the change efforts forward (AISR, 2004; Argyis, 1990; Fullan, 2010; Hord, 1997; Schmoker, 2000; Talbert, 2010; Wenger, McDermott, & Snyder, 2002). Overall, the characteristics of schools that are sustaining change and improving student learning require shared expertise among members and everyone working together toward a common purpose (DuFour & Eaker, 1998; Talbert & McLaughlin, 2006).

System changes attempted without building teacher capacity most often result in a return to the status quo (Lambert, 1998). So that teaching practices don't return to status quo, teachers must work smarter to do a better job, especially in unfriendly political climates (Ash & Persall, 2000). Teachers are often isolated and not given the opportunity to improve their practice through collaborating, sharing their knowledge, solving problems, learning from each other or planning for student achievement (Ash & Persall, 2000; Fullan, 1991). Working in structured collaborative groups affords time for such collegiality and helps to decrease the feelings of being disconnected. Teams of teachers, focused on improving student learning and working to become data-driven problem solvers build shared knowledge and a strong professional community

(AISR, 2004; Ash & Persall, 2000; CCSRI, 2005; DuFour & Eaker, 1998; DuFour, et al., 2010; Fullan, 1996; Garmston & Wellman, 2009; Hord 1997; Talbert & McLaughlin, 1994).

***Collaboration in reform.*** The work of a collaborative learning community is similar to the work necessary to sustain educational reform initiatives. DuFour et al. (2010) describes the work of a professional learning community as beginning with members creating a clear and compelling vision that guides the work and improves student learning. The members are committed to these goals and work collaboratively to achieve them. Results are analyzed to judge the progress toward the goals and the goals are refocused. Teachers lead the collaborative group and contribute to the school improvement effort (Silva, Gimbert, & Nolan, 2000). According to Slater (2004), school improvement needs collaboration with professional leadership opportunities. Collaborative communities are part of teacher professionalism both as a community of practice and as an opportunity for teacher leadership. When teachers value their work to improve student learning within their collaborative groups they are helping to re-culture the school as a place of continuous learning (Fullan, 1996). As shown in Table 1, there are many terms used to describe this collaborative community. Many schools say they are working as professional learning communities, but they have only set aside the time to meet. Professional learning communities or PLCs are not department meetings, committee meetings, grade-level team meetings or weekly planning meetings (DuFour, 2004). When referring to reform efforts using collaborative communities, the term used in this study is professional learning communities or *PLCs*. When referring to the specific research for this study, the word *PLC team* or *team*, referring to the math content collaborative groups, will be used.

Table 1

*Multiple Terms for Professional Learning Communities*

Terms	Authors
Collegiality	Little, 1991
Professional Community	Louis, Marks, & Kruse, 1996; Talbert & McLaughlin, 1994
Communities of Continuous Inquiry	Schmoker, 2006
Schools that Learn	Leithwood, 2002
Communities of Practice	Wenger, McDermott, & Snyder, 2002
Professional Learning Communities	DuFour & Eaker, 1998

When a school becomes a learning community, the achievement capacity is raised for all the community members including the staff and the students (Gronn, 2000). Easton (2008), found that teachers are making changes hourly as they learn what students know and can do and use those results to change their instruction. Teachers contribute to the change vision through the relationships they have developed with many different people including colleagues, students and parents (Firestone, 1996). Teachers success depends not only on the relationships they build, but also on their ability to learn continuously, expand their capabilities, and assume greater leadership responsibility (Ash & Persall, 2000). The world around us, especially in technology and business is changing rapidly. Teachers need to know and understand new information and

knowledge; teachers are learning along with the students. In order to cope with the multiple future choices available for students with all the unknown changes, a flexible plan for continuous improvement accompanied by the support and encouragement of leadership is necessary (Ash & Persall, 2000). Becoming a learning organization that changes from the ‘status quo’ culture to one of continuous improvement involves improving the practice of teaching while improving the profession of teaching (AISR, 2004).

Developing a professional teaching staff includes nurturing the willingness to change and focusing on high quality learning for the students (Hord, 1997). Teachers both have classroom knowledge and the understanding of the school culture (CCSRI, 2005). Teachers have a strong ‘service ethic’; they care about the students and possess a commitment to teaching and personal professional growth (Talbert & McLaughlin, 1994). This professionalism makes teachers the experts on teaching and learning on their campus. Professionalism allows administration to trust the teachers to make good judgments, implement the improvement programs, and support schools’ efforts toward success (Timperley, 2005). Teacher professionalism must be supported by the administration, be collegial and student centered (Firestone, 1996; Garmston & Wellman, 2009); thus allowing the attitudes of teachers to remain positive (York-Barr & Duke, 2004). Often, the leadership mandates change initiatives by ignoring history, ignoring the passion of the staff, and forgoing staff choices (Lambert, 2005). Mandating school change without staff support results in the staff returning their practices back to the ‘status quo’. When math curriculum is part of the change reform, it is a challenge to gather staff support and change teacher practice (Stein & Kim, 2009).

**Mathematics reform movements.** The movement toward national and state standards in education began in the 1990’s after the 1989 publication of *Everybody Counts: A Report to the*

*Nation on the Future of Mathematics Education* (Mathematical Sciences Education Board (MSEB), 1989) which stated that students were not being prepared for college and the workforce with the necessary problem solving skills. The report also expressed concerns about sustaining the United States global leadership in technology. Global influences came from the Trends in International Math and Science Studies or TIMSS report (Schmidt et al., 2005) in regard to the language used in the curriculum standards and the curriculum guidelines adopted by each state. The National Council of Teachers of Mathematics (NCTM) responded to these reports with their *Curricular and Evaluation Standards for School Mathematics* that included more rigorous curricular and performance standards such as communication, problem solving, mathematical reasoning and making connections (NCTM, 1989). Because this was the first approved document of national standards in a core content area, there was considerable discussion regarding what student should know and be able to do in mathematics at each grade level (Palacios, 2005).

To support this curricular change, NCTM published in 1991 the *Professional Standards for Teaching Mathematics* (NCTM, 1991). This document detailed the specific knowledge and pedagogy necessary for teachers to support students in learning the new curriculum and how to evaluate teaching in order to make improvements. In 1995, the *Assessment Standards for School Mathematics* (NCTM, 1995) was published so that teachers would have new assessment strategies to help improve student performance on the new standards. These reform standards included more communication of mathematical thinking, problem solving, constructive learning and technology that both influenced both the *Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve* (California Department of Education, 1992) and called for calculator use in all grade levels (Klein, 2007). The *Professional Standards for*

*Teaching Mathematics* (NCTM, 1991) also changed the 1996 *National Assessment of Educational Progress (NAEP) Math Frameworks* (National Assessment Governing Board, 1996) that influenced national testing of mathematics learning. The *Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve* (California Department of Education, 1992) was student centered, used hands-on manipulatives and technology and involved active participation and problem solving to build students' conceptual understanding in math (Palacios, 2005). Research from these math curriculum changes in the 1990's, that included engaging students in thinking, making conjectures, framing and solving problems, explaining, justifying and defending their solutions; demonstrates how complex and challenging such dramatic reforms are to teaching and learning mathematics (Manouchechri, 1998; Spillane & Zueli, 1999).

When reforming mathematics curriculum, it is easier to change materials and student groupings than it is to change student discourse and academic tasks (Manouchechri, 1998; Spillane & Zueli, 1999). The 1996 *NAEP Math Frameworks* called for more conceptual thinking both by the students and the teachers (National Assessment Governing Board, 1996). The necessary changes in the classroom environment for improved student inquiry and discussion require teachers to understand and explore the new curriculum and instructional practices (Manouchechri, 1998; Spillane & Zueli, 1999). The conditions needed to support teachers' pedagogical changes include continuous professional development, time, resources, leadership guidance and support (Manouchechri, 1998). Pacing and practice were found to be strong during initial curricular implementation but became episodic because of non-continuous support and encouragement. These studies suggested that teachers needed to continue to work collaboratively in a professional school culture with continually guided development and

progressive leadership (Doyle, 2000; Leithwood, Jantzi, & Steinback, 1990; Manouchehri, 1998; Manouchehri & Goodman, 1998) to sustain the curricular changes. Unfortunately, when there was pressure from leadership to meet immediate performance goals, teaching practices reverted to traditional instruction or the ‘status quo’ (Manouchehri & Goodman, 1998). Ongoing changes of curriculum and performance goals (currently, for example the CCSSM) continue to influence and effect changes in math pedagogical practices.

It was the heated controversy over the pedagogy (teacher-directed versus student constructed) and curricular emphasis on process (problem solving and reasoning versus content of math facts, computation and algorithms) between reformers and traditionalist, some of whom were university professors, that ignited the California math wars of the 1990’s (Goertz, 2008; Klein, 2007). The 1992 *Mathematics Framework For California Public Schools: Kindergarten Through Grade Twelve* and the 1996 *NAEP Frameworks* were considered too radical for many parents and politicians (Goertz, 2008; Klein, 2007). Because of this polarization, California rewrote their standards in 1997 with emphasis on more basic skills and less emphasis on problem solving and critical thinking (Klein, 2007). Two years later, in 1999, the US Education Department released data on ‘exemplary’ programs that included programs based on the NCTM reform standards and reduced the criticism of the NCTM aligned textbooks that California had adopted based on their 1992 frameworks. In 2000, NCTM also revised their standards in the *Principals and Standards for School Mathematics* (NCTM, 2000; Palacios, 2005) because of considerable criticisms of the standards lacking sufficient basic skill development. This revision was overshadowed by the *No Child Left Behind* (NCLB, 2001) legislation that not only expanded the federal government’s role in education, but required states to test more frequently with built-in sanctions for failing to meet the uniform improvement goals (Goertz, 2008). Pedagogical

discussions and research in mathematics slowed during the NCLB era because of the emphasis on test scores and traditional pedagogy. Teacher time and school resources were spent on test prep as the criterion for quality education depended on API, the state reported school scores and APY, the national reported school scores (Goertz, 2008; Palacios, 2005). NCLB not only required increased proficiency in students' mathematical performance, but also increased requirements for teachers in credentialing and staff development (NCLB, 2001).

The highly qualified teacher portion of the NCLB legislation (NCLB, 2001) encouraged many states and school districts to employ best practices for math instruction as part of their staff development programs (Palacios, 2005). During the NCLB era, the influence for reform movements was an emphasis on building teacher knowledge and skills – especially in regards to understanding the math standards - that produced school improvement as demonstrated by students testing proficient on state exams (Goertz, 2008). Studies and research for changes in the math curriculum not only emphasized changing curriculum but also focused on sustaining the improvement effort (Heck & Hallinger, 2009; Silver, Ghouseini, Charalambouse, & Mills, 2009; Stein & Kim, 2009). Findings from the few studies on implementing math curricular changes during NCLB emphasize the challenge of teaching higher level thinking skills and keeping both students and teachers engaged in cognitive demanding math thinking (Heck & Hallinger, 2009; Silver et al., 2009; Stein & Kim, 2009). To encourage and sustain implementation of reform curriculum, teacher instructional support is needed. This support includes improving the professional environment, building collegial relationships, strengthening content expertise and increasing the teachers' role in facilitating the instructional practices.

**Teacher leadership in reform movements.** An important tenant of the US school system is that individuals, such as teachers, have been empowered to influence the local schools (York-

Barr & Duke, 2004). While effective school leadership has been shown to positively influence school improvement (Crowther et al., 2002; Harris, 2004; Hord et al., 1987; Leithwood et al., 2004; Lewis & Murphy, 2008) there is an increased recognition for expanding the role of the teacher leaders (Crowther et al., 2002). The concept of teacher leadership incorporates teachers holding important and prominent position in how schools operate combined with the pedagogy of teaching and learning (York-Barr & Duke, 2004). New understandings of how organizations change and improve are acknowledging the role of teacher leaders (Spillane, Halverson & Diamond, 2001). With reform initiatives for educational improvements targeting instruction and curriculum, the role of teacher leadership has expanded (York-Barr & Duke, 2004).

During the 1980's educational reform initiatives, teacher leadership was part of the teacher professionalism discussion (York-Barr & Duke, 2004). Because teaching was traditionally viewed as an isolated activity, the opportunities for professional growth and learning with other teachers have been limited (Talbert & McLaughlin, 1994). As part of professional reform, these initiatives attempted to improve teacher excellence through promoting more professional development along with more effective educational practices and increased teacher participation in decision-making (York-Barr & Duke, 2004). One professional model for teachers in educational restructuring (Elmore, 2000) realized that teachers exercise judgments that influence teaching and learning daily and, therefore, teachers hold tacit knowledge needed to inform and lead any school improvement effort (York-Barr & Duke, 2004). Knowing how to use teachers' knowledge, skills and abilities in educational reform requires effective leadership. One way to improve the teaching profession includes increasing the teachers' role in leadership (Lambert, 1998).

Teacher leadership studies from the last ten years include mostly case studies including Crowther, Kaagan, Ferguson & Hann's (2002) *Developing Teacher Leaders: How Teacher Leadership Enhances School Success*, an empirical literature review by York-Barr & Duke (2004) and an empirical research summary by Schiavo, Miller, Busy & King, (2010). Crowther et al. (2002) found four conditions for teacher leadership in their six case studies over five years: public and professional acceptance, active support from the school principal, nurturing teacher leadership and nurturing teachers and the interactions between professional learning, schoolwide pedagogy and professional culture building. The empirical literature review, *What Do We Know About Teacher Leadership? Findings From Two Decades of Scholarship* (York-Barr & Duke, 2004) found three developments needed for teacher leadership to work. The three types of development include "individual development, collaborative or team development and organizational development" (p. 88). In the *Summary of Empirical Research on Teacher Leaders' Instructional Support Practices* most teacher leaders support other teachers in improving their instruction through designing and leading professional development workshops (Schiavo et al., 2010). The intersection of these studies focuses on the importance of developing and nurturing people through relationships, improving the professional culture and supporting professional growth.

The impact of teacher leaders on instruction includes their influence to engage others to share classroom practices through collegial and collaborative relationships (Ash & Persall, 2000; CCSRI, 2005; Firestone & Martinez; 2009, Garmston & Wellman, 2009; Lambert, 1998; Schiavo et al., 2010; York-Barr & Duke, 2004). This collaborative effort comes from a sense of shared purpose that improves the school culture (Crowther et al., 2002). Firestone & Martinez (2009) found in their two-year case study of four schools, that teacher leaders performed the

important task of building relationships and developing people through personal, trusting and close connections to others. Teacher leaders have many small conversations with other teachers daily to seek understanding and share the work (Ashe & Persall, 2000). As respected and accomplished teachers, teacher leaders are closer to other teachers and the instructional work allowing them to develop relationships and complete their leadership tasks differently than the administration does (Firestone & Martinez, 2009; York-Barr & Duke, 2004).

***Teacher Leader Functions.*** In conjunction with developing working relationships with the staff, teacher leaders support teachers in their professional growth with resources and materials and more importantly work with teachers to engage and share instructional practices (CCSRI, 2005; Crowther et al., 2002; Firestone & Martinez, 2009; Schiavo et al., 2010). The larger role of the teacher leader as a professional teacher who is continuously learning includes modeling the new learning, focusing on student achievement and integrating the shared vision for teaching and learning (Ash & Persall, 2000; Crowther et al., 2002; Schiavo et al., 2010) into their daily instruction. It takes numerous daily conversations between teachers and teacher leaders to help teacher leaders support teachers in their ability to design quality-learning activities (Ash & Persall, 2000; Garmston & Wellman, 2009; Katzenmeyer & Moller, 2001; York-Barr & Duke, 2004). Although there is no mention of PLCs by name in these studies, properties of PLCs such as professional norms of trust and collaboration along with influencing staff development were found to be part of the teacher leader's work (Ash & Persall, 2000; CCSRI, 2005; Firestone & Martinez, 2009; York-Barr & Duke, 2004). Influencing teachers to engage in staff development around improving instruction is complex work. With the support of the principal, practicing these complex teacher leader roles and functions makes for an effective

instructional leader (Ash & Persall, 2000) and has been linked to sustained school reform (Crowther et al., 2002).

The tasks of the teacher leaders are complimentary and performed in parallel with the administration (Crowther et al., 2002; Firestone & Martinez, 2009; York-Barr & Duke, 2004). Crowther, et al. (2002) developed a framework for teacher leadership that includes four conditions for teacher leadership to develop: public and professional acceptance, active support from the principal, increased nurturing of teacher leadership and the nurturing of teachers, and interactions between the professional learning, schoolwide pedagogy and schoolwide culture building. Unfortunately, the study also found that none of these forms have been completely developed in the research. As the paradigm of teaching changes, so must the paradigm of leadership change so that principals can share leadership and support teacher leaders (Crowther et al., 2002; Firestone & Martinez, 2009; York-Barr & Duke, 2004).

Many researchers have found that there are five premises to guide the teaching profession and the educational community in regard to teacher leadership (Crowther et al., 2002; Darling-Hammond, 1997; Katzenmeyer & Moller, 1996; Louis, Marks & Kruse, 1996). The five premises they found are that teacher leadership really exists, it is grounded in authoritative theory, and it is distinct, it is diverse and it can be nurtured (Crowther et al., 2002). Ash & Persall (2000) found that principals need to become accustomed to sharing their leadership as they nurture teacher leaders. Teacher leaders work to engage teachers in learning while the principal works to lead the teacher leaders. Working together to improve student learning through reform initiatives involves the principal demonstrating a conviction and passion for the school vision while the teacher leaders demonstrate it in a complementary manner (Crowther et al., 2002).

Committing to sharing the responsibility of continuous improvement impacts the roles of the teacher as their responsibilities and skill levels are expanded (Ash & Persall, 2000).

Professional development must change to meet the needs of the staff to increase their knowledge base, improve their collegiality and collaboration skills and commit to the work of continuous learning (Fullan, 1996). The higher the levels of teacher involvement, the higher their expertise and skill levels (Harris, 2003; Lambert, 2003). It is the expertise of the teacher, rather than the position, that allows for the authoritative of the teacher leader in the professional community to build relationships in order to influence others (Day & Harris, 2002).

Teacher leadership includes the expertise in understanding the teaching content and instructional practices and other needed characteristics (Harris & Muijs, 2005). Important for the success of teacher leadership is the need for the expertise of the teacher leader to match the leadership functions (York-Barr & Duke, 2004). Teacher leaders need to have time, resources and the skills to lead along with regular feedback, role clarification and reflection on the progress being made (Murphy, 2005; Schiavo et al., 2010; York-Barr & Duke, 2004). An important part of successful teacher leadership is the principal's active support and communication to all staff (Crowther et al., 2002; Firestone & Martinez, 2009; York-Barr & Duke, 2004). Certain structures involving more participatory leadership and systematic efforts to build and support leadership capacity are needed to foster more teacher leadership (CCSRI, 2005; Schiavo et al., 2010; Spillane et al., 2001; York-Barr & Duke, 2004).

Teacher success in new program implementation involves the continuous learning of the entire school staff and greater teacher leadership in the school (Ash & Persall, 2000). The school, as a learning community is committed to improving the achievement capacity for all (Gronn, 2000), including students, teachers and teacher leaders. Distributive leadership calls on

the teachers, the ones with the expertise, to be involved in the commitment of continual growth and building capacity for sustainability (Elmore, 2000; Gronn, 2002; Heck & Hallinger, 2009; Leithwood et al., 2007; Senge, 1990; Spillane et al., 2001).

### **Theoretical Framework**

The early theoretical premises of distributed leadership research drew on socio-cultural activity theory (Gronn, 2000; Spillane et al., 2001). Cultural theory involves the process of making sense of and creating meaning in order to continuously engage the members of the community in learning (Harris, 2003). Constructing meaning and knowledge collectively and collaboratively while seeking to reflect and make sense of the shared beliefs, new information and new understandings encompasses the social aspect of cultural theory. But, as in all theories, the theory in use is more important than the espoused theory (Timperley, 2009). Distributed leadership theory began with looking at the theories in action as to how leadership tasks were socially distributed and who completed the leadership task (Timperley, 2009). As the focus turned to student achievement, the research turned from who held the leadership to how was it enacted and what were the conditions for distributed leadership to be effective.

Gronn (2000) found that distributed leadership was constructed over time and place and therefore had no ontological status. As a theory, it was constructed to help understand leadership practice ‘in situ’ in order to look at the theories in use (Brooks & Kensler, 2011). Distributed leadership is not a set of constructs or a prescriptive role but rather a way to make sense of leadership by describing behaviors, traits, attitudes, and interactions of leaders and followers, formal and informal, over time in different situations (Brooks & Kensler, 2011; Spillane, 2006). The role or position is not necessarily set as there is fluid movement between the leadership roles of the leaders and followers (Brooks & Kensler, 2011; Gronn, 2000). Teachers, as content

experts, take on both formal and informal leadership roles (Ash & Persall, 2000; Camburn, Rowan, & Taylor, 2003; Harris, 2003, 2004; Lambert, 2005; Leithwood et al., 2009; Spillane et al., 2009; Timperley, 2005).

Educational leadership research has used the term ‘distributed leadership’ for over 70 years to encompass the ideas of successful leaders depending on help from others (Leithwood et al., 2004). During the 1990’s, distributive leadership became a main focus in the literature with the idea of spanning the boundaries between the principal and teachers and their activities with respect to their leadership roles (Timperley, 2005). Distributive leadership is based on the undisputed premise that the administration, neither the superintendents nor the principals, can complete all the leadership tasks by themselves (Leithwood et al., 2004). In order for the administrative leaders to be successful, they must develop and rely on contributions from key teachers.

Teachers, as the curricular expert at their schools, are important to how the school operates. Harris (2004) describes distributed leadership as seeking expertise wherever it is, instead of depending on formal roles. When there is high leadership density then there are more people working on improvement, more people who trust in the information, who are making decisions, sharing new ideas, creating knowledge, and transferring the knowledge into their practice (Sergiovanni, 2006). All this involvement leads to more staff members having a stake in the school and it’s success. Sergiovanni, (2006), considers all teachers as potential leaders, spanning the leadership boundaries of the school.

Spillane (2006) lists three reasons to develop distributed leadership. First, distributed leadership gives the school multiple leaders and groups to guide the staff in the instructional change process. Also, the function of distributed leadership stretches the work of many to

accomplish tasks through multiple interactions. And finally, distributed leadership implies an interdependency of the various roles and responsibilities of others instead of the dependency on one leader. As leaders work collaboratively, the roles of the principal and teacher leaders are redesigned (Slater, 2004) as a sharing of responsibility emerges. With shared leadership, the role of the teacher widens and the expectations for involvement will deepen (Fullan, 1996).

The core of distributed leadership is leadership by empowerment (Harris, 2003), where teachers exercise their leadership and influence within the school community. Leadership that empowers promotes a higher level of teacher involvement and adds to teacher expertise (Harris, 2003; Slater, 2008). Teachers possess the ability to influence not only their students, but also their fellow teachers in improving student education (CCSRI, 2005; Firestone & Martinez, 2009; York-Barr & Duke, 2004). It is not the structure or programs that focuses the school toward improvement, but the promotion and sustainability of the interactions with others (Spillane et al., 2004), both the formal leadership-including principals, administration and department chairs-and the informal leadership-including other school personnel and classroom teachers. Copland (2003) describes distributed leadership as the functions or qualities that are shared across a broad segment of the entire school community from administrators to teachers, from professionals to community members. Leadership interactions and activities can be distributed across all the people in the organization and among many situations (Spillane et al, 2004). It is this broad sharing approach, the interactions with the leaders, followers, and the situation, that needs to be created and sustained in order to improve educational organizations.

### **Distributed Leadership Research**

There have been very few studies that examine the relationship between student improvement and school leadership and even fewer studies about distributed leadership. Many

leadership studies about effective schools, since the mid 1970s, have compared high achieving and low achieving schools; Marzano, Waters & McNulty (2005) call these ‘outlier’ studies. The conclusions from their meta-analysis of 69 schools about school leadership were descriptive, characterizing the traits of effective school leaders. More recently, the empirical review of research *How Leadership Influences Student Learning* (Leithwood et al., 2004) answered the question “How do high-quality leaders achieve improved student learning?” The results produced two leadership claims. The first is that leadership is the second most important school-related factor contributing to student learning. The second is that leadership effects have the largest impact where the need is largest. Many factors contribute to school success, but Leithwood’s et al. (2004) review found that leadership was the catalyst. One common theme is that principals, teachers, and superintendents are supposed to be ‘instructional leaders’ but there is not much clarity about the term. Meanwhile, we know that neither the superintendents nor principals can complete all the leadership tasks on their own, therefore, they need key teachers to act as leaders thereby enacting distributed leadership (Elmore, 2000; Spillane & Camburn, 2006).

Spillane, Halverson & Diamond (2001, 2004) and Elmore (2000) found that the responsibility of leadership should be distributed because the principal does not have the time or energy to master all knowledge about the curriculum, instruction and assessments. Spillane et al. (2004) describes how in distributed leadership the leaders and followers interact as a web of leaders who periodically change roles within different situations allowing for numerous tasks to be completed. The details to how the leadership is ‘stretched out’ includes collaborative distribution based on actions of others, collective distribution based on both separately and independently shared goals, and coordinated distribution where sequential tasks are done by

different individuals (Spillane, 2006). Distributed leadership involves collaboration, collective and shared goals and the coordination of these tasks according to the situation.

Limitations to distributive leadership include Lakowski's (2005) and Storey's (2004) argument that distributed leadership is just a repackaging of existing leadership concepts. Other research claims that there is little empirical research on the meaning and implications of distributed leadership (Avolio et al., 2009; Spillane et al., 2009; Storey, 2004). Mayrowetz et al., (2009) in their empirical meta-analysis, also found little evidence to support multiple people performing leadership to connect to school improvement. In the case study analyzed by Storey (2004), different interpretations of what leadership should entail and what distributed leadership looks like at the different levels of the organization adds to the variability that any set of approaches and behaviors will produce a transformation. Just having more 'leaders' does not increase organizational outcomes (Leithwood & Jantzi, 2000; Leithwood et al., 2009). More leadership may detract from the organizations purpose, mission and work that need to be done (Leithwood & Jantzi, 2000; Timperley, 2005). Likewise, when there are different versions of what the transformed leadership situation should look like among the staff, then deep divisions within the staff can occur (Storey, 2004).

Other problematic findings of distributed leadership research show that distributed leadership is hard work, especially when leaders are unsure of how to distribute the leadership (Mayrowetz et al., 2009). When teacher leaders do try to span the leadership boundaries, they become vulnerable to disrespect and disregard because they often do not have any formal authority, and the principal finds these informal teacher leaders hard to manage (Timperley, 2009). With no formal authority, negative tension may build up causing conflict and blame, especially when teachers who are looked upon as leaders are those who are not the most

competent (Storey, 2004; Timperley, 2009). With no formal roles and functions, the informal leaders are often inefficient in their use of meeting time and in understanding the student data in order to improve instruction (Timperley, 2005). It is a challenge for informal teacher leaders to gain acceptance as teachers with the expertise (Timperley, 2009).

Teacher leaders who participate with their peers in planning and decision-making are found to have a positive influence on reform initiatives (Leithwood & Jantzi, 2005; Talbert & McLaughlin, 1994) and especially on influencing collaboration among teachers (Leithwood et al., 2007). Leadership that shared the responsibility of the success of the reform found the greater need for coordination and monitoring of the leadership work and the need for more feedback on the coordination of tasks (Leithwood et al., 2007, 2009). The structure found most helpful in coordinating leadership was a planful alignment (Leithwood et al., 2007). Heller & Firestone (1995) combined teacher leaders and distributed leadership into six functions. These six functions of distributed leadership are: providing and selling of the vision, providing encouragement and recognition, obtaining resources, adapting standard operating procedures, monitoring improvement efforts and handling disturbances.

Overall, distributed leadership is most successful when it is planfully aligned so that both the teacher leaders and the administration understand the situation for the distributed leadership and how the boundaries are spanned (Leithwood et al., 2007, 2009; Murphy, 2005). As in any reform initiative the goals and visions must be clear; resources must be provided; and the structure, including procedures and monitoring and feedback must be a priority. Care must be taken to provide the teacher leaders with authority, training, respect and communication so that conflict can be handled appropriately and professional relationships are maintained. Studying content collaborative teams with expert teacher leaders to implement the CCSS curricular reform

in mathematics at the high school will provide the opportunity to further the research on teacher leaders and distributed leadership.

### **Variables**

**Leadership practices.** The practices of the teacher leaders are similar to the tasks of the principal, who sets the staff in their direction, but on a smaller scale, specifically when leading a content team or PLC (Hord, 1997). Hord (1997) describes six practices of a PLC leader. Initiating and managing the change improvement for the organization or PLC is the leaders' first task. Then the teacher leader needs to develop and support the vision, values, and focus goals that are consistent with the vision and values in both the heads and the hearts of the team members (Ash & Persall, 2000; DuFour et al., 2010; DuFour & Eaker, 1998; Fullan, 1996; Garmston & Wellman, 2009; Harris, 2003; Hord 1997; Lambert, Walker, Zimmerman, Cooper, Gardner, Lambert M. & Ford-Slack, 1995; Talbert, 2010; Timperley, 2005). Working collaboratively is the third task and requires the teacher leaders to develop and nurture group interdependence by working with the strengths of each individual member (Hord, 1997) along with empowering them (Slater, 2004). Using data, another important task for collaborative team problem solving needs the teacher leaders to involve the entire group in this activity (Goertz, 2008; Hord 1997; Mayrowetz et al., 2009; Mulford & Silins, 2003; Timperley, 2009). The data cycle that teacher leaders help complete includes collecting data, developing strategies, formulating implementation and processes, examining the results, continued learning, re-implementing and following through with the strategies (Argyris, 1990). This data cycle needs to be part of system development that encourages creative thinking and the fifth leadership tasks mentioned by Hord (1997). Lastly, it is the responsibility of the teacher leaders to gather all the needed resources for the team (Hord, 1997; Murphy, 2005; York-Barr & Duke, 2004). These

leadership tasks and functions contribute to the influence of teacher leaders with their followers (Harris & Muijs, 2005).

***Leadership in setting direction.*** An important first step in implementing reform initiatives is developing a shared vision (Ash & Persall, 2000; DuFour et al., 2010; DuFour & Eaker, 1998; Fullan, 1996; Garmston & Wellman, 2009; Harris, 2003; Hord 1997; Lambert et al., 1995; Talbert, 2010; Timperley, 2005). Led by the leadership vision (McAdams, 1997), the entire faculty needs to participate in vision creation (Hord, 1997). Working with a common vision, specifically in a PLC, requires effort in helping educators understand the common vocabulary and shared knowledge they use (DuFour & Eaker, 1998; DuFour et al., 2010). The shared vision, focusing on something that is meaningful and real (Fullan, 1996) and shared by all, compels the staff to work for a common purpose (DuFour et al., 2010). Initiating a reform process to help students and teachers improve their learning is strengthened with a shared purpose determined and maintained by the teachers (Crowther et al., 2002; DuFour et al., 2010).

With a shared vision in place, developing a few ambitious measurable goals assists in achieving the common objectives (Fullan, 2010; Schmoker, 2000; Spillane et al., 2004). The team leader helps in setting the direction by developing these shared goals (LaFasto & Larson, 2001; Lambert et al., 1995). Necessitating work on these goals requires communicating the goals clearly (Lewis & Murphy, 2008). Keeping the team organized around the shared vision and measurable goals keeps the team focused on the work to be done (LaFasto & Larson, 2001). Additionally, creating professional norms for the team along with designing meeting agendas are steps in implementing change reforms (CCSRI, 2005; DuFour & Eaker, 1998; Hord, 1997; Schmoker, 2000; York-Barr & Duke, 2004). Gordin (2010) found that designing successful meetings was important in facilitating team success. Successful meetings involve teacher leaders

designing activities that facilitate learning about professional practices (Crowther et al., 2002) with the goal of changing the instruction for the students so that student learning improves (Timperley, 2005). A guiding checklist for the teacher leader would start with the team purpose, the timeline and all necessary information needed by the team members (Hord et al., 1987). Then, the expectations, goals, and guidelines must be developed and resources must be acquired. During this process, checking with members for concerns and monitoring individual task involvement helps keep the school moving forward in improving student learning.

In the distributed leadership research, developing collective goals is a function that should be shared (Day & Harris, 2002). Distributing the leadership helps teachers embrace the common vision and the common goals (Harris, 2004; Heller & Firestone, 1995). With the goals determined, teachers need to have or acquire the skills to achieve the goals (Harris, 2004; Leithwood et al., 2007). Multiple and shared leaders, with different expertise, provide support in developing these skills and tasks to achieve the goals (Spillane et al., 2001).

***Leadership in building relationships.*** Teacher leaders help manage the school culture by facilitating the conversations to build norms, trust, collaboration and teacher growth and development (Timperley, 2005). Teacher leadership research by Ash & Persall (2000) emphasizes the power of these types of conversations. It is the teacher leader who sets the tone to talk about the vision, student work and student outcomes. The daily routines of teacher leaders in close visible proximity to the teachers evolve from these personal ‘adult to adult’ interactions involving leading and learning into social norms, communication, respect and trust (Harris, 2004 Slater, 2008). Strategies and skills to build effective communication, including listening with openness and empathy, are needed for successful relationship building (Lambert, 1998; Mayrowetz et al., 2009; Slater, 2008).

An important function for teacher leaders is to develop mutual trust and build relationships among their team members (Hord, 1997; LaFasto & Larson, 2001; Lambert, 1998; McAdams, 1997; Spillane et al., 2001; York-Barr & Duke 2004). Time to develop respect assists in building the trust needed to discuss what happens in the classroom (Hord & Hirsch, 2009; McAdams, 1997). With mutual trust, fear is diminished (Padilla, 2013) and teachers are trusted to make good judgments about their professional growth and development (Timperley, 2005) while sharing the responsibility of their work in teaching and learning (DuFour et al., 2010). When there is mutual trust and reciprocal understanding, teachers have enough confidence to allow a degree of vulnerability, exposing their work and their weaknesses in order to engage in the problem solving needed to raise the teaching standards (Lewis & Murphy, 2008). Leaders working to build trust should increase the understanding within their teams by allowing questions, checking for understanding, being caring, helpful, supportive, respectful, honest and demonstrating integrity (Argyris, 1990). Improving the working relationships within the team helps gain the commitment of each team member to work toward the team goals (Gordin, 2010). Effective teamwork requires individual members to believe in each other's capacity to learn (Schmoker, 2000). When teams are open and supportive they work better together (LaFasto & Larson, 2001). Resolving any trust or conflict issues is vital for the success of the team (Gordin, 2010). In a supportive and caring school culture, how teachers treat and respect each other is as important as how the students treat and respect each other (Garmston & Wellman, 2009).

Teacher leaders assume the major responsibility for the school culture (Crowther et al., 2002) including building a climate of trust where people work together, learn together and listen to each other (Ash & Persall, 2000). Teacher leaders who inspire trust and respect help in the development of a culture of teamwork (Senge, 1990). Distributed leadership values teamwork

and a supportive culture so that leaders can positively influence others (Leithwood et a, 2007; Macbeath, 2009). Shared responsibility and leadership is necessary to foster a mutual and supportive culture (Lewis & Murphy, 2008). Teacher leaders are excellent educators. They are respected, take risks and assume responsibility for the school culture, including developing high trust and working relationships with teachers and peers, as they establish a cooperative learning environment (CCSRI, 2005).

People development, according to Firestone & Martinez (2009) is a task required of teacher leaders. Building relationships and trust so that teachers are able to share information and build quality relationships takes time and a planful alignment (Firestone & Martinez, 2009; Murphy, 2005). Providing encouragement and recognition helps to develop people as they build the relationships necessary to influence others (Harris & Muijs, 2005; Heller & Firestone, 1995). Developing networks of relationships is how facilitators help people work together building the collaborative environment needed for improving learning (Fullan, 1996).

***Leadership in collaboration.*** Collegial interactions, often called collaboration, significantly promote reform program implementation (Fullan, 1991) that leads to improved student learning. Several writings on school reform list collaboration as a major theme (DuFour & Eaker, 1998; Fullan, 1993, 2010; Garmston & Wellman, 2009; Hord, 1997; Slater, 2008). Collaboration is one way to provide needed professional development and to build the leadership capacity in the school by sustaining the efforts that result in raising the standards for school leadership (Andes, 2009). Building an effective schoolwide collaboration system is not easy. A culture of professionalism that is student focused, where teachers can see themselves as learners (Harris, 2003), requires the school principal to begin constructing the conditions that allow for a collaborative environment (Williams, 2009). The school administration needs to allow the PLCs

the time to work, as well as the help and resources they need and also needs to back-up any decisions the staff makes. The principal must share the PLC leadership with all of the staff allowing them to build the shared vision, to build leadership capacity, to have important conversations and be given the opportunities to learn (Talbert, 2010). Creating the opportunity for staff to work collaboratively not only breaks down the isolation felt in the teaching profession but it is a powerful tool to create opportunities for the staff to learn, for people to work together, to develop teams, and to use collective brainpower to solve problems both effectively and efficiently (Ash & Persall, 2000).

The opportunity to work collaboratively also needs to include an effort to teach collaborative skills to those working in collaborative groups (Hord & Hirsh, 2009). It takes time to build trust while balancing the individual and the collective mindset and developing group effectiveness (Fullan, 1996; Hord & Hirsch, 2009). Often the strategic plan comes after the group spends shared time developing clarity and learning from each other, discussing challenges and developing a degree of skill in working together (Firestone, 1996; Fullan, 1996). Collaboration skills cannot be mandated (Fullan, 1996) but are built through productive shared relationships (Garmston & Wellman, 2009). When doing collaborative work, teachers influence each other and help to develop each member's human potential so that the group feels energized and motivated in their work (Slater, 2004). It takes teacher leadership to help form a PLC (Katzenmeyer & Moller, 2001) and develop the skills needed to support teacher professional development (Harris, 2004).

Transforming schools into PLCs begins with helping educators develop their professionalism through common vocabulary and an understanding of the collaborative process and how it will benefit both the teachers and the students (DuFour et al., 2010). Establishing a

collaborative culture involves improving how teachers treat and respect each other and builds on each teacher's leadership capacity to teach and to learn (Garmston & Wellman, 2009). This type of collective leadership and responsibility is described as distributed and helps the group work together to enact their shared tasks (Spillane et al., 2004). The tasks of successful teams include sharing their goals of student success, taking responsibility for developing strategies from their school data and working together to produce small gains in student success (Schmoker, 2000; Timperley, 2005). A culture of collaboration improves team learning, productive thinking and collaborative problem solving and is part of distributed leadership that does not depend on leadership conformity or top-down control (Ash & Persall, 2000).

Leadership within the collaborative process is necessary to build relationships and engage people (Lambert, 1998). Teacher leadership is important to provide the follow through for each meeting and connect the previous discussions to the current discussion (Schmoker, 2000). Through collaboration and shared leadership in PLCs the entire staff can share ideas and practices (Williams, 2009). Lambert (1998) advocates that positive relationships form the teacher leadership, teacher collaboration and capacity building necessary for school improvement.

***Leadership in monitoring progress.*** During any improvement effort, better results will be achieved when the progress is monitored (Schmoker, 2000). Measuring the impact of new innovations requires evidence and data to be communicated to the team (Schmoker, 2000). Such data needs to be collected and used for feedback and decision-making (Goertz, 2008, Hord, 1997; Mayrowetz et al., 2009; Timperley, 2009). When using a distributed leadership model, the monitoring of progress and the sharing of data are often developed by the teacher leaders (Mayrowetz et al., 2009; Mulford & Silins, 2003). Research on distributed leadership has found that effectively monitoring the instructional program, including the agenda and progress, is done

through focused teacher leadership using a planful distributed leadership alignment (Leithwood et al., 2007; Murphy, 2005).

Teacher leaders share tasks with administration and districts in monitoring improvement efforts (CCSRI, 2005; Firestone & Martinez, 2009; Heller & Firestone, 1995; Leithwood et al., 2007; Spillane et al., 2004). Distributed leadership shares the functions of monitoring instruction, innovation and the overall school climate (Heller & Firestone, 1995; Spillane et al., 2001; Spillane et al., 2004). Teacher leaders can influence their team in helping to manage their own programs (Leithwood et al., 2009) by creating, monitoring and diagnosing their progress while working in their PLCs (DuFour & Eaker, 1998).

Leadership support for systematic opportunities for teacher leaders to reflect, provide feedback and monitor progress is needed (York-Barr & Duke, 2004).

**Leadership supports.** For any reform to take place, the administration must support teachers in developing professionally (Harris, 2004; Hord, 1997; Timperley, 2005) and allowing teachers to focus on improving instruction (Hord, 1997). Supports can be structural such as giving teachers and PLCs the time, place, autonomy, resources and collaborative environment to work (AISR, 2004; Slater, 2008). Administrative support in policy development such as site based decision-making and empowering teachers as professionals is also necessary (AISR, 2004; CCSRI, 2005; Crowther et al., 2002; Garmston & Wellman, 2009; Harris, 2003; Williams, 2009). Teachers need to believe they are trusted (Argyis, 1990) and are supported in developing new ideas for school change (Ash & Persall, 2000). Administration can help teachers and teacher leaders gain the public and professional acceptance (Crowther et al., 2002) and parent and community support (Hord, 1997) needed to make the necessary changes for school improvement.

***Distributed and shared leadership.*** High quality leaders set the direction, develop the people and redesign the organizations through structuring the time and resources, promoting continual learning, and supporting collaboration (Leithwood et al., 2004). Hord et al. (1987) found effective principals constantly examine their school to gather information and data about the site, the staff and the students. The information is then processed to help generate ideas that will address any problems or needs. Artifacts, including data, can span the boundaries between the principals, teacher leaders, and teachers and can help set the direction of discussions and the actions of the school (Timperley, 2005). In setting the direction and using it to determine priorities, it is important that a principal's espoused vision matches both the theory in use and the principal's actions (Argyris, 1990; Timperley, 2005). The effective principal does not mandate what matters most-the skills attitudes, behaviors and beliefs of the staff; such a mandate will only cause superficial compliance (Fullan, 1996). Leadership reciprocity is needed to solve problems and allow the staff to work collaboratively; the principal needs to let go of authority and responsibility to build leadership capacity among the staff (Lambert, 2005).

There are numerous leadership possibilities in a school that are not role specific and that an effective principal can use to develop the school staff. It is the job of the principal to fashion learning for all the staff allowing teachers to participate as leaders and principals to serve as the leaders of leaders (Ash, Persall, 2000). Site leaders need to be honest, trustworthy, truthful, ask questions and act in ways that reduce errors while educating and engaging individuals by making school issues discussable and manageable (Argyris, 1990). When principals provide opportunities for teachers to practice leadership while supporting their risk taking and attempts at new initiatives, teacher leaders develop responsibility, gain confidence and improve their job satisfaction (Slater, 2004). Principals need to define the roles and responsibilities of the teacher

leaders, find those with the strength and abilities, and support them in their leadership roles along with providing them with the resources they need and rewarding them for taking the leadership risks (Argyris, 1990). Skillful leaders use their resources to create shared leadership knowing that they have neither endless amounts of time nor endless expertise in all areas (Williams, 2009).

Successful leadership supports collaboration through empowering others and creating an environment that energizes and motivates people (Slater, 2004). The roles and responsibilities of the principals and the stakeholders change in order to broaden participation, collaboration and shared involvement. Crowther et al. (2002) found four conditions that support teacher leadership. Teacher leaders need both public and professional acceptance, active support from the principal, greater resources, and the nurturing of the interaction of three interrelated processes of professional learning, culture building and schoolwide pedagogy. The traditional roles of teacher leaders have been: as curriculum developers, counselors, assessment and testing coordinators, peer mentors, parent coordinators (Ash & Persall, 2000), facilitators, coaches, mentors, trainers, and curriculum specialist (Katzenmeyer & Moller, 2001). With distributed leadership, the roles become more complex requiring more skills and abilities for collaboration and collegiality (Ash & Persall, 2000).

The new and different roles of the teacher leaders involve not only leading students, but leading teachers, completing operational tasks, participating in decision-making and completing action research (Harris, 2003). Day & Harris (2002), list the teacher leader roles as developing meaningful classroom practices, focusing on fostering collaboration and collective goals, providing expertise, information resources and external assistance if needed and most importantly, developing close relationships with individuals through mutual learning, action

research, and peer observations. Teachers, though, may fear of losing their autonomy; and therefore trust needs to be built between the site leaders and other staff members (McAdams, 1997). Teachers need to feel in control of their classrooms, the curriculum, the instruction, and the standards. Ultimately, a teacher leader needs to share, with the team, the lead and the load of improving instruction (Slater, 2004).

*Leadership characteristics and skills.* There are numerous leadership characteristics and skills listed for teacher leaders. Ash & Persall (2000) list ten principles or skills needed in formative leadership. The first is related to team learning and includes collaborative problem solving while controlling any top-down conformity. LaFasto & Larson (2001) support the characteristic of productivity and add mutual understanding and giving and receiving feedback to the skills list. Teachers should view their leadership as participatory and ask the hard questions instead of knowing all the answers (Ash & Persall, 2000). Team leaders also need to speak up for the real issues (LaFasto & Larson, 2001) and facilitate dialogue by posing questions (Lambert, 1998). Teacher leaders need to trust in the relationship developed in their teams and assume the best from their team members (Ash & Persall, 2000). Team leaders are positive and honest (Argyris, 1990), open with a positive style (LaFasto & Larson, 2001), and build ‘adult to adult’ relationships (Slater, 2004). Teacher leaders support innovation and creativity (Ash & Persall, 2000). The focus of a leader should be on the people and the process, not on the paperwork (Ash & Persall, 2000; LaFasto & Larson, 2001).

Leaders are servants who focus on student learning and the team’s goals (Ash & Persall, 2000; LaFasto & Larson, 2001). Leaders create a two-way channel that foster communication (Ash & Persall, 2000; Harris, 2004), builds capacity (Slater, 2004), and includes listening and empathy. Teacher leaders must be in close proximity and visible to their colleagues (Ash &

Persall, 2000) to foster such communication. The work of the teacher leader also includes empowering and motivating (Firestone, 1996) others to do their work while protecting them from outside interference (Ash & Persall, 2000; Slater, 2004). Leadership requires the ability to function in a climate of uncertainty while working to continuously learn and improve (Ash & Persall, 2000; CCSRI, 2005).

The Center for Comprehensive School Reform and Improvement (2005) lists three areas for fostering teacher leadership. The areas of knowledge needed for successful teacher leaders include knowing the culture and context of the school, the roles and relationships of the leaders and the structures that have been put in place. Teacher leaders need to be facilitators, delegators, planners in the change process and learners, too (Hord, 1997; Hord et al., 1987). Lencioni (2005) expects leaders working in teams to building trust, deal with conflict, build commitment, hold the team accountable and analyze the outcomes. Overall, team leaders and members have invested time and energy in the process and noting the accomplishment of goals helps to develop the momentum to continue the work (Lencioni, 2005; Schmoker, 2000).

*Leadership Capacity.* The collective force of distributed leadership maximizes the human capacity to guide and influence others (Harris, 2004). Building capacity in an organization involves using the ‘underutilized talent’ within the organization (Slater, 2004) in the broad-based and skilled work of leadership (Lambert, 1998). An emerging theme in the research is that effective leadership is widespread and collective and that the people throughout the organization have the capacity to lead (DuFour, 2004). Both Lambert (1998) and Sergiovanni (1988) found that it is teacher leadership that promotes the capacity of the organization; while Harris (2003) and Lambert (2003) found studies that school change can be sustained through building leadership capacity within the organization.

In order to engage in the collective action to build leadership capacity, mutual respect must exist (Crowther et al., 2002). Mutual respect between the school principal and the teacher leaders along with trust and appreciation of each other's responsibilities and an environment conducive to the sharing of new ideas is necessary for distributed leadership to exist. Crowther et al. (2002) warn that due to the historical isolation and alienation of the teacher workplace, developing mutual respect is difficult and involves the need to build trust. When mutual trust is established and the teacher leaders embrace the sense of shared purpose and assume major responsibility for leading then the culture of the school will reflect the integration of the vision with teaching and learning. Principals and teachers must work together in joint professional development activities in order to build the trust needed to engage in problem solving and raise teaching standards (Lewis & Murphy, 2008). Building leadership capacity allows leaders to make others shine, to share their talents and contribute to school growth while intentionally promoting the leadership in others (Slater, 2004).

According to Slater (2004) there are two main reasons to build leadership capacity: to improve student learning and to contribute to the growth of teachers' knowledge, morale and retention. Williams (2009) adds that leadership capacity creates growth, a sense of self-renewal and helps in the development of distributed leadership. Creating and developing leadership capacity not only includes district policies and practices that support leadership but also includes building trusting relationship; sharing and collaborating around learning; a culture of inquiry and the implementation of a plan to build leadership through professional development (Lambert, 2003). When professional learning is communal, the core values of the school gain more importance, the authority from leadership roles becomes more supportive and facilitative (Crowther et al., 2002) and the work of the school is shared.

***Leadership time supports.*** Teacher leaders need the time and opportunity to do the complex tasks required to complete their work (Firestone & Martinez, 2009; Leithwood et al., 2007; Mayrowetz et al., 2009; Murphy, 2005). Silver et al. (2009) found that implementation of new curriculum was easier at first because more time and resources were spent on professional development. As years passed, there was less time set aside for professional development, planning and training and curriculum implementation was difficult to sustain. Fullan (1991) found it takes time for change processes to occur, up to ten years. When investing in teachers both time and professional development must be provided (Hord, 1997; Lambert, 2005). Time for teacher leaders to facilitate professional development is important (Senge, 1990) and should be ongoing and relevant (Padilla, 2013).

Time needs to be set aside for teams to meet, plan, discuss, organize visits and collaborate (Harris, 2003). Regular and substantial time to meet and talk is required when working in a PLC (AISR, 2004; DuFour et al., 2010). Principals need to provide these conditions for PLC time including teacher leaders who have the expertise needed for the content area (Williams, 2009). PLC time needs to be structured (Gordin, 2010), focused on the goals and be productive (DuFour & Eaker, 1998; DuFour et al., 2010; Schmoker, 2000). Teacher leaders need time to act and respond to the needs of the team and balance the needs of each participant (Schiavo et al., 2010) along with balancing their responsibilities (Storey, 2004).

***Leadership resources supports.*** When facilitating shared leadership, an important task, shared by teachers, administrators and the district is to work together to provide and distribute the materials needed for the change initiative (Heller & Firestone, 1995; Leithwood et al., 2007; Spillane et al., 2004). The provision of resources fosters the development of teacher leaders (CCSRI, 2005). Teacher leaders need to gather, provide and manage the materials and

information resources (CCSRI, 2005; Day & Harris, 2002; Murphy, 2005; Schiavo et al., 2010; York-Barr & Duke, 2004). Managing curricular materials is difficult because students will be at different readiness levels (Silver et al., 2009) requiring multiple levels of materials. Good instructional materials need to be engaging and available. Skillful leaders are able to manage all their resources including materials, information and human resources (Spillane, 2006; Williams, 2009).

Administrations need to focus their budgets on the needs of the teacher leaders (Harris & Muijs, 2005). Aligning the budgets with the innovation and the change process helps the teacher leaders complete their work (Mizell, 2007). Distributed leadership is threatened when there are no resources for the teacher leaders; distributed leadership is threatened (Harris, 2004).

***Leadership structural supports.*** Effective principals provide support in designing structures for collaboration, providing resources and providing the time needed for teacher leaders to develop their skills (Easton, 2008). An ongoing and coherent professional development structure is important and should be provided when aligning curriculum and collaborating toward student improvement (DuFour et al., 2010; Palacios, 2005; Stein & Kim, 2009; York-Barr & Duke, 2004). Structures that facilitate school improvement and ensure sustainability for reform efforts also foster teacher leadership (CCSRI, 2005). Some of the system changes that support teacher leaders include; providing for more self-governance including making data accessible and easy to use, examining and refining the processes (Schmoker, 2000); and providing the research to inform decision-making (Hord & Hirsch, 2009). Most importantly, effective principals should encourage their districts and schools to support building a culture of collaboration and risk-taking to increase student learning (Leithwood et al., 2004).

The work of teacher leaders needs to complement the work of the administration (Heller & Firestone, 1995). Both the school leadership and the teacher leaders need to participate in the development and work on the school vision including helping the staff to embrace the school goals (DuFour et al., 2010; Harris, 2004; Heller & Firestone, 1995). Sharing the leadership with administration and teachers includes the need to work together in monitoring the improvement efforts (Harris, 2004; Heller & Firestone, 1995; Leithwood et al., 2007; Spillane et al., 2004). Providing all the needed resources including professional development opportunities, time to meet, and instructional materials also needs to be coordinated between the site leadership and the teacher leader (Heller & Firestone, 1995; Leithwood et al., 2007; Murphy, 2005; Spillane et al., 2004). Leadership capacity needs to be developed in teaching staff, as the reform initiatives require more instructional knowledge and content expertise (Heller & Firestone, 1995; Hord & Hirsch, 2009; York-Barr & Duke, 2004). Relationship building and role clarity is necessary for teacher leaders to have the authority to influence the change required for improvement (Day & Harris, 2002; Firestone, 1996; Lambert et al., 1995; Murphy, 2005). Transformational thinking, including how schools are organized, is needed for teacher leadership to succeed as part of school improvement efforts (Ash & Persall, 2000).

**Leadership challenges.** Teacher leaders find it challenging to understand and integrate the relationships and roles they have with the administration (Harris, 2004) and with their fellow teachers (York-Barr & Duke, 2004). When implementing reform initiatives, providing stable leadership and resources can be limited by bureaucratic controls (Mayrowetz et al., 2009). School personnel need to internalize new understandings about the relationships between school leadership and school outcomes including the relationship between the administration and the teacher leaders (Crowther et al., 2002). More demands are being made for teachers to change

more continually and improve student learning (Ash & Persall, 2000) especially with the current requirement for schools to prepare all students to be college and career ready (California Department of Education, 2013a). As teachers become the experts in the new curriculum, they share the leadership in school improvement (CCSRI, 2005; Williams, 2009). A major constraint in using teacher leaders is that in addition to their leadership work, they have their own work to complete (Firestone & Martinez, 2009; Leithwood et al., 2007; Spillane et al., 2004).

***Challenges in collaboration.*** Involving staff in leadership and working collaboratively is not without challenges (Slater, 2008). Teachers need training about the PLC process and how to deal with conflict (Gordin, 2010; Well & Feun, 2007). During participation collegiality can raise the issues of privacy or the risk of criticism or being viewed as weak (Firestone, 1996). One of the major challenges in teams is inadequate communication and feedback (CCSRI, 2005). Team members need to feel that they are actively and collectively involved and that their participation and contributions are valued (Mulford & Silins, 2003). Also, no favoritism should be shown as teacher leaders balance the tensions and difficulties that arise when working with a team (Leithwood et al., 2007; Storey, 2004). Often theory cannot be referenced (Hargreaves, 1984) or shared knowledge is incomplete (Firestone, 1996) leading to inaccurate information, flawed feedback and miscommunication because much of teacher knowledge is tacit. Teachers do not want to waste their time with too many meetings, so it is important that the shared goals be compelling and that results can be shown from their collaborative work (DuFour & Eaker, 1998; Schmoker, 2000).

***Challenges in shared leadership.*** When developing teacher leaders and PLCs, only a minority of teachers will commit to be a facilitator even when given the opportunity (Firestone,

1996; Leithwood et al., 2007). Leaders will need to be developed for the position they hold, instead of developed for their current abilities (Lambert, 2005). The largest threat to developing teacher leaders is requiring the formal leaders to relinquish some of their power for a more horizontal model of power sharing (CCSRI, 2005; Harris, 2004). Not relinquishing power impedes the development of distributed leadership (Harris, 2004). Principals need to give shared leadership a high priority, support and acceptability, but few actually allow it (Firestone & Martinez, 2009; Leithwood et al., 2007; Timperley, 2009). Teams can be powerful, but they need to develop role-clarity, shared responsibilities and decide not only who distributes responsibilities and authority but also how (Harris, 2004; Murphy, 2005). Most importantly, teacher leaders need to believe that their tasks are significant and that they do not threaten the administrations' authority (Mayrowetz et al., 2009).

***Challenges in school structures.*** Traditional school leadership needs to provide a structure that improves the sustainability of reform efforts (CCSRI, 2005). Currently schools are not organized to efficiently support and encourage continual learning (Ash & Persall, 2000). Teachers need consistent opportunities to collaborate, share information and plan together. This will require the intentional and systematic support for collaboration development, staff development and the transformational opportunities to think creatively in order to systematically improve student achievement (Ash & Persall, 2000; York-Barr & Duke, 2004). Making use of schools' existing resources and capacities includes locating the expertise needed to respond positively to new challenges (Leithwood, Mascall & Strauss, 2009).

Often initiating a new curriculum it is done quickly with not enough training, without the required professional development in the content area or led by those who do not understand the current situation (Palacios, 2005; Stein & Kim, 2009). There is often tension when providing the

necessary professional development, monitoring progress of the professional development, evaluating the new program and building the needed trust for attempting new innovations (Leithwood et al., 2007; Spillane et al., 2004). District support is needed to provide long term, consistent, cohesive and high-quality professional development (Firestone & Martinez, 2009).

### **Summary**

The major educational reforms in the United States in the last fifty years include reform movements involving more curricular standards and assessments, monitoring of students and expanding the profession and roles of teachers. From the 1970's federal monitoring of education to determine whether the Civil Rights laws were being upheld, through the 1980's movement to increase the status of teachers, the expansion of teacher leadership rolls in the 1990's and the Standards Based federal mandates in NCLB, the current reform is the Common Core State Standards with the goal of all students being college and career ready upon graduation. In the math content area the CCSSM mirrors closely the National Council of Teachers of Mathematics (NCTM, 1989) *Curricular and Evaluation Standards for School Mathematic* that now includes the eight mathematical practices including modeling of the math, reasoning abstractly and constructing viable arguments and critiquing the reasoning of other. The expanded roles of teaching is summarized in the high school report, *Second to None* (California High School Task Force, 1992), explained that teachers need to be encouraged and supported, share a sense of common purpose and dedication, able to build on their expertise, given the time and opportunity to learn, question and collaborate and be given the opportunity to offer input and help design the approach to the change. It is a challenge for teachers to sustain the continuous learning in math curricular changes (Stein & Kim, 2009).

The literature on curricular reform suggests that on-going coherent professional development involving teachers as continuous learners needs effective leadership. Themes that have shown to help facilitate the change process include involving teachers due to their roles as instructional experts and holding them responsible for enacting curricular change. Teachers in these roles have shown to help facilitate the change process (York-Barr & Duke, 2004). The practices of the teacher leaders that emerged from the research include context knowledge, relationships with peers, values and beliefs, experience with student data and focus on improvement goals and are important in implementing and sustaining the reform efforts. Teacher leaders working alone cannot sustain the change initiatives. The teacher leaders need the support of their administration including the time, resources, structures and role clarification in order to spread the leadership to all capable staff members. Sergiovanni (2006) found that the more shared leadership in the school, the more committed the staff. “The more that leadership is cultivated in a school, the more likely it is that everyone will get a chance to use their talents fully, and the more committed everyone is likely to be” (p 173).

The relationship of teacher leadership and distributive leadership has not experienced in-depth exploration (Harris, 2003). Further research focusing less on the development of leadership models and more on the flexibility of the leadership roles and functions (Leithwood et al., 2004) is needed, especially between the principal, the teacher leaders and the followers. Knowledge of curriculum instruction and assessment, as well as monitoring and evaluating the effect of the school curriculum and instruction practices on student achievement are responsibilities of effective leadership (Marzano, Waters, & McNulty, 2005) and this is the area where the teacher leader has intimate knowledge and expertise. Teacher leaders who are empowered to facilitate and lead PLCs focused on current reform efforts-including research and

theories about curriculum, instruction and assessment and the best teacher practices-can improve academic achievement for students.

Developing a culture of collaboration and teamwork is not without challenges. As California high school math teachers work to implement the CCSS in math, they will experience both successes and obstacles. Studies are needed that focus on instruction and professional development using respected and accomplished teachers to extend their knowledge, skills and influence throughout the school culture (York-Barr & Duke, 2004). This year of CCSS implementation presents an opportunity to examine this shared teacher leadership collaborative change process, the practices, supports and challenges.

### **Chapter 3: Research Design and Methodology**

The purpose of this study was to understand the informal teacher leaders' perception of their leadership practices, supports received and needed, and challenges during the first year of implementation of the Common Core State Standards (CCSS) in math working in content teams. Semi-structured interviews, using the themes from the research to narrow the two broad questions asked in phenomenological studies about what was experienced and what influenced the experience (Moustakas, 1994) were used. The outcome of these interviews was to discover the common themes of the teacher leaders' experiences to provide a better understanding of the phenomenon (Creswell, 2013) of curricular reform in math. This chapter provides an overview of the phenomenological design, starting with the purpose of the study, the study questions and the methodology. Also in this chapter, the researcher's positionality and connection to the research are explained. The setting is described along with the subjects including the sampling size and the criteria for selecting the participants. Data procedures comprised of the instrumentation, interview questions and the method of analysis is described. Finally, the validity and trustworthiness of the data findings is discussed.

#### **Purpose Statement**

The purpose of this phenomenological study was to describe the experiences of high school math teacher leaders, in a Southern California district, as they worked with their content teams to implement the Common Core state math standards curriculum, instruction and assessments. Specifically, the purpose was to describe (1) the leadership practices used, (2) the supports received, (3) the perceived needed supports, and (4) the challenges they encountered during the first year of implementation of the CCSS in math.

### **Research Questions**

There were four broad research questions with several sub questions that guided this phenomenological study.

1. How did high school math teacher leaders, from a Southern California district, describe their leadership practices, if any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?
2. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?
3. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they perceive to need to implement the Common Core high school math standards?
4. How did high school math teacher leaders, from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards?

### **General Approach**

This non-experimental qualitative study explored the phenomenological experiences of seven Southern California secondary math teacher leaders in implementing the Common Core Curriculum including standards, instruction and classroom assessments. Semi-structured face-to-face, telephone interviews and email were used to gather information about the teachers' experiences as informal leaders. The interviews included four broad questions about their leadership practices, the supports they received, the future supports they perceived to need and

any challenges they have encountered along with several open-ended questions specific to the themes found in the literature review.

### **Methodology**

The purpose of phenomenological research is to describe the common meaning, the essence, (van Manen, 1990) of several individuals' experiences of a concept, human experience or phenomenon (Creswell, 2013). Moustakas (1994) includes in the method the 'what' was experienced and the 'how' it was experienced. This study was interested in describing the 'what' the teacher leaders have experienced in their implementation of the CCSS and the 'how' they experienced the implementation process. Phenomenological research endeavors to uncover both the evidence of and the meanings that underlies in the culture of an organization (Marshall & Rossman, 1999). Interpreting the lived experiences of the teacher leaders helped discover the nuances of the math content teacher lead implementation culture.

Adding to the body of knowledge about the experiences, practices, supports and challenges of teacher leaders in a content team implementing a change initiative including how leadership was shared was the goal of this study. The intent was to assist other teacher leaders and site principals in improving the learning culture of their school through understanding the facilitating practices that were most useful in the implementation. Also, identifying the supports and challenges both resolved and unresolved endured by the teacher leaders can inform and improve future curricular implementation processes. This genuine understanding could only be discovered through studies that uncover the lived experiences of the participants and through recognizing the common themes among them. Semi-structured interviews, to be coded thematically using the a priori themes found in the review of research will capture the lived experiences of the participants.

**Rationale**

Phenomenological research, according to Creswell (2013) works best when the goal of the researcher is to understand the experiences in order to develop policies or practices or a deeper understanding of the phenomenon. This study was selected for three primary reasons: (a) the educational pedagogy is changing more and more frequently and examining how using a teacher lead content group, at the secondary level, helps the implementation of the change process needs further study; (b) very few research studies exist examining secondary schools using teacher leaders in a distributed leadership framework; and (c) qualitative interviewing of shared experiences allows for individual representations of the experiences rather than measured, hypothesis or evaluation approach (Seidman, 1991). Very little data exists about the role and function of teacher leaders implementing change initiatives. The current research around distributed leadership and teacher leaders is mostly descriptive about the skill traits and roles. The research lists and describes the functions and roles of teacher leaders and how principals can build teacher leaders. There is limited research about the practices or experiences of the teacher leaders themselves or the supports and challenges that were encountered during the implementation of new curriculum.

**Positionality**

In a phenomenological design, the researcher attempts to bracket, or set aside one's beliefs, feelings, and perceptions in order to approach the experience with new eyes (Colaizzi, 1978). Qualitative researchers must be candid about their connections to the topic of study by exposing the readers to potential biases, values and interests. As a high school math teacher in Southern California, it was necessary that during the interviews, the researcher bracketed her experiences and captured the lived experiences of the participants. One way to do this, as

described by Creswell (2013) is for the researcher to describe her personal experiences with the phenomenon and explain her views before proceeding with the experiences of the participants.

### **Époche**

Moustakas, 1994, explains the *époche* process as setting aside biases, prejudgments, and preconceived ideas. The researcher must take no position and make sure that every quality has equal value. Researchers can accomplish this by using software to help with the transcribing of the interviews and/or add separately their own personal observations and judgments when starting the transcription process. This forces the researcher to engage in a reflective cognitive process to write down and label prejudgments in order to be transparent about any preconceptions and biases.

The researcher has taught math at a Southern California high school for 22 years. She has implemented previous reform curriculum such as the *Integrated Math Program (IMP)* and *College Preparatory Math (CPM)*. The implementation of these curriculums included a week of summer training for each level that included solving the key problems in each unit with a trainer and group of teachers from her site and other schools. During the school year, these teachers would meet weekly to share materials and coordinate their pacing of the curriculum. Common assessments were developed along with additional materials mostly to provide remediation and extra practice for the students. After the first few years of implementation, the collaboration steadily declined for the researcher and her fellow teachers. Also, when the implementation was new, sharing of student work especially tests was more frequent. Both the decline of collaborative planning time and the decline of sharing student work is considered unfortunate by the researcher.

The researcher has been trained in the Common Core state standards in geometry and in statistics. As in past reforms, the training began during the summer with fellow teachers from her site and other schools and continued with a few one-day trainings during the school year. This year she is working with her department chair to implement the Common Core state standards for geometry during their weekly collaboration time. The researcher is interested in the practices, supports and challenges experienced by teacher leaders as they implement the new curriculum.

### **Setting**

Data for this phenomenological study was collected from teacher leaders working at three comprehensive high schools in a K-12 district of around 15,000 students located in Southern California. The school districts' demographics include 60% Hispanic, 33% White, 3% Asian, 3% Mixed and 1% African American students. Thirty one percent of the students are English Language Learners while 52% qualify for free and reduced lunch. Beginning in the 2011 school year, this district has employed a professional learning coordinator/math specialist to help support the CCSS math transition work. During the 2013-2014 academic year, this math specialist or TOSA's job evolved into more of a coaching position with an additional focus on developing an integrated curriculum for CCSS, often called units of study. Various professional learning opportunities focused on the CCSS have been offered to the staff as well as the district supporting other countywide professional learning events. During the 2013-2014 school year, the high school math teachers had been meeting in content groups, with teacher leaders, to work on the implementation of the CCSS in mathematics.

## Subjects

In phenomenological studies, the participants must have experienced the phenomenon (Creswell, 2013). Criterion sampling was used in order to focus on the individuals who meet the criterion. The researcher needed access to the particular types of purposefully chosen participants in order to aid in the understanding of the shared phenomenon (Patten, 2010). The selection of participants and their specific criterion will be discussed in detail in the sampling procedure section.

**Human subject considerations.** The researcher, to ensure the rights of the human participants had been protected (see Appendix A), obtained permission (see Appendix B) from the Pepperdine University Institutional Review Board prior to conducting the study. An Exempt Review procedure authorized by 45 CFR 46.101(b)(2) and 46.116(a-b) was obtained. This study presented minimal risk to the participants, the subjects' names remain confidential, the researcher obtained informed consent and the data was collected through voice (audio) recordings for research purposes. Participants were identified with pseudonyms to protect their confidentiality. The researcher has no supervisory or evaluative role and does not work in the same district as the participants. It was the researcher's job to create a climate where the interviewees felt comfortable to respond to the questions openly and honestly with comprehension (Moustakas, 1994). The interviewees were told that they could stop the interview at any time.

The researcher first obtained permission from the district office (see Appendix C) to recruit and contact math teacher leaders of content teams. Once the permission to contact the teacher leaders was given, a letter of consent for research participation was emailed to explain the study and obtain consent to participate in the study (see Appendix D). If a response was not

received from a participant within a week, a follow-up email was sent (see Appendix E). After consent to participate was received by the researcher through email or a phone call, the letter of informed consent and the experience questionnaire was emailed to the participant (see Appendix F and G). A ten minute follow up phone call or email was made to answer any questions, obtain the demographic experience information along with explaining the letter of consent before the interview process began (see Appendix F). The participants scanned and sent the signed letter of research participation consent and the informed consent form to the researcher before the face-to-face interview was arranged. The potential risk to the participant was minimal and involved the loss of time due to the emails, phone calls, printing and signing, faxing or scanning of consent forms along with possible fatigue due to the interview lasting 30–60 minutes. Keeping the correspondence professional minimized these risks. To minimize the risk of fatigue during the interview the researcher helped make the participant feel welcomed and comfortable by being friendly and professional. The environment for the interview was chosen for the convenience and comfort of the participant. The possible benefits included sharing of experiences to further the body of research and possibly improving the implementation process of reform initiatives.

**Sampling procedures.** Criterion sampling was used to select individuals carefully for the phenomenological research (Patten, 2010). Sampling should maximize information gathering and provide saturation but there should be a limit (Seidman, 1991). A sample ranging from 2-16 (Creswell, 2013) is considered an appropriate sample size with this study anticipating 6–9 participants. Nine teacher leaders were invited to participate in this study and seven accepted to participate and were interviewed. What is most important in a phenomenological study is that the participants have experienced the phenomenon. In order to insure participants have experienced

the phenomenon and to allow for a more consistent sample the following inclusion criterion are listed below.

1. The participants have attended CCSS training for math and are working at their site to implement the high school math CCSS standards, instructional practices and assessments.
2. The participants live in Southern California.
3. The participants were self-identified as working as the teacher leader of a high school math content team to implement the CCSS weekly or bi-weekly.
4. The participants have experience as the content team teacher leader or facilitator for the 2013–2014 school year.
5. The participants were interested in gaining a deeper understanding of the teacher leaders experience during the implementation.
6. The participants were willing to participate in a 30–60 minute interview (Moustakas, 1994).
7. The participant willing gave permission to the researcher to digitally record and publish the interview themes (Moustakas, 1994).

The criterion sampling was accomplished by receiving permission (see Appendix C) of the superintendent of the chosen district and the high school principals of the high school math teachers who attended the CCSS trainings to contact their teacher leaders. The district assistant superintendent was contacted by phone, email with an attached letter (see Appendix C) for the requested permission to solicit the teachers within their district where the team of content teachers work. The researcher was given the information to find the forms for applying for research permission. The researcher completed and sent the district paperwork for requesting research permission. When no response was given within a week, the request for permission was

repeated. The assistant superintendent and the principals from the high schools emailed the researcher permission to contact the teacher leaders.

The teacher leaders were contacted through email. The teacher leaders who were willing to participate were told they are participating voluntarily and that they could withdraw at any time. The participants were asked for their approval to be audio taped during the interview and they were assured that everything was confidential with pseudonyms given for identification and to protect their confidentiality. All questions regarding participation were repeated when there was no response to guarantee the understanding that their participation was voluntary. Before the participants were given the questionnaire, they had signed, scanned and sent the consent for research and informed consent forms (see Appendix D and F).

Table 2 displays the demographics of the seven teacher leaders in this study. The information gathered included the participants' college degrees, area of credentialing, years of experience teaching and the type of classes they teach. Responses were collected using a questionnaire (Appendix G) that is discussed further during the instrumentation section of this chapter.

Table 2

*Participants Demographics and Background Information*

	Subject Pseudonyms						
Demographic Question	Mr. Allan	Mrs. Bea	Mr. Call	Mrs. Dean	Mrs. Erst	Mr. Fee	Mr. Grant
Degrees	BS Math	BA Math MA Education	BA English MLA Teaching Math	BS Mechanical Engineering MA Education	BA Applied Math MA Education	BS Physics	BA Math and History MBA
Credential	SS: Math/Science	SS: Math	SS: Math/English	SS: Math	SS: Math	SS: Math/Physics	SS: Math/History

(continued)

Demographic Question	Mr. Allan	Mrs. Bea	Mr. Call	Mrs. Dean	Mrs. Erst	Mr. Fee	Mr. Grant
Years Teaching	25	20	8	13	14	20	14
Years at Site	18	19	3	13	10	20	13
Years Teaching the Same Content of PLC	10	20	1	10	14	20	14
Classes Currently Teaching	Algebra 1 Algebra 2 Trig. Honors	Algebra 1 Algebra 2 Geometry	Algebra 1	Algebra 2 AP Calculus	Algebra 1 Pre-Calculus	Algebra 2 Trig. Honors Statistics	Algebra 1 Algebra 2

*Note.* SS indicates single subject credentials and PLC, Professional Learning Community.

**Subject participation.** The participants were engaged in the following activities during the study.

1. The participant received an email inviting them to participate in the study (see Appendix D).
2. The participant received the informed consent form (see Appendix F) once they indicated they were willing to participate.
3. The participant completed a six question demographic experience questionnaire, through a phone call or email, detailing their years of teaching, years working at the site, their educational levels and their trainings and background experiences (see Appendix G).
4. The participant completed a 5 -10 minute in person or phone interview to review the questionnaire, consent for research and informed consent forms and had the opportunity to ask any questions (see Appendix D, F, G). The participant scanned and emailed the signed consent forms (see Appendix D and F) to the researcher. During this phone interview a date, time, and place that was

convenient for the participant was determined for the 30–60 minute face-to-face or phone interview. The interviews were conducted in August and September of 2014.

5. The participant completed a 30–60 minute recorded, semi-structured, one-on-one in-depth interview, either face-to-face or on the phone, consisting of four broad open-ended questions that were organized into 12 sections (see Appendix H). The researcher asked permission to use the audio recorder and placed it with a new tape on the table or next to the phone. A printed copy of the questions with room for notes (see Appendix H) was used by the researcher to record the participant's responses.
6. The participant had an opportunity, once the recordings of the one-on-one interviews had been transcribed, to complete a member check. Participant's individual transcripts were emailed to them within three weeks of the interview, in PDF form. The participants were given two weeks to respond to their transcripts. This gave each participant the opportunity to review and correct their responses before the findings were compiled.

### **Instrumentation**

The instrumentation to be used was a face-to-face or over the phone semi-structured interview with seven math teacher leaders who are implementing the Common Core curriculum. The interview instrument consisted of three broad questions organized into twelve sections with several possible probing questions (see Table 3). The research questions about perceived supports and perceived needed supports were combined in the interview so that the need question followed immediately after the support question. This combining of the two questions allowed

the interview questions to be recorded in three sections instead of four. The interview questions were completed during a face-to-face or phone interview that lasted approximately 30 to 60 minutes and were tape-recorded for coding purposes. The interviewees were contacted through email or phone two weeks before arranging the interview and emailed the questions in order to allow them time to reflect on their experiences and help eliminate any nervousness they may have felt about being interviewed.

A few questions to obtain the demographic information (see Appendix G) regarding each teacher leaders background experiences were asked during the phone call or email prior to arranging the face-to-face interviews. The demographic questions are listed below.

1. How many years have you been a math teacher? At this school site? Include this year, please. What math classes do you teach?
2. What degrees and credentials do you hold?
3. How long have you been teaching the classes/content area you are leading?
4. What experience and/or trainings have you attended to help you facilitate your content teams?
5. What staff developments, trainings or experiences in leading a department or committee have you experienced?
6. Describe, if any, PLC, decision-making or collaboration experiences (classes, books read) or trainings you have experienced?

The interview questions, as shown in Table 3, were created using the existing literature about school reform efforts, distributed leadership and teacher leadership. The table includes the research questions, the themes, the interview questions and the research cited.

Table 3

*Relationship of Interview Questions to the Research Questions*

Research Questions	Teacher Leader & Reform Practice Themes	Interview Questions	Research Cited
1. How do high school math teacher leaders, from a Southern California district, describe their leadership practices, if any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?	1a. Setting Direction (establishing the vision understanding the need, setting and embracing goals and establishing norms)	1a. Describe the leadership practices you experienced that have been most helpful in setting the direction with your math content team in the implementation of the Common Core high school math standards into their curriculum. 1a <sub>1</sub> . How did you facilitate establishing the vision (all students can learn CCSSM) with your team? 1a <sub>2</sub> . How did you facilitate your team members understanding the need for this change? 1a <sub>3</sub> . How did you facilitate establishing your content team goals with your team? 1a <sub>4</sub> . How did you facilitate your team members embracing the goals? 1a <sub>5</sub> . How did you facilitate establishing meeting norms with your team?	Ash & Persall, 2000; CCSRI, 2005; Crowther et al., 2002; Day & Harris, 2003; DuFour & Eaker, 1998; DuFour, et al., 2010; Fullan, 1996, 2010; Garmston & Wellman, 2009; Harris, 2004; Heller & Firestone, 1995; Hord 1997; Lambert et al., 1995; Leithwood et al., 2007; Lewis & Murphy, 2008; Mayrowetz et al., 2009; McAdams, 1997; Murphy, 2005; Schmoker, 2000; Senge, 1991; Slater, 2008; Spillane et al., 2001; Talbert, 2010; Timperley, 2005; York-Barr & Duke, 2004

(continued)

Research Questions	Teacher Leader & Reform Practice Themes	Interview Questions	Research Cited
	1b. Developing relationships (trust and communication)	1b. Describe the leadership practices you experienced that have been most helpful in developing positive relationships within your math content team during implementation of the Common Core high school math standards into their curriculum? 1b <sub>1</sub> . How did you facilitate establishing trust within your team? 1b <sub>2</sub> . How did you facilitate establishing communication within your team?	Argyris, 1990; Ash & Persall, 2000; CCSRI, 2005; DuFour & Eaker, 1998; DuFour et al., 2010; Crowther et al., 2002; Day & Harris, 2002; Firestone & Martinez, 2009; Fullan, 1996; Garmston & Wellman, 2009; Gordin, 2010; Harris, 2004; Harris & Muijs, 2005; Heller & Firestone, 1995; Hord 1997; Hord & Hirsch, 2009; LaFasto & Larson, 2001; Lambert, 1998; Leithwood et al., 2007; Leithwood et al., 2009; Lewis & Murphy, 2008; Macbeath, 2009; Mayrowetz et al., 2009; McAdams, 1997; Murphy, 2005; Padilla, 2013; Schmoker, 2000; Senge 1990; Slater, 2008; Spillane et al., 2001; Spillane et al., 2004; Timperley, 2005; York-Barr & Duke, 2004
	1c. Developing Collaborative work groups	1c. Describe the leadership practices you experienced that have been most helpful in developing collaboration within your math content team during implementation of the Common Core high school math standards into their curriculum. 1c <sub>1</sub> . How did you facilitate establishing collaboration within your team?	AISR, 2004; Ash & Persall, 2000; CCSRI, 2005; Crowther et al., 2002; Day & Harris, 2002; DuFour & Eaker, 1998; DuFour et al., 2010; Firestone, 1996; Fullan, 1996; Garmston & Wellman, 2009; Gordin, 2010; Harris, 2003, 2004; Hord 1997; Heck & Hallinger, 2009; Hord & Hirsch, 2009; Katzenmeyer & Moller, 2001; LaFasto & Larson,

(continued)

Research Questions	Teacher Leader and Reform Support Themes	Interview Questions	Research Cited
		<p>1c<sub>2</sub>. How did you facilitate sharing of ideas and practices within your team?</p> <p>1c<sub>3</sub>. How did you facilitate collaborative problem solving within your team?</p>	<p>2001; Lambert, 1998, 2003, 2005; Leithwood et al., 2007; Lewis &amp; Murphy, 2008; Mayrowetz et al., 2009; McAdams, 1997; Murphy, 2005; Padilla, 2013; Schmoker, 2000; Senge 1990; Slater, 2008; Spillane, 2008; Spillane et al., 2001; Spillane et al., 2004; Talbert, 2010; Timperley, 2005; York-Barr &amp; Duke, 2004</p>
	<p>1d. Monitoring Progress (data collection, data sharing and analysis and feedback)</p>	<p>1d. Describe the leadership practices that you have experienced that have been most helpful in facilitating your math content team in monitoring their progress during the implementation of the Common Core high school math standards into their curriculum.</p> <p>1d<sub>1</sub>. How did you facilitate the collection of data and/or information and/or research within your team?</p> <p>1d<sub>2</sub>. How did you facilitate sharing and analyzing of data within your team?</p> <p>1d<sub>3</sub>. How did you facilitate the giving and receiving of feedback within your team?</p>	<p>AISR, 2004; Argyris, 1990; Ash &amp; Persall, 2000; CCSRI, 2005; Crowther et al., 2002; Day &amp; Harris, 2002; DuFour &amp; Eaker, 1998; DuFour et al., 2010; Firestone, 1996; Firestone &amp; Martinez, 2009; Fullan, 1996; Garmston &amp; Wellman, 2009; Harris, 2003; Heller &amp; Firestone, 1995; Hord 1997; Hord &amp; Hirsch, 2009; Hord et al., 1987; LaFasto &amp; Larson, 2001; Lambert, 1998; Leithwood et al., 2007; Mayrowetz et al., 2009; Murphy, 2005; Schmoker, 2000; Senge, 1990; Spillane et al., 2001; Talbert, 2010; Williams, 2009; York-Barr &amp; Duke, 2004</p>

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Research Questions	Teacher Leader and Reform Support Themes	Interview Questions	Research Cited
<p>2. How do high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?</p> <p>3. How do high school math teacher leaders, from a Southern California district, describe the supports, if any, they perceive to need to implement the Common Core high school math standards?</p>	<p>2a. Distributed and/or Shared Leadership</p>	<p>2a. Describe your perceived supports from both your site and district administrations and from your content team members that you have received during the first year of implementation of the Common Core high school math standards.</p> <p>3a. What perceived support from both site and district administration and from team members do you still need to implement the Common Core high school math standards with your team?</p> <p>2a<sub>1</sub>. How did your site administration support you in developing your leadership skills with your team including how they distributed leadership?</p> <p>2a<sub>2</sub>. How did your district administration support you in developing your leadership skills with your team including how they distributed leadership?</p> <p>2a<sub>3</sub>. How did you support and share leadership with your team?</p> <p>3a<sub>1</sub>. What supports from your district administration or site administration do you perceive to need in developing your leadership skills with your team?</p> <p>3a<sub>2</sub>. What supports from your team members do you perceive to need in developing your leadership skills with your team?</p>	<p>Argyris, 1990; Ash &amp; Persall, 2000; CCSRI, 2005; Crowther et al., 2002; DuFour, 2004; Fullan, 1996; Gordin, 2010; Harris, 2004; Heller &amp; Firestone, 1995; Firestone &amp; Martinez, 2009; Harris, 2003, 2004; Harris &amp; Muijs, 2005; Heck &amp; Hallinger, 2009; Hord 1997; Hord &amp; Hirsch, 2009; Hord et al., 1987; Lambert, 1998, 2005; Leithwood et al., 2007; Leithwood et al., 2009; Lewis &amp; Murphy, 2008; Macbeath, 2009; Mayrowetz et al., 2009; McAdams, 1997; Mulford, &amp; Silins, 2003; Murphy, 2005; Padilla, 2013; Schmoker, 2000; Senge 1991; Slater, 2008; Spillane, 2008; Spillane &amp; Camburn, 2006; Spillane et al., 2001; Spillane et al., 2004; Spillane et al., 2009; Timperley, 2005, 2009; Williams, 2009</p>

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Research Questions	Teacher Leader and Reform Support Themes	Interview Questions	Research Cited
	2b. Time (including meetings and professional development)	<p>2b. Describe your perceived time support from both your site and district administrations and from your team members that you have experienced during the first year of implementation of the Common Core high school math standards.</p> <p>3b. And, what perceived time support from both site and district administration and from team members do you still need to implement the Common Core high school math standards with your team?</p> <p>2b<sub>1</sub>. How did your site and district administrations support you and your team with meeting and/or collaboration time?</p> <p>2b<sub>2</sub>. How did your site and district administrations support you and your team with professional development time?</p> <p>3b<sub>1</sub>. What time supports for meeting and/or collaboration do you perceive to need from your site or district administration?</p> <p>3b<sub>2</sub>. What time supports for professional development do you perceive to need from your site or district administration?</p>	<p>AISR, 2004; Ash &amp; Persall, 2000; CCSRI, 2005; DuFour &amp; Eaker, 1998; DuFour et al., 2010; Firestone &amp; Martinez, 2009; Fullan, 1991; Gordin, 2010; Harris, 2003; Harris &amp; Muijs, 2005; Heller &amp; Firestone, 1995; LaFasto &amp; Larson, 2001; Lambert, 2005; Leithwood et al., 2007; Murphy, 2005; Padilla, 2013; Schiavo et al., 2010; Schmoker, 2000; Senge, 1990; Slater, 2008; Spillane et al., 2001; Spillane et al., 2004; Timperley, 2005; Williams, 2009</p>

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Research Questions	Teacher Leader and Reform Support Themes	Interview Questions	Research Cited
	2c. Resources & Materials	<p>2c. Describe for me what perceived resources and materials support from both site and district administrations have you experienced during the first year of implementation of the Common Core high school math standards with your team.</p> <p>3c. And, describe what perceived resources and materials support from both site and district administrations do you still need to implement the Common Core high school math standards with your team?</p> <p>2c<sub>1</sub>. How did your site and district administrations support you with resources and materials?</p> <p>3c<sub>1</sub>. What resources and material supports from your site and district administrations do you perceive to need?</p>	<p>AISR, 2004; CCSRI, 2005; Day &amp; Harris, 2002; DuFour &amp; Eaker 1998; DuFour et al., 2010; Firestone &amp; Martinez, 2009; Harris, 2004; Harris &amp; Muijs, 2005; Heller &amp; Firestone, 1995; Hord 1997; Murphy, 2005; Schmoker, 2000; Williams, 2009</p>
	2d. Develop or redesign systems and procedures including professional development structures	<p>2d. Describe what perceived supports in developing or redesigning systems, procedures and professional development structures from both site and district administrations have you experienced during the first year of implementation of the Common Core high school math standards with your team.</p>	<p>AISR, 2004; Argyris, 1990; Ash &amp; Persall, 2000; CCSRI, 2005; Crowther et al., 2002; Day &amp; Harris, 2003; DuFour &amp; Eaker, 1998; DuFour et al., 2010; Firestone, 1996; Fullan, 1996; Garmston &amp; Wellman, 2009; Gordin, 2010; Harris, 2003, 2004; Harris &amp; Muijs, 2005; Heller &amp; Firestone, 1995;</p>

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Research Questions	Teacher Leader and Reform Support Themes	Interview Questions	Research Cited
		<p>3d. And, describe what perceived supports in developing or redesigning systems, procedures and professional development structures from both site and district administrations do you still need to implement the Common Core high school math standards with your team?</p> <p>2d<sub>1</sub>. How did your site and district administrations support you in developing or redesigning systems, procedures and professional development structures?</p> <p>3d<sub>1</sub>. What supports in developing or redesigning systems, procedures and professional development structures, support from both site and district administrations do you perceive to need?</p>	<p>Hord 1997; LaFasto &amp; Larson, 2001; Lambert, 1998; Leithwood et al., 2007; Leithwood et al., 2009; Mayrowetz, et al., 2009; McAdams, 1997; Murphy, 2005; Padilla, 2013; Schiavo et al., 2010; Schmoker, 2000; Senge, 1990; Williams, 2009; York-Barr &amp; Duke, 2004</p>

Research Questions	Teacher Leader and Reform Challenges Themes	Interview Questions	Research Cited
<p>4. How do high school math teacher leaders, from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards?</p>	<p>4a. Collaboration Conflicts</p>	<p>4a. Describe what perceived collaboration challenges have the Southern California high school math teacher leaders experienced during the first year of implementation of the Common Core high school math standards with your team?</p>	<p>AISR, 2004; Ash &amp; Persall, 2000; Day &amp; Harris, 2003; Crowther et al., 2002; DuFour &amp; Eaker, 1998; DuFour et al., 2010; Firestone, 1996; Fullan, 1996; Harris, 2004; Heller &amp; Firestone, 1995; Hord 1997; Mayrowetz et al., 2009; McAdams, 1997</p>

(continued)

Research Questions	Teacher Leader and Reform Challenges Themes	Interview Questions	Research Cited
		<p>4a<sub>1</sub>. How did you facilitate conflicts with your team?</p> <p>4a<sub>2</sub>. How did you facilitate conflicts within your team?</p> <p>4a<sub>3</sub>. How did you facilitate challenges of privacy versus collaboration within your team?</p>	
	4b. Distributed and Shared Leadership	<p>4b. Describe for me, what perceived leadership challenges you have experienced during the first year of implementation of the Common Core high school math standards with your team?</p> <p>4b<sub>1</sub>. What leadership challenges did you experience with your team?</p> <p>4b<sub>2</sub>. What leadership challenges did you experience with your district or site administration?</p>	<p>Argyris, 1990; Ash &amp; Persall, 2000; CCSRI, 2005; Crowther et al., 2002; Day &amp; Harris, 2002; Firestone, 1996; Firestone &amp; Martinez, 2009; Fullan, 1996; Harris, 2003, 2004; Harris &amp; Muijs, 2005; Heller &amp; Firestone, 1995; Hord et al., 1987; Lambert, 1998; Lambert, 2003; Leithwood et al., 2007; Leithwood et al., 2009; Mayrowetz et al., 2009; Murphy, 2005; Padilla, 2013; Smiley et al., 2002; Timperley, 2009; Williams, 2009</p>
	4c System, procedures, policies including professional development structures	<p>4c. Describe, if any, what perceived challenges in developing or redesigning systems, procedures and professional development structures from site and district administrations and or team members have you experienced during the first year of implementation of the Common Core high school math standards with your team?</p>	<p>AISR, 2004; Ash &amp; Persall, 2000; CCSRI, 2005; Firestone, 1996; Heller &amp; Firestone, 1995; Hord 1997; Lambert, 1998; Leithwood et al., 2007; Mayrowetz et al., 2009; Schmoker, 2000; Senge, 1990; York-Barr &amp; Duke, 2004</p>

### **Credibility of the Instrument**

The researcher used a review of related literature to design the open-ended questions. To gather feedback regarding relevance to the study to the interview, two experts examined the questions and provided feedback on the type of questions, the wording and appropriateness. One expert has a PhD from the University of Colorado and has worked as a professional learning coordinator/math specialist for a unified school district for the past three years helping support Common Core state standards in math. The second expert has been a faculty member for four years at a University of California campus with a joint position in the Department of Mathematics and Department of Education. He is also the Director of the local Mathematics Project, a professional development program for K-12 mathematics educators that is primarily focused on the implementation of the Common Core state standards. A pilot interview was conducted with a high school math department chair from another school not in the study, to gather feedback about the length of the interview, the wording and clarity of the interview questions and their effectiveness in gathering data.

### **Data Collection**

The interviews took place during the months of August 2014 and September of 2014. Emails requesting study permission were sent to a potential district office superintendant that had sent high school math teachers to Common Core State Standard math trainings. The assistant district superintendant requested that the research complete the district paperwork to request permission for the study. Once the assistant district superintendent and site principals had given permission to recruit teacher leaders for this study, the teacher leaders were contacted by email with a recruitment letter asking for their participation and consent (see Appendix D and F). After consent was given through returning the signed forms, the participants were emailed the

background experience questions to answer and then contacted to go over their consent forms allowing the participants to ask any questions. The participants were informed that their identity and contact information would be kept secure and confidential, that they could refuse to answer any questions at any time and that pseudonyms would be used to protect their identity. Copies of their transcripts, within three weeks of the interview, were sent to them to check for accuracy. Memoing by the researcher about questions, patterns or special aspects of the interview occurred at the end of each interview.

The in-depth and semi-structured one-on-one interviews were scheduled to last about a half hour took place in a quiet and mutually convenient place and over the phone. The interviews took place off-site and not during contracted working hours. Each interview was in person or over the phone, digital recorded with a tape recorder (one coded tape per person) and transcribed verbatim along with the researchers notes and stored on a password-protected computer. The researcher bracketed her observations including any reactions, comments, problems and non-verbal clues during the interview. All paper notes along with the recorder and tapes are stored in a locked file cabinet with access by the researcher only.

The interview began with reviewing the purpose of the study, the informed consent form, and the human subject protection. The researcher reviewed the taping of the interview, the confidentiality use of pseudonyms, the verbatim transcribing and the member checking. The researcher made the interviewee comfortable with casual conversation. Moustakas (1994) suggests starting the interview with social conversation to build a relaxing atmosphere. After the information given was understood and the interviewee was comfortable, the researcher prompted the participant to share and describe their experiences of implementing the CCSS in math as the content team leader.

To increase validity and decrease bias, all participants were asked the same open-ended questions and their names were not listed with their responses. It was important that the questions were open ended so that the participant could broadly describe their experiences. Some probing questions were needed to help with clarification and elaboration. Participants were informed that pseudonyms were used for all teachers to provide confidentiality, that all data is held secured and that they could refuse to answer any question at any time.

### **Data Analysis Procedures**

The researcher used the Creswell (2013) and Moustakas (1994) multiple step analysis process. The first step is to manage the data. This was done both with a tape recorder and note taking. The second step is to read and memo. After each interview, memoing took place as the researcher noted any patterns or specific aspects of concern along with entering the transcript into a word document and the HyperResearch coding program. The third step is to describe the interviews. Both the transcribing, memoing, and member checking helped with the description. The fourth step is to classify the data. Using an independent coder along with the researcher and the HyperResearch coding program accomplished this step. The fifth step is to interpret the data. The researcher used the a priori coding of literature review themes to do data interpretation and find any new emergent themes. The last step is to represent and visualize the data. Through explaining the discovered themes and sub-themes the essence of the experience was developed. Special care was taken to not only describe the what, but also the how of the participants' experiences as teacher leaders of content teams.

### **Validity**

It is important that the study be credible, applicable, and dependable while minimizing personal bias. Three steps were taken to attain validity. First the researcher clarified her biases

by stating her positionality (see Appendix H) about the study. Next, the researcher sent the verbatim transcripts to each participant for member checking and corrections. Lastly, an independent coder for intra-rater validity reviewed the transcripts. The coder has been an adjunct professor and taught composition for over six years at the community college and university levels. Her most recent experiences have been writing and editing a variety of projects including grants, manuals and marketing proposals. She holds a MBA in Marketing, Organization & Behavior, a MA in English Literature and an ABD in 20th Century Literature.

In order for the methods to be credible, they must be trustworthy. The researcher not only transcribed the interviews verbatim but also bracketed out any bias or misconceptions. Trustworthiness was improved through the use of member checking of the verbatim transcripts. The participants had the opportunity to view, agree and correct any portion of the transcript.

### **Threats to Validity**

As all qualitative research is interpretive and therefore subjective, it is important to be accurate, trustworthy and credible. Because this study is a self-reporting phenomenological study, there are natural threats to validity including the biases of both the researcher and the participants, the subjectivity of both the participant and the researcher on the value of qualities and hasty or incomplete answers due to fatigue. The researcher reduced these threats by providing an open and safe environment, by presenting her positionality and by using probing questions to create an authentic and complete description.

### **Data Management**

During the study, the physical data collected was kept in a locked file cabinet on site with the researcher having sole access while the electronic data was kept on a password protected computer that only the researcher uses. All participants in the study have read and signed the

consent form (see Appendix D and F). These consent documents and tape recordings are also kept in a locked file cabinet at the researcher's home and only accessible by the researcher. The paper data collected will be destroyed through shredding services after five years. Also after five years the tape recordings will be destroyed. Electronic files include the coded interviews and final report. The electronic files, with no identifying factors, is backed up on a flash drive that is placed in a locked cabinet and will not be destroyed for five years. All steps necessary were taken to protect the participants of this study (see Appendix A and B).

## **Chapter 4: Findings**

In this chapter the findings from the research are presented. First, the purpose statement, research questions and research design are re-stated and a summary of the participants' demographics is displayed. An epoché about the interviews is described followed by a synopsis of the seven teacher leaders' responses. Finally, the themes found in the participants' responses are clustered to depict the essence of the lived experiences of the teacher leaders as they facilitated the implementation of the high school Common Core math standards.

### **Purpose Statement**

The purpose of this phenomenological study was to describe the experiences of high school math teacher leaders in a Southern California district, as they worked with their content teams to implement the Common Core state math standards curriculum, instruction and assessments. More specifically, the purpose was to describe (a) the leadership practices used, (b) the supports received, (c) the perceived needed supports, and (d) the challenges they encountered during the first year of implementation of the CCSS in math.

Seven high school math teacher leaders were interviewed to describe their lived experiences during the 2013-2014 academic year as they facilitated the implementation of the Common Core high school math standards. The responses of each teacher leader and the common themes in the findings represent the lived experiences of the participants as they described their leadership practices, supports, needs and challenges.

### **Research Questions**

There were four broad research questions with several sub questions that guided this phenomenological study:

1. How did high school math teacher leaders, from a Southern California district, describe their leadership practices, if any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?
2. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?
3. How did high school math teacher leaders, from a Southern California district, describe the future supports, if any, they perceive to be needed to implement the Common Core high school math standards?
4. How did high school math teacher leaders, from a Southern California district, describe the challenges, if any, they encountered during the first year of implementation of the Common Core high school math standards?

### **Methodology Overview**

This non-experimental qualitative study explored the phenomenological experiences of seven Southern California secondary math teacher leaders in implementing the Common Core Curriculum. Semi-structured face-to-face or telephone interviews and six demographic questions were used to gather information about the teachers' experiences as informal leaders. The interviews consisted of four broad questions about their leadership practices, the supports they received, the future supports they perceive as needed and any challenges they encountered.

Using a qualitative phenomenological approach helped to discover the lived experiences of teacher leaders. The researcher, a high school teacher for twenty-two years, has been implementing new curriculum throughout her career and is currently implementing the Common

Core state standards for high school mathematics. During this implementation, the use of teacher leaders in collaborative content teams to facilitate the integration of new curriculum has been used in various manners within the researcher's district. The personal experiences of the researcher as facilitator contributes to her understanding of the seven participants' lived experiences.

The teacher leaders were selected specifically from one district, different from the researcher's district, following specific criteria. This district was chosen because they were using PLCs with teacher leaders to implement the CCSS for high school mathematics. There were nine possible participants with seven who agreed to be interviewed. All of the interviewees and the researcher had participated in Common Core training activities. Therefore, there was a collegial and professional relationship between the researcher and the participants that led to open, honest and congenial interviews. Overall, having all participants from the same district lends to the validity of their shared experiences.

### **Demographic Questions**

There were six demographic questions asked of the participants in order to obtain information about their education, credentials, teaching experience, past PLC experiences and trainings. The six questions are listed in Appendix G. The questions relevant to the seven participants' background were displayed and discussed in Table 2. In Table 4, all six of the questions are displayed. Table 4 demonstrates both the similarities and differences in the participants' backgrounds, trainings and experiences. This table will help determine the relevance of trainings and experience in the findings describing the teacher leaders' practices, supports, needed supports and challenges. Overall, the teacher leaders are experienced teachers and have participated in multiple trainings. Only one teacher leader stated that there were no

formal leadership trainings and another teacher leader expressed no PLC trainings or experiences. Each participant's experiences and trainings are described in more detail in their narrative section of the findings. The key themes from the demographic questions are described in the discussion of leadership practices and the findings summary.

Table 4

*Demographics and Experience of Participants*

Demographic Question	Subject Pseudonyms						
	Mr. Allan	Mrs. Bea	Mr. Call	Mrs. Dean	Mrs. Erst	Mr. Fee	Mr. Grant
Degrees	BS Math	BA Math MA Education	BA English MLA Teaching Math	BS Mechanical Engineering MA Education	BA Applied Math MA Education	BS Physics	BA Math and History MBA
Credential	SS: Math/Science	SS: Math	SS: Math/English	SS: Math	SS: Math	SS: Math/Physics	SS: Math/History
Years Teaching	25	20	8	13	14	20	14
Years at Site	18	19	3	13	10	20	13
Years Teaching the Same Content as PLC	10	20	1	10	14	20	14
Classes Currently Teaching	Algebra 1 Algebra 2 Trig. Honors	Algebra 1 Algebra 2 Geometry	Algebra 1	Algebra 2 AP Calculus	Algebra 1 Pre- Calculus	Algebra 2 Trig. Honors Statistics	Algebra 1 Algebra 2
Experience or Trainings to Lead	County and UC CCSS trainings Read <i>Orchestrating Math Discussion</i>	PLC lead at meetings for last two years	District meetings, trainings, workshops	3 pull-out days and 3 days of PD last summer	Past department chair, leadership planning team, Avid trainings	Common Core district meetings	Attended everything district provided – conferences, county workshops
Past Trainings or Experiences	Handout <i>How to Lead a PLC</i>	Department Chair Past PLC lead	PLC Lead for Algebra 1	PLC Lead for Algebra 2, Liaison Math 1, Past Management experience	No formal trainings	CCSS math meetings and 5-6 days to write integrated units	Past MBA experience

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Demographic Question	Mr. Allan	Mrs. Bea	Mr. Call	Mrs. Dean	Mrs. Erst	Mr. Fee	Mr. Grant
PLC Trainings or Experiences	1-hour Professional Development during Pre-service day	Past PLC lead	Read Math PLC book from NCTM	Course alike weekly site collaboration meetings	Department chair meetings to plan for CC transition	None	District had specific site PLC trainings

*Note.* SS indicates single subject credentials; PLC, Professional Learning Community; and PD, Professional Development.

### **Epoché and Bracketing**

The researcher, when developing the interview questions, wrote down her experiences involving the Common Core high school math standards and the implementation of new curriculum as written in Appendix H. During the interview process, the researcher shared her previous experiences but did not respond or compare her experiences with those of the participants. The researcher kept to the interview script and responded with clarifying questions and the summarizing of responses. All participants were asked the same broad questions and more specific probing questions. All participants candidly answered all questions and acted in a professional and friendly manner. The researcher and all the interviewees have met previously as participants in Common Core math trainings. After the interviews, the researcher bracketed her ideas and connections with the participants' responses to use for referencing the common themes after analysis of the findings.

### **Introduction to Findings**

The findings are displayed first as narrative summaries of each of the seven participants. Next, the findings are described with common themes organized by each question. Finally, the key findings are summarized by the recurring themes.

**Participant “A” (Pseudonym: Mr. Allan)**

Mr. Allan has the most teaching experience of all the teacher leaders. He is also involved with the technology changes at his site. In describing the leadership practices at his site he explained that at first, he was not “gung ho” with the Common Core and all the changes asked of the teachers. The Common Core high school math standards were introduced to the teachers in their district three years ago and there were no printed materials so they were asked to create projects and tasks aligned with the Common Core (CC) and submit them to their administration. At some meetings they “were despondent and at others they were hopeful.” Mr. Allan shared that “the earlier stages were often permeated with currents of being overwhelmed with no textbook, trying to figure out what was out there and what was available in curriculum. We would try to rally, but it was daunting.” It was not until the 2013-2014 academic year when the Teachers On Special Assignment, (TOSAs who act as coaches and are considered leadership support) became involved that the meetings were given more direction. The TOSAs helped establish the vision and purpose and gave direction, including the use of agendas, liaisons and note taking. Fortunately, the district administration and TOSAs made it clear that it was okay to go slow, let things evolve and allowed the teachers to express their concerns about the process. Mr. Allan believed the TOSAs’ leadership helped focus the meetings.

In the 2014-2015 school year, Mr. Allan comments that teachers are “officially” using the CC curriculum. The TOSAs are supporting the teachers by visiting their sites, conducting summer trainings and organizing pullout days, providing curricular books and leading by example. Common prep time with other teachers and monthly PLC meetings are used for CC work. But finding time to develop and improve curriculum while still teaching has Mr. Allan’s “responsibilities brimmed.” He was leading the Geometry team and had planned to be on the

Math 2 team, but this year is focused on Math 1. He did not choose to continue as liaison for several reasons including prioritizing his time on technology leadership, allowing newer teachers to take leadership roles, looking at less of a stipend but more work required and no release period for the work. Mr. Allan understands this year is “Version 1” and next year the curriculum will be better.

The 2013–2014 academic year was a transitional year in implementing the CC and had some challenges. Mr. Allan expressed that the administration was “very sympathetic to our plight and still are. This has helped tremendously – so I hope they will continue.” Some teachers have expressed to Mr. Allan frustration about not feeling strong in some subject areas and with other teachers who expressed not being fully supportive of the change. Many teachers, including Mr. Allan, are spending “tons of time developing the projects and did not also want to continue to also spend time in the making of formative assessments.” When the teachers proposed that some teachers should develop projects while other teachers develop the assessments, this change “alleviated the strain” of some of the work. Another successful change facilitated by Mr. Allan was to allow the teachers to choose what they wanted to do instead of assigning teachers items to do. This choice increased the “ownership and egalitarianism” of the team. Everyone shared resources and products even though teachers started at different competency levels of understanding of the CCSS for math. A personal challenge for Mr. Allan was to realize “he did not need to reproduce” a textbook, even though it may have felt like it. Mr. Allan is glad to have the TOSAs and believes they could use more of them. Mr. Allan also expressed his concern about letting students down and not preparing them for their futures when teaching a new curriculum. For Mr. Allan, remembering that this is “Version 1”, that the district

“has made it abundantly clear that this is a process, not a product, and that collaboration is key” helps to allay some of his concerns.

**Participant “B” (Pseudonym: Mrs. Bea)**

Mrs. Bea has the most experience of all the participants with PLC leading and department chair leadership. She states that she has “been lucky enough to receive a lot of training through the district as well as on my own for the CCSS, so I have more information than most of the other department members and it was the natural choice for me to lead the team.” She was aware of the change to the CCSS early on (during the last three years) and “decided to embrace the change instead of hiding from it.” Mrs. Bea “started to figure what it [CC] meant for the classroom and the department and was willing to share what I [she] found out with the department.” Mrs. Bea introduced the CCSS by finding “a few department members who were willing to try new things along with me ... in a way where they felt safe because we were in this together.” By the 2013-2014 academic year, the district stopped giving her team agendas for their meetings and “this freed us up to share ideas.” Mrs. Bea expressed feeling a “great energy at this time” and added: “everyone was eager to hear about great lessons that had worked in their Geometry classes.” Her team was able to decide on CC lessons, report back and encourage each other and commiserate” together. She shared, “we really learned a lot from each other and we were excited to try new lessons.”

Mrs. Bea didn’t receive any leadership training from her site administration but shared that the site administration “respects what I have to say and are willing to listen to me about implementing the CCSS.” As liaison for the math department, Mrs. Bea works with the TOSAs and district administration through the meetings she attends and she shares what she learns from them with her team. Although there is designated PLC time for CC work, it is more difficult to

obtain professional development support because the economy has suffered (less money). Mrs. Bea found that the county office meetings have lead to “great resources.” “All the math teachers in the district can’t wait to actually have CCSS textbooks despite all the free resources available, but they understand it will take a few years.” Mrs. Bea understands that it is the district leading the CCSS implementation and Mrs. Bea says “thank goodness for the TOSAs.” She finds it is “so nice to have someone to talk to and ask questions of.”

Mrs. Bea found no conflicts during the CCSS implementation. “Our math department has always worked very well together and that is one of our greatest strengths.” She shared that her department was working in “informal PLCs” since before she was hired. She responded, “we are a lot of different personalities and teaching styles but we all respect each other and know that we all have a lot to bring to the group.” Mrs. Bea does not see any leadership or system challenges but has found the challenge is about resources-the lack of textbooks. “Some [teachers] are excited about this, while others are frustrated by the idea of finding their own resources.”

**Participant “C” (Pseudonym: Mr. Call)**

Mr. Call has been in the district only three years and, out of all the participants, has the fewest number of years teaching. He has taught special education at his prior school and Algebra 1 in the 2013-2014 academic years. There were only three team members in the Algebra 1 PLC at his site and when the veteran teacher had no interest in leading, Mr. Call took on the roll. Being the younger teacher has impacted his approach as the PLC lead when working with his team. Mr. Call was able to attend the CC math trainings sponsored by the county office during the 2012-2013 school year. At these trainings he was able to gather CC materials, work through them and analyze and discuss the similarities and differences between the CCSS and the previous California math standards. The TOSAs also used this method to introduce the CCSS

for math during district voluntary meetings to prepare for the CC implementation and Mr. Call modeled this method of trying CCSS activities with his team. Mr. Call was on the team to “draft curriculum for the first year of Math 1.” Mr. Call “tried to emulate with his PLC team” the positive impact that the CC could have on the students. He explains, “This was a challenge in that I was leading a PLC that had two members with significantly more experience at my school site and while I was an early adopter of the Common Core pedagogy, the other members weren’t quite as enthusiastic. In some ways, our vision and direction were viewed as set by the district as we worked through the given tasks at each weekly meeting with a very specific agenda.” Mr. Call described the PLC structure as very top down, in order to stay on schedule and make progress for the Math 1 curriculum. Even with the set agendas during the collaboration time, the team “members were very willing to share past experiences and assess potential strengths and weaknesses of a given activity.”

Leadership support for Mr. Call comes in the form of meetings, professional development days and pullout days to work on the Math 1 curriculum. This year all the Math 1 teachers have a common prep period and weekly late start days for collaborative team meetings. Mr. Call would like “more flexibility to direct the meeting content and honest feedback from the teacher members.” In addition, the common prep is not enough time and Mr. Call would like to see observation days available along with more math-specific common core trainings. Not only does he see a need for training in the curriculum development, but also a need for training in lesson delivery, questioning techniques and assessments. Resources supplied to his team include binders for Math 1 and he expressed the concern that these binders “will need to be continually enhanced while determining the strengths and weakness of the curriculum as well as the access to technology in order to model the online assessment.”

The largest challenges are the “lack of shared and compensated teacher time to fully draft more nuanced modifications to the Math 1 curriculum, a reliance on voluntary teacher time, teachers that focus on potential problems in order to avoid embracing the transition and concerns over parent backlash (particularly for those of advanced level students).” Often agendas were late and Mr. Call could not fully prepare for the meetings. Also, it was a challenge keeping the “veteran teachers from getting bogged down in negative mindsets or becoming cynical of the process.” Once the Math 1 teachers begin assessing the new curriculum being taught in the classroom, the PLCs will need to look at assessments and “this aspect of the PLC process will be greatly beneficial going forward.”

**Participant “D” (Pseudonym: Mrs. Dean)**

Mrs. Dean has experience as the Algebra 2 PLC lead and is the liaison for Math 1. She attended the summer and district professional development pullout days and the weekly PLC collaboration meetings. In her previous career she had management experience and does not feel the need for any additional leadership training. After attending the three pullout days with the other teacher liaisons, to establish a vision for implementing the CCSS, Mrs. Dean shared that she “relayed this vision back to my team at my site at our collaboration meetings.” She facilitated setting norms at the start of the school year and proposed some norms that the team modified, coming to a consensus. Mrs. Dean’s department had “been meeting in collaborative groups long before the idea of PLCs.” Her department has met in ‘course alike groups’ during their lunchtime for over ten years. Mrs. Dean explained that everyone works well together and they are very productive. During team meetings, “one teacher in the group is responsible for the schedule for a given unit including worksheets, tests and quizzes.” The responsibility for a unit rotates from teacher to teacher throughout the group. The team gives input before the unit is

finalized and copied. Mrs. Dean gives “support to her team by recording their concerns and going and getting answers for them.” The information and feedback is shared at the weekly PLC meetings.

Mrs. Dean explained that her department elected the PLC leads but that the administration appointed the liaison leaders. The TOSAs led the pullout collaboration meetings while she has “been given a lot of freedom to chose a direction that seems best” for her PLC late start meetings. Even with “a new schedule this year which allows a second late start day.... there is never enough time!” Developing curriculum is very time consuming and “it would have been nice to have a paid prep period that was devoted just to curriculum development.” During the summer, Mrs. Dean met with her team, three times on their own. Mrs. Dean divided up the responsibilities for the first unit of Math 1 and that helped lower the overall burden for everyone. Nevertheless, “now that school is in session, no one wants to miss class.” Mrs. Dean commented that it was nice to meet with the teachers from all over the district during the TOSA lead district meetings, but her team was “really anxious to just get to work on planning our lessons for our own site.” All resources are online and the site and district have assembled the student readers for Math 1, yet, all teachers agree that it would be nice to have a textbook. The site has three different textbooks as a resource with more of the resources available online.

Mrs. Dean explained that one of “the challenges [was] to get other math teachers to join me on the endeavor of signing up to teach the new Integrated Math 1 course.” No one really stepped up at first and Mrs. Dean said she “felt like I was dragging along a sack full of boulders.” Finally, one of the teachers said, “ok,” and then “the ball started really rolling.” An additional challenge for Mrs. Dean during the 2013-14 year was where to find the resources that the teachers needed. “There are lots of things out there to choose from; it is just time consuming

with each lesson to sift through things.” Mrs. Dean is confident that it will get easier in the future, even though right now she feels like a new teacher all over again. Her perceived challenges are from “parents who want to help their students with the math but maybe aren’t comfortable with the online resources that are provided.”

**Participant “E” (Pseudonym: Mrs. Erst)**

Mrs. Erst has been a past department chair, on the planning team for CC implementation and has been trained to teach AVID (Achievement via Individual Determination). Her training for the CC started in 2011-2012. During these Common Core trainings, PLCs were becoming a priority at her site. Before 2011-2012, her high school had always met in “course alike groups” during lunch or after school. Starting in 2011-2012 Mrs. Erst’s department was “meeting in PLCs to review the new CCSS standards” and how they are organized. The PLCs met weekly with three meetings for CC and one meeting for department meetings. The special education teachers who teach math were also included. During these meetings teachers would try different activities in their classes and report back to the PLC. In 2013-2014 the “PLCs met during set times and the TOSAs recommended different activities” for the PLC lead to implement. In March of 2014, “smaller groups of teachers were created at each high school to develop units” for the Math 1 course. Mrs. Erst was part of the leadership during these changes.

Mrs. Erst’s “site administration has been very supportive in this implementation process.” The administration “was very willing to allow interested teachers to attend trainings.” The district supported the teachers by allowing the teachers to review materials, create unit plans and work on CCSS implementation. The district also has been asking for the “teachers’ input on materials, pathways and steps for implementation.” Unfortunately, all this input made “decision-making a very slow process.” As PLC liaison, Mrs. Erst attended trainings, distributed

information, led the department meetings, recorded department votes and reported back any concerns or thoughts about the process to the TOSAs. The TOSAs have been “vital in organizing curriculum pathways” and helping with the implementation process. The TOSAs have also provided materials. Mrs. Erst’s site administration also allowed the teachers to vote on a late-start schedule that embedded collaboration time into their day once a week. Still, there is a need for “more common planning time and common prep time during the day.” Continued support and time is needed as teachers continue to create common assessments and analyze the data. Mrs. Erst also expressed a “need to continue to work with the TOSAs, course alike teams, and the elementary and secondary teachers” to refine the new curriculum and assessments and look at technology.

Mrs. Erst has had to completely rework the math curriculum and pathways at her site. She feels like “a new teacher again.” The Math 1 teachers have no “textbook” so they are “relying on newly created tasks and curriculum.” Mrs. Erst explained that the new courses are depending on how well their teams can collaborate and try new things. Her department feels like they have a huge task in front of them and “even with endless support, they are just trying to keep up.” Mrs. Erst suggests more common planning time to help with these challenges.

**Participant “F” (Pseudonym: Mr. Fee)**

Attending district meetings for the Common Core and the writing meetings for the integrated curriculum is part of Mr. Fee’s leadership experience. He was part of the Algebra 2 team that started without a lead. The team met weekly and they were “told what to do at each meeting” and submitted their findings to their administration. In the last six months, the PLCs were given the freedom to do what they thought was best, and Mr. Fee was the acting lead. Everyone was professional and all were friends so the team was open, honest, discussed

everything and worked together. Writing units is a big job and “looking at materials was overwhelming-too much.” Mr. Fee said that the problems are that teachers are so busy during the year they “can’t see how to put units together on the fly, they need source materials or a book.”

Mr. Fee feels he did not get much leadership support for his team, but they don’t need administrative support in their PLC. The district gave directives and told them what to do. The last few months the team looked at different units but no one wanted to do it alone, so they shared leadership within their team. The team supported each other in completing the Algebra 2 work in their PLC. Mr. Fee is now leading the integrated Math 3 team (because the math teachers chose an integrated curriculum the Algebra 2 group became the Math 3 group while Algebra 1 became Math 1 and Geometry became Math 2), so they will not be using the Math 3 curriculum for two more years. He is concerned that there might be a problem with having enough time for completing the Math 1 curriculum. Mr. Fee sees the need to “get together and continue to write Math 2 and Math 3, nice and relaxed.” He believes the district will probably tell them what to do during their collaboration time. Another need for the teachers is “a set of books.” Mr. Fee “likes to develop materials... he likes to make things up.” He also shared that other teachers don’t like to make up their own problems. Mr. Fee stated that extra time is what is needed, not just pullout days. He hates being pulled out of class but he doesn’t know of any other way. He considered the first year-and-a-half as a “learning process where we delve in and see what to do.” Now, as teachers are writing units he sees teaching as the best way to understand the curriculum. He explained it is “a huge trial and error [process], and we try something new and experiment.” Mr. Fee believes the teachers are the experts on teaching, not on curricular development.

During the CC implementation, Mr. Fee has had one area of disagreement in his department. The math teachers disagree about how to support the low-level students with the new CC curriculum. There is also a problem with not enough time to develop the curriculum and make changes if they are using just the PLC time. He, as a leader, needs to talk about these challenges with the administration. First, the district told the PLCs what to do and then they realized that there was not a whole lot of time to develop the units. So, then the district had the teachers just started writing units for Math 1. The teachers who are writing units are working collaboratively online where everyone can submit their suggestions. But, he reflected, it will take more time to complete everything.

**Participant “G” (Pseudonym: Mr. Grant)**

Mr. Grant attended every training, workshop and conference that his district offered for the CCSS. He was part of the special PLC training at his site. His leadership experience also includes having completed an MBA. He considers himself a contributor; he shares his perspective and is not shy. Mr. Grant doesn't want to “make someone do something.” He is a leader who speaks up and shares his thoughts respectfully and respects others. The district did away with the department chairs and reconfigured departments into PLCs only. Mr. Grant facilitated the development of the new frameworks for Math 1 in the smaller PLC group. The district controlled two of the weekly meetings each month so Mr. Grant attended pullouts to get the work done on the Math 1 curriculum. His group of teachers has been together for five years. They are “very familiar, respectful and work well together.” There was some “grumbling” and the group included some “strong personalities” but the teachers kept trying the CCSS and Mr. Grant “tweaked” the meetings so that they worked better. Fortunately, the district did not say, “you have to do it our way.” Mr. Grant's team was not required to change how they teach, but to

look at their student results. Teachers were busy working “around prep times, after school, in the hallway and it doesn’t work.” A better structure with more time is needed. The teachers, including Mr. Grant, have spent the last three to four years “getting their heads around all that is new.” The TOSAs helped with the change by communicating with the district so that district officials understand that it will take a long time and a lot of work and teachers will need to be compensated and supported in many ways. The district listened and is supporting the change as best as they can.

Several years ago, Mr. Grant was selected for leadership training. He gets along with his peers and joined the district team so that everyone would be represented. Financial support is one area of need. When the site administration put a limit on the copy budget, the district supported the teachers financially by increasing the budget for the new curriculum. The district is also supplying substitute teachers for the pullout days when the teacher leaders are writing the new curriculum. Mr. Grant believes more financial support is needed so that teachers are not doing all the work on their own time. The district cannot afford a release period each day, so “this first year will be “Version 1” and will not be top-notch.” Mr. Grant believes that next year the curriculum will be better as teachers learn and explore more options. Mr. Grant is working too many hours and is tired. He wants to be compensated for writing curriculum and meeting after school. He appreciates that managing the teaching and the writing is difficult; and while support is welcome, making substitute teacher plans is more work for teachers. Mr. Grant sees this as an on-going need and if the teachers ask, the district will support them. The district is supplying the bound Math 1 Units for the students and teachers. Mr. Grant has added scientific calculators to his wish list of materials. Mr. Grant considers the structure of arranging PLCs using embedded time during the day and having a TOSA to help is working, but he is not sure

about getting rid of the department structure. Mr. Grant is still struggling with how he uses his time. He commented that there is not a lot of time to reflect. He has been given “latitude to work on it [implementing the CC] and not being held to unreasonable demands, yet” from the district. Mr. Grant suggests that the TOSAs positions remain in place until all the math units are created and for another year to “tie up any loose ends.”

Mr. Grant has not experienced any conflicts during the CC implementation process. He is concerned that the district leadership may overpower the site leadership with directives and then there will be limited options for teachers. Changing to the PLCs and eliminating the departments is still confusing for deciding who is responsible for various things. “Everyone is trying to make it work,” he said. Mr. Grant’s team is excited about the new curriculum and trying to make a better math experience for the students. He is trying to “support all the Math 1 teachers by collaborating regularly and staying close together and sharing their leadership” and their experiences.

### **Review of Research Questions and Findings**

This section will explore more completely the key themes that emerged from the seven teacher leaders’ shared experiences in leading the CCSS high school math implementation during the 2013-2014 academic year. Six demographic questions were asked before the interview began to gather information regarding the teacher leaders experience and trainings. The four broad interview questions were asked sequentially allowing the participants to describe their leadership practices, their supports and perceived needs along with their challenges.

### **Describe the Leadership Practices**

*Research Question 1: How did high school math teacher leaders, from a Southern California district, describe their leadership practices, if any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?*

The teacher leaders experienced the leadership practices in setting the direction through the four practices of being the experts on the CCSS in math; having and using the vision and purpose; understanding and supporting the district's plan including the use of the district timeline and the TOSA's agendas; and using norms. The teacher leaders' experience in developing relationships included having already established professional relationships in the math department, the team members being honest and trusting, everyone sharing experiences and communicating with the TOSAs. The teacher leaders practiced collaboration using past experiences in course alike teams and using the given PLC time for sharing. One site had specific PLC trainings. The teacher leaders were unable to practice monitoring progress because it was the first year of implementation yet they are looking forward to making improvements in the future. An outline of research question one and sub-questions along with the teacher leaders' response themes is summarized in Table 5 with more detailed descriptions to follow.

Table 5

#### *Research Question 1 and Themes*

Research Question	Teacher Leader & Reform Practices	Common Practices
1. How did high school math teacher leaders, from a Southern California district, describe their leadership practices, if (continued)	1a. Setting Direction (establishing the vision understanding the need, setting and embracing goals and establishing norms)	The teacher leaders held the knowledge about the new CCSSM including the vision and purpose of the new curriculum in helping students learn math. The teacher leaders understood and supported

Research Question	Teacher Leader & Reform Practices	Common Practices
any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?	1b. Developing relationships (trust and communication)	the district plan and direction for implementation by using the given agendas and timelines for PLC meetings that were developed by TOSAs. Previous PLC work and CCSS trainings provided the leaders with the norms they used.  Content teams and departments have worked together for years so the relationships were already built and allowed team members to try new things.
	1c. Developing Collaborative work groups	Sharing within the teams helped foster collaboration and build trust. There was regular communication with the TOSA and support provided when needed.
	1d. Monitoring Progress (data collection, data sharing and analysis and feedback)	Because this is the first year of implementation, this step has not taken place but many look forward to collecting and analyzing data next year.

The teacher leaders described in their practice the many trainings they had received building up their knowledge of the CCSS and the practice of using their team meetings to develop an understanding of the vision and purpose of the new curriculum. Mr. Allan noted, “In earlier meetings (beginning three years ago), we were given a chance to get some understanding” of the CCSS and as time went on it became more focused. Mrs. Bea “had more information than most of the other department members.” She “saw that the CCSS was coming and ... started figuring out what it meant for my classroom and the department and [I] was willing to share

what I found out with the department.” Mr. Call focused on gathering Common Core materials and letting teachers work through the problems and “discussing the similarities and differences between Common Core and the current California math standards.” Mrs. Erst also had “an idea of things to come with 2014 as the goal to roll out the CCSS and the Smarter Balance test.” The teacher leaders knew and understood the CCSS for mathematics and used their knowledge to help their team members understand and stay focused on the implementation.

When recounting how the teacher leaders set the direction in their content teams during the 2013-2014 academic year, another common theme was that they followed the district plan for CCSS implementation including the districts vision and plan, their weekly meeting agendas and a timeline for implementation. The teacher leaders supported this practice within their PLC teams by using the agendas and the timelines. Mr. Allan explained that “there was a need to establish the vision and purpose and it was difficult at first;” but that the teacher on special assignment (TOSA) lead agendas gave more direction for his team. Mrs. Bea described that she used the TOSA and the agendas from the district and commented that the site followed the district lead when it came to the direction of her team. Mr. Call also used the TOSA agendas and noted that for his team the Common Core implementation was an “obligation rather than opportunity” and seemed very top down. Mrs. Dean described how the liaisons (the districts name for teacher leaders) lead by the TOSAs (this district used both a secondary math TOSA and an elementary math TOSA during the 2013-2014 academic year) met to establish the vision for implementation of the CCSS. Mrs. Erst also reported being given a timeline and making reports of her teams’ progress to the TOSA. Mr. Fee said they were told what to do “week by week” and used the TOSA recommended activities at their content meetings. Mr. Grant described setting the direction -- that the district wanted them to do it their way.

As teacher leaders, four of the seven reported following norms as part of their leadership practices developed through previous experiences and trainings. Mrs. Bea used consensus with her team to decide the norms. Mrs. Dean modified the norms in her team through consensus. Mr. Call followed the PLC norms as given. Mr. Allan stated that the norms were explicit.

When describing how the teacher leaders' experienced relationship building, trust, communication and working collaboratively they said that sharing was common, especially the new things they had tried between team members and between the teacher leader and members was common. Mr. Allan described how after they decided on a Common Core lesson, they would report back on how it went. He added how his team "encouraged each other. We commiserated... we gotta try something." Mrs. Bea embraced the change toward CCSS and "was willing to share what [she] found out with the department." "I found a few department members who were willing to try new things along with me and that was a great way to introduce the CCSS to them in a way where they felt safer because we were in this together." She shared that "later in 2013-2014 the district stopped giving us agendas for the PLC meetings and this freed us up to share ideas. There was a great energy at this time." Mr. Call described, "The collaborative aspect of our PLC was primarily via the use of CC math materials which I would present to the group to try out. Our team members were very willing to share past experiences and assess potential strengths and weaknesses of a given activity." Mrs. Dean shared that she always reported back to her team after attending trainings or a conference and that "helped develop trust and positive relationships." Mrs. Erst described how they "would try different writings or reading activities and report back to our PLC. This sharing of our work samples and lessons was helpful in moving toward our goal." Working together and sharing at school during PLC time is how Mr. Fee described working collaboratively with his department

and team. Mr. Grant explained that everyone interacted and “wanted to help each other-to try” the new curriculum.

In addition to sharing, the teacher leaders described their teams as having worked together in the past and as Mrs. Bea explained, “always having meet in informal PLCs.” All but Mr. Allan described their teams as being professional and respectful. Mr. Allan described his team as being “honest with our feelings and [we] expressed them.” Mrs. Bea shared that her team members “respected each other and [knew] that they each have a lot to bring to the meetings.” Mr. Call described his PLC as “friendly, and having professional trust in [each] other.” Mrs. Dean described that, “trust and solid relationships have been built over a period of ten and more years of working together in course alike groups.” Mrs. Erst also describes her math department as very strong and their department “goal has always been to work together and help each other.” Building trust was not an issue with any content teams, although Mr. Grant described some “grumbling” from his team at the beginning of the year. He described how “I tweaked it [how the approach to the implementation] so that it worked better.” Mr. Grant described his team as familiar with working together, respectful, [getting] along and so there was not a need to develop trust.

When summarizing the themes emerging from the teacher leadership practices, it should be noted that the teacher leaders emerged from the CCSS trainings with thorough knowledge of the new math curriculum including its vision, purpose and goals. Mrs. Bea and Mrs. Erst also had leadership experience as past department chairs, while both Mrs. Dean and Mr. Grant have previous leadership experience and past leadership trainings through management positions. Mr. Allan and Mr. Fee are experienced teachers who have attended numerous math trainings while Mr. Call is the only newer teacher who has taken on this leadership role. The practices they

experienced to lead their teams' work clustered around using the CCSS vision and purpose to improve student learning and stay focused on their goals, following the timeline and agendas set by the district and TOSA, using and building on the existing trusting and honest relationships to try new things and share experiences and learnings while regularly communicating with the TOSA.

### **Describe the Supports**

*Research Question 2: How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?*

The teacher leaders experienced three overarching types of support from the district and sites – professional development, TOSA leadership and the PLC structure. CCSS trainings were provided for all teachers. The teachers described these trainings as leadership support, professional development support and time support. The TOSAs provided leadership support through coaching, communication and the provision of materials and resources. The district embedded PLC structure provided support through weekly meetings to work collaboratively on curriculum development and included writing integrated units of study for the CCSS implementation. Table 6 displays research question two and the teacher leaders support themes. More detailed descriptions of the teacher leaders supports follow after Table 6.

Table 6

*Research Question 2 and Themes*

Research Question	Teacher Leader and Reform Supports	Common Supports
2. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?	2a. Distributed and/or Shared Leadership	All teacher leaders have attended CCSS trainings and found them very helpful for leading and supporting their teams. The TOSA was very supportive and acted as an advocate for the teacher leaders and their group members.
	2b. Time (including meetings and professional development)	Every site had designated PLC time for working on implementing the CCSS and writing integrated units.
	2c. Resources & Materials	Most resources were on line and provided by the TOSA and from the trainings. New curriculum in binders and copies were provided by the TOSA.
	2d. Develop or redesign systems and procedures including professional development structures	The PLC/content teams dedicated to the implementation of the new curriculum. Pullout days are also being used for writing curriculum.

One support theme experienced by every teacher leader involved attending trainings for the CCSS. These trainings included county CC trainings, district trainings and pull out days. Mr. Allan described how the administration “conducted summer trainings as well as pull out days.” Mrs. Bea attended training meetings and noted that “the site administration [hadn’t] given me any leadership trainings but respect what I have to say and they listen to me about

implementing the CCSS.” Team meetings, professional development days in June, and volunteer trainings were the supports described by Mr. Call. Mrs. Dean has attended “pull out days for collaboration meetings led by our TOSAs.” Mrs. Erst, as the PLC liaison, attended many CCSS trainings. She explained, “Our site administration was very willing to allow interested teachers to attend trainings.” Mr. Fee also attended, voluntarily, CCSS trainings. Mr. Grant was provided with leadership training several years ago and has attended CCSS trainings more recently. Only Mr. Fee specifically mentioned no “leadership” training was offered while Mrs. Dean and Mr. Grant explained that they did not need any leadership training due to their past experiences.

The teacher leaders have described the leadership from the district TOSAs as an important part of the leadership support they received during the implementation of the CCSS in mathematics and the writing of the integrated units. Mr. Allan mentioned the TOSAs as giving leadership support: “they lead by example.” Mrs. Bea, Mrs. Erst and Mr. Grant described the TOSAs as being helpful in the implementation process. Mrs. Bea, Mrs. Erst and Mr. Grant also expressed “thanks” for the TOSAs help. It was considered by Mr. Allan, an important form of leadership support when the district communicated through the TOSAs that “it was okay to go slow, let things evolve, and allow us to express our concerns.” The TOSAs also supplied resource support according to Mr. Call and Mrs. Erst. “The TOSAs have been amazing in this respect,” commented Mrs. Erst when asked about her experiences about how the administration gave resource support. Every participant mentioned support from the administration, specifically the TOSAs, for supplying the Math 1 unit binders for the students and teachers.

The PLC system structure is a common theme throughout the participants’ descriptions of the leadership supports they received. During the 2013-2014 academic year, the participants’

district required weekly meetings as part of banked minutes that embedded the PLC time into the teachers' workday once a week. Every teacher leader mentioned the PLC as time for collaboration and working on the CC curriculum and discussing the implementation. Only Mr. Allan and Mr. Call spoke of experiencing a common prep time with their team members as additional collaboration time. Additional collaboration time, in the form of pullout days was given to the teacher leaders who were writing the Math 1 curriculum. Mr. Call, Mrs. Dean and Mr. Grant attended these curricular writing pullout days. Mr. Grant said that his team made "good use of late start" days.

In summarizing the supports experienced by the teacher leaders the common themes mentioned included providing multiple CCSS trainings over time, leadership support from the TOSAs who acted as coaches and leads in writing the integrated curriculum units and supplied needed resources and the PLC structure for the necessary collaborative work time.

### **Describe the Needed Supports**

*Research Questions 3: How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they perceive to need to implement the Common Core high school math standards?*

Teacher leaders experienced two common needs – time and resources. All teacher leaders experienced the need for more time. Time was requested for both writing and reviewing the new integrated materials. In addition, the teacher leaders describe their need for more resources, materials and more specifically, a textbook. In Table 7, question three and the themes are listed. A more detailed description of the teacher leaders needed supports are described after Table 7.

Table 7

*Research Question 3 and Themes*

Research Question	Teacher Leader and Reform Support Needs	Common Needs
3. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they perceive to need to implement the Common Core high school math standards?	3a. Distributed and/or Shared Leadership Needs	Three teacher leaders did not see a need for additional leadership trainings or support. All the teacher leaders supported keeping the TOSAs.
	3b. Time Needs (including meetings and professional development)	Every teacher leader wanted more time and said their team members needed more time.
	3c. Resources & Materials Needs	All of the teacher leaders mentioned that the teachers want a textbook. There are too many online resources to sift through.
	3d. Need to Develop or redesign systems and procedures including professional development structures	The participants agree that the district understands the difficulty of this curricular change and know it will take time and this is the first version. Many asked for a prep-period to write curriculum or another prep to work with team teachers.

The teacher leaders all expressed the need for more time. Mr. Allan said that, “during the school year I am so busy with all of the other teaching responsibilities that I have little time to develop a new curriculum. Our district will not or cannot afford a release period each day, so this first year will be “Version 1” and will not be top-notch.” Mrs. Bea noted that professional

development time has been difficult to find. She would “love all the help and resources her team can get.” Mr. Call would like to add time for observation days and more math-specific common core training. “Developing the curriculum has been proven to be very time consuming. It would have been nice to have a prep period (paid) that was devoted just to curriculum development,” explained Mrs. Dean. Mrs. Erst expressed her needs as “more common planning time and common prep time during the day. We need to look at curriculum but also assessments and data. We also need to discuss ways to address multiple levels of student abilities.” Mr. Fee recalled that spending “two days writing at the end of the school year might be a problem, [we] might need more time. I hate being pulled out of class.” And Mr. Grant summed it up as “I am working too many hours and too tired to care. I want compensation for curriculum development and meeting after school and I appreciate that trying to manage this is difficult. Any time I have to make sub plans is more work.”

The teacher leaders expressed the common need for a textbook and more curricular materials. Mr. Allan shared, “we are waiting for the “reader” that has Units 1 and 2 for student consumption.” Mrs. Bea added that, “all the math teachers in the district [say they] can’t wait to actually have CCSS textbooks but we understand that it will take a few years.” While Mrs. Dean said, “it would be really great to have a textbook to follow.” And, even though Mr. Fee is not teaching the new curriculum, he stated, “most teachers I know would like a set or book with these materials.”

In summarizing the teacher leaders perceived needs for continued implementation of the CCSS, two main themes emerged. The need for additional time outside of the teacher workday to write the integrated curricular units was frequently described. The second major theme was the need for resources specifically in the form of textbooks and materials.

### Describe the Challenges

*Research Question 4: How did high school math teacher leaders, from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards?*

The teacher leaders described the most concerning challenges as the need for additional time and resources. In addition, the teacher leaders expressed concern that the support from the TOSAs would need to be continued beyond the three years of writing the integrated curricular units. Lastly, there was mentioned the concern about developing interventions for use by students and parents with the new CCSS math curriculum. In Table 8 the research question is listed along with the common challenges described by the teacher leaders.

Table 8

*Research Question 4 and Themes*

Research Question	Teacher Leaders and Reform Challenges	Common Challenges
4. How did high school math teacher leaders, from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards?	4a. Collaboration Conflicts	The only conflicts were finding teachers willing to teach the new integrated curriculum and the overwhelming feeling of the change.
	4b. Distributed and Shared Leadership	Having the support of leadership and relationship with the TOSA was helpful and many thought this support should continue.
	4c System, procedures, policies including professional development structures	The major obstacle is the time needed for developing curriculum and the need to be compensated for the extra work. Teachers also want a textbook and help finding materials. Some teacher leaders mentioned concerns about helping parents understand the curricular changes and helping students who are not successful.

Again, the issues of time and compensation were a common challenge experienced by the teacher leaders. Mr. Allan mentioned time as a conflict between teaching, developing curriculum and developing common formative assessments. Under leadership challenges Mr. Fee reported that time and priorities were a challenge. He said there is “not enough time to do what we need to do.” System challenges for Mr. Call included “[the] lack of shared and compensated teacher time to fully draft more nuanced modification to the curriculum. There is a reliance on voluntary teacher time.” Mrs. Dean connected the time challenge with resource challenges. She stated, “The challenges we have experienced so far include where to turn for the resources [we] need. There are lots of things out there to choose from, it is just time consuming, with each lesson, to sift through things. It is like being a new teacher all over again.” Mrs. Erst simply answered that common planning time was a need. Mr. Fee didn’t use the word time, but stated the challenge of going to the website every week and filling out forms, and looking at everybody’s recommendations online. Mr. Grant spoke about the lack of time needed for reflecting on what they are doing and have done.

The lack of resources-in the forms of textbooks-as well as an overwhelming amount of Internet resources were other challenges that the teacher leaders experienced. Mr. Allan “would look at the current textbook and all of the ancillary resources and just get overwhelmed with the task.” Mrs. Bea responded, “the teachers are very used to using a textbook for their main curriculum and that has had to change with the CCSS. Some teachers are excited about this, while others are frustrated by the idea of finding their own resources.” Mrs. Dean shared similar concerns about resources. She said that the “challenges we have experienced so far include where to turn for the resource you need. There are lots of things out there to choose from, it is just time consuming with each lesson to sift through things.” Mr. Grant’s resource challenges

were a little different; he mentioned that the change from department chairs to solely PLCs only, changed how supplies were managed and was an issue.

Keeping the TOSAs as leadership support was mentioned as a concern. Both Mrs. Erst and Mr. Grant expressed the need to continue using the TOSAs. Mr. Grant suggested that the PLC teams would need the TOSAs for a third year of leadership and even another year to “tie up loose ends.” In addition, concerns about student interventions were mentioned. Mrs. Dean said that she “was unsure how to place [her] students.” Mr. Call has concerns about how parents can support their students.

In summarizing the challenges experienced by the teacher leaders, two main themes emerged. The first challenge is the need for more time to work collaboratively on developing the integrated curriculum or at least some additional compensation for all the extra work done by the teacher leaders. The second challenge is teaching without a textbook. The teachers also mentioned the concern that they need additional leadership support for developing assessments, reflecting on the work done and making improvements to the integrated units.

### **Summary**

This qualitative phenomenological study described the experiences of seven high school teacher leaders in facilitating their content teams in the implementation of the Common Core State math Standards during the 2013-2014 academic year at three high schools in a Southern California district. There were four teacher leader practices described in setting the direction, four practices for building relationships, three for working collaboratively and interest in monitoring the progress in the future. The three key supports described by the teacher leaders are professional development and trainings, the TOSA leadership support and the embedded PLC team time. The two key needs described by the teacher leaders are the need for more time and

compensation to complete the work and the need for more resources, materials and textbooks. Four challenges were described including time and materials along with concerns about continued leadership support from the TOSAs.

Information about the teacher leaders from Table 4 shows that six of the seven participants are experienced teachers who have taught for ten or more years in the content area they are leading. Every teacher leader has attended Common Core trainings and two of the participants have previous leadership experience. The team members have been together for many years and there were no conflicts. All but Mr. Allan will continue as the PLC liaisons for the next year. Mr. Allan will be helping in the technology area.

In attempting to better understand the teacher leader experiences, research question one sought to describe the leadership practices used by the participants to set the direction of the math content teams. All of the teacher leaders acknowledged that the district was leading the implementation of the Common Core State Standards and that the site administrations were following their lead. The vision and purpose used by the teacher leaders was the CCSS vision and purpose with the goal of improving students' mathematical learning. The teacher leaders emphasized this vision, purpose and goals in leading their PLC team in implementation. The agendas for the PLC meetings were set by the district's TOSAs, as were also the timelines for implementation. The teacher leaders used the agendas and timelines as part of their leadership practices, as given by the leadership. Two of the teacher leaders found this very top down while the other five teacher leaders commented that it gave more direction to their team meetings. In order to give more choice about the work to their team members, the teacher leaders adjusted the agendas as the implementation progressed. Four of the seven teacher leaders described using

norms during their meeting times. Mr. Call summed it up, saying: “all members were professional and we adopted and followed the standard PLC norms from prior experience.”

Trying new things and sharing experiences was described by each teacher leader as part of their leadership practice and was part of working collaboratively in their PLCs. Five of the seven teacher leaders talked about working together as part of building their team’s relationships. Three teacher leaders mentioning being together for many years, “so the trust and solid relationship[s] have been built”, specifically in course alike teams that have been together for years. The honest professional relationships led to collaborative sharing within the PLC teams. All the teacher leaders used the PLC time for the implementation of the CCSS.

Question two asked teacher leaders to describe the supports they received from the administration during the implementation process. The common themes for teacher leader support included attending trainings for the common core, the help of the TOSA and time within the PLC embedded structure. Every teacher leader spoke of attending CC trainings, including county and district trainings and pullout days. Also, every teacher leader spoke of using the PLC time to work collaboratively on developing the curriculum, sharing integrated units and developing assessments. Four of the seven teacher leaders spoke about the leadership support from the TOSAs.

Question three asks for the perceived needs of the teacher leaders during the implementation of the CCSS. Every teacher leader asked for more time. Three of the teacher leaders also mentioned a concern about the ongoing need for the TOSAs’ leadership. The writing of the CC integrated curriculum was mentioned as overwhelming, time consuming and there is never enough time. Although another way to provide time to work on the CCSS, pullout days that require preparation for substitute teachers, were considered more work by two of the

teacher leaders. Common prep periods that gave teachers more collaboration time were asked for by five of the seven teacher leaders.

Question four asked for the challenges experienced by the teacher leaders. The challenges coincide with the common themes found as needed supports. All the teacher leaders, again, expressed the need for more time. Three teacher leaders also mentioned wanting to be compensated for their time spent working on the CC integrated units. The challenge of not having a textbook was experienced by five of the seven teacher leaders. Most teachers at the high schools cannot wait for a common core math textbook.

## **Chapter 5: Discussion, Conclusion and Recommendations**

In this chapter the major themes from the qualitative study are discussed and analyzed. First, the purpose statement, research questions and research design is summarized. The discussion of the key themes and findings follows including references to the literature and theoretical framework. After the discussion, the conclusions are presented. Recommendations for policy and practice to improve the implementation of the high school Common Core math standards are described. Finally, recommendations for further research are given.

### **Purpose Statement**

The purpose of this phenomenological study was to describe the experiences of high school math teacher leaders, in a Southern California district, as they worked with their content teams to implement the Common Core state math standards curriculum, instruction and assessments. More specifically, the purpose was to describe (a) the leadership practices used, (b) the supports received, (c) the perceived needed supports, and (d) the challenges teachers encountered during the first year of implementation of the CCSS in math.

### **Research Questions**

Four broad research questions guided this study.

1. How did high school math teacher leaders, from a Southern California district, describe their leadership practices, if any, in facilitating their math content teams during the first year of implementation of the Common Core high school math standards?
2. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they have received during the first year of implementation of the Common Core high school math standards?

3. How did high school math teacher leaders, from a Southern California district, describe the supports, if any, they perceive to need to implement the Common Core high school math standards?
4. How did high school math teacher leaders, from a Southern California district, describe the challenges, if any, they have encountered during the first year of implementation of the Common Core high school math standards?

### **Design Overview**

In this non-experimental qualitative study exploring the phenomenological experiences of seven high school math teacher leaders from a Southern California school district, the teacher leaders were interviewed using semi-structured face-to-face and telephone interviews. The teacher leaders described their shared experiences during the 2013-2014 academic year as they facilitated the implementation of the Common Core high school math standards. The responses of each teacher leader and the common themes in the findings represent the lived experiences of the participants as they described their leadership practices, supports, needs and challenges.

### **Discussion of Key Findings**

**Research question one.** The teacher leaders were asked to describe *the leadership practices you experienced that have been most helpful in setting the direction with your math content team in the implementation of the Common Core high school math standards into your curriculum.* The teacher leaders responded with four main practices: (a) using the vision and purpose of the CCSS, (b) setting the direction using district and TOSA-led agendas, timelines and meeting norms, (c) creating opportunities to try new things and share best practices and experiences, and (d) building trusting relationships over many years of working together.

The math teacher leaders emerged from the many CCSS trainings they attended with an understanding of the new Common Core State Standards in Mathematics (CCSSM) that created the knowledge and skills needed to direct their PLC teams toward the CCSSM vision and purpose for improved student learning. The teacher leaders became the experts of the CCSSM and it is the teacher leaders who provided and sold the vision for change (Heller & Firestone, 1995). According to Crowther et al., 2002, teacher leadership is essential for developing a collective purpose and effort in schoolwide pedagogical change. This common understanding of the vision, purpose and goals of the CCSSM along with distributing the leadership among the PLC team leaders (Harris, 2004) helped the teacher leaders embrace the goals to move their teams forward toward the implementation of the CCSS standards. The teacher leaders reported that there was a need to establish a vision with their teams and at the same time some felt the vision was top down from the district. Mr. Call stated, “in some ways, our vision and direction were viewed as set by the district as we worked through the given tasks at each weekly meeting with a very specific agenda.” Change needs a compelling purpose that shares an academic focus (Garmston & Wellman, 2009). Yet, change is still difficult and needs a clear direction. Mr. Allan stated, “Some meetings we were despondent and others hopeful, ... as time went on, the meetings became more focused. I think this was due to the TOSAs leadership.” The shared purpose is just the beginning of the change process that included providing the information—“the who and the why”—for the change, but the details, the timelines, expectations and guidelines must follow (Hord et al., 1987).

The school district, starting three years ago, developed the overall vision and plan for the CCSSM implementation. The sites schedules were changed in order to embed PLC team time and the teacher leaders were given agendas and timelines to focus the work on the CCSS

implementation. Timelines and agendas act like a checklist for change (Hord et al., 1987) and provide the direction needed to focus the work. The teacher leader undertakes the task of keeping their content team focused on accomplishing their goals (CCSRI, 2005; Crowther et al., 2002; Katzenmeyer & Moller, 2001; Lambert, 1998; York-Barr & Duke, 2004). The teacher leaders described the agendas and timelines as top down but characterized the TOSAs as helpful in providing activities and facilitating ideas such as norms and note-takers to focus the PLC teams work. The teacher leaders met with the TOSAs sharing the purpose and plans for implementation. To implement reforms, school leaders need to communicate well between teachers and administrations, sharing the power and allowing teachers to participate in the decision-making process (CCSRI, 2005; Williams, 2009). Communication and sharing was also an important practice within the PLC teams.

Every teacher leader spoke of using the practice of trying new things and sharing information and experiences with their PLC team members. The PLC structure provided the time and place for teachers to share and learn from each other in order to make collaborative decisions about the curriculum (Wells & Feun, 2007). It is important that teachers feel actively and collectively involved (Mulford & Silins, 2003) in the development and implementation of the new curriculum. Teachers also need the time to understand and explore the new curriculum before presenting it to the students (Stein & Kim, 2009). When enacting a reform, the collaborative culture requires that teachers respect and trust each other (Garmston & Wellman, 2009). Vital practices included teachers talking openly and honestly with each other sharing their concerns and even grumbling about the changes and how hard the work is.

For PLC teams to function successfully, it is important the teacher leaders have developed trusting respectful relationships (Garmston & Wellman, 2009; Hord, 1997; LaFasto & Larson,

2001). The PLC teams, in this district were demonstrating DuFour's six elements of a PLC (DuFour et al., 2010) by having their shared purpose, shared responsibility and collaborative culture, and by using effective teaching practices such as coaching and developing instruction collaboratively, building trusting relationships and using group learning. The teacher leaders and their PLC teams have a history of working together in informal course alike PLCs. One site has experienced specific PLC trainings. The math departments in this district have been consistent in retaining math teachers resulting in team members having worked together for many years. All but one team was led by an experienced teacher with ten or more years of teaching. Because of their many years together, all the PLC teams worked together honestly and professionally.

Teacher leaders need both the structure and the time to develop the relationships that overcome conflict and build communication with their team members (CCSRI, 2005; Gordin, 2010; Harris, 2004; Padilla, 2013). The administration needs to trust that the PLC teams are making good decisions and that everyone is trying their best (Ash & Persall, 2000; Timperley, 2005), providing the teams with the opportunities to develop their curricular skills (Harris, 2003). Using the teacher leaders, with the support of the TOSAs, to create trusting relationships and transparent communication builds leadership capacity (Lambert, 1998; Spillane et al., 2001; York-Barr & Duke, 2004). Sharing and collaboration was not limited to the PLC teams but also occurred between the teacher leaders and the TOSAs. The TOSAs were able to communicate directly with the teacher leaders and understand their concerns. The TOSAs, through their role as coaches, were also able to communicate directly with the administration and work through the concerns of the PLC team members.

**Research question two.** The teacher leaders were asked to describe *your perceived supports from both your site and district administration and from your content team members*

*that you have received during the first year of implementation of the Common core high school math standards.* The three central supports for the teacher leaders included professional development through trainings, leadership support through the TOSAs and structural support through PLC teams.

Every teacher leader stated that they had received training on the new Common Core State Standards for Mathematics. These trainings have taken place over more than two years and the teacher leaders have attended more than one district lead or county lead training. During the implementation of new curriculum, a large number of teachers need to be educated on the new curriculum quickly and professional development and coaching must be provided (Joyce & Showers, 2002; Stein & Kim, 2009). The district, using system thinking to establish a professional culture focused on continuous learning and building capacity for improvement (Gronn, 2000; Hord, 1997; Leithwood et al., 2009; Stein & Kim, 2009), invited all teachers to attend trainings even sending as many teachers as possible to multiple trainings starting as soon as possible and continuing over time. These trainings helped update and build the teachers' knowledge and skills, a crucial part when changing curriculum (Hord & Hirsch, 2009; NCTM, 1989, 2000; Schivo et al., 2009). The district not only provided CCSS trainings for all the math teachers, but also provided pullout days for the teacher leaders to write the new curriculum. Time away from the classroom is critical for reviewing research and selecting curriculum (CCSRI, 2005). The teacher leaders, through multiple trainings over time, became the CCSS experts. The on-going professional develop provided the knowledge of the CCSS, the need for change and the plans for implementation that allowed these teacher leaders to be visible, respected and valued by their peers (Leithwood et al., 2007). With the support of the TOSAs and their examples for modeling the new curriculum and PLC activities, the teacher leaders were

able to use their prior leadership experience to lead their PLC teams without additional specific leadership trainings.

Throughout the implementation of the CCSS, the teacher leaders found the TOSAs to be helpful in giving leadership support. For successful reform, the administration needed to provide meaningful professional development and support, such as the TOSAs who supported the teacher leaders (York-Bar & Duke, 2004). The district hired math TOSAs to help with professional development and coaching of the new curriculum. The leadership support provided by the TOSAs included coaching tasks such as professional development trainings, visiting sites, providing materials and resources, communicating with the district office and administration, and providing agendas, timelines and activities for the PLC teams. Teacher leaders, including the TOSAs act as facilitators, mentors, coaches and trainers to keep the teams organized and moving toward their goals (Katzenmeyer & Moller, 2001; Timperley, 2009). Effective coaching provided for the development of coherent instructional practices (Garmston & Wellman, 2009) such as writing curriculum and implementing the CCSS.

The TOSAs also provided support by acting as advocates for the teacher leaders and their team members. As the leaders of the teacher leaders, the TOSAs provided a more horizontal form of distributed leadership, improving the communication between the administration and the teachers (Mayrowetz et al., 2009). Because the TOSAs were teacher leaders without the responsibility of classroom teaching, they had the time and availability to answer questions and provide a direct link to the district office. Procuring materials, monitoring the implementation effort and handling disturbances were additional support tasks performed by the TOSAs (Heller & Firestone, 1995; Leithwood et al., 2007; Spillane et al., 2004). With the CCSS implementation, the TOSAs were able to check in with the teacher leaders and deal with their

concerns (Hord et al., 1987). Distributing the leadership support through teacher leaders and the TOSAs enhanced the mutual respect and reciprocity for the leadership while increasing the teacher leaders' responsibility and building leadership capacity within the site (Macbeath, 2009). Supporting the teacher leader role is linked to more focused and sustained reform (Crowther et al., 2002).

The final support of the teacher leaders provided by the district was the structure of the weekly PLC time, embedded into the school week and used intentionally to collaborate, share ideas and work on the CCSS implementation. The teacher leaders considered this structure integral for providing collaborative time to collectively solve problems, share leadership, share time and resources and develop and share curricular ideas (Hord, 1997), for implementing the CCSS. Teacher leaders participated as part of the teams doing the PLC work with their peers (Murphy, 2005). The teacher leaders provided the culture of sharing and engaging in the work on the new curriculum, helping the teachers feel actively and collectively involved in the process where their contributions are valued (Mulford & Silins, 2003). Promoting a culture of professional improvement with individual and collective capacity building is linked to sustained change efforts (Fullan, 2010; Mulford & Silins, 2003).

The planful alignment of the PLC content teams helps to positively influence the distribution of the leadership (Murphy, 2005). At the beginning of the CCSS implementation and the PLC teams, the district leadership provided the agendas for the PLC work. Although this felt top-down, it provided the purposeful steps in the PLC work, (DuFour et al., 2010) toward the goal of the CCSS implementation. The teacher leaders were more energized once they were given more autonomy and team responsibility-a distributed leadership practice-to choose the focus of their implementation work (Mayrowetz et al., 2009). By distributing the labor, focusing

on strengths, interdependence and participation, the teams were more committed to making school improvements (Leithwood et al., 2009). While the PLC team time is an important condition for PLCs, more than structure is needed to foster effective teams (AISR, 2004).

The PLC team members in this district had a history of supporting each other by working in course alike teams within their departments. Over several years of working together, the math department members had developed professional, honest and trusting relationships. A successful PLC requires the investment of time and relationships with each other (Lambert, 2005). The teacher leaders, having built trusting relationships in their teams were able to interact face-to-face with their team members to decrease fear, encourage risk-taking and allow others to lead (Slater, 2008). Mr. Allan wanted to encourage the less experienced math teachers to take on leadership roles; and Mr. Call, when the experienced math teachers in his team did not want to take any leadership role, stepped into the position. Successful teams support this type of teacher growth and development (Timperley, 2005).

**Research question three.** The teacher leaders were asked to describe *the supports, if any, you perceived to need to implement the Common Core high school math standards*. Two essential themes emerged. The teacher leaders expressed the need for more time not only to write the curriculum but also to reflect on the progress of implementation in order to monitor and adjust the curriculum as needed. The participating teacher leaders also indicated the need for additional resources including materials and textbooks.

Every teacher leader responded that time was their primary need. “There is never enough time,” stated Mrs. Dean. She added, “Developing curriculum is very time consuming.” For school improvement and distributed leadership to work, time must be set aside to meet, to plan lessons, to discuss experiences and to develop curriculum (Harris, 2003). The PLC teacher

leaders are full-time teachers and developing curriculum and leading their PLC teams is an additional job duty. Teacher leaders do not want to be pulled out of their classroom for curricular work. The leadership must provide additional time for PLC activities (Easton, 2008). Even with the embedded PLC time, the teacher leaders want an additional prep period to work collaboratively to develop the curriculum. Teachers want to be compensated for the extra work they do outside of their teaching responsibilities. More time dedicated to collaboration and teamwork supports school improvement efforts (Harris, 2004).

Not only did the teacher leaders mention that they would have liked to have a textbook, but they also shared that many, if not all, of the math teachers also expressed this need. Because the CCSS in math is a new curriculum, teacher leaders were required to sift through the many online resources available to find the needed materials for developing the curriculum. A lack of materials is considered a constraint with new curriculum; curricular materials need to be ready and available for the teachers and the students, (Silver et al., 2009). The PLC teacher leaders were compelled to share with, direct the focus of, and provide and distribute to their team members the required resources (CCSRI, 2005; Hord, 1997; Leithwood et al., 2007; Mayrowetz et al., 2009; Mizell, 2007; New England Comprehensive Center, 2008; Spillane et al., 2004; Wells, & Feun, 2007). Because online resources are vast and no textbooks are available, procuring materials was a definite need for the teacher leaders (Murphy, 2005).

**Research question four.** The teacher leaders were asked to describe *the challenges, if any, you perceived to need to implement the Common Core high school math standards*. The teacher leaders experienced two inevitable challenges, which coincide with their needs,: the lack of time and the lack of materials. Both the challenge to find and compensate teacher leaders for

their time working on implementing the Common Core math standards and the need to find and develop Common Core math curriculum materials were described.

Looking forward to complete implementation of the integrated math CCSS, a process that will take at least two more years, the teacher leaders expressed the challenge of finding the necessary time and materials to complete full implementation. Teacher leaders expressed concern that obtaining the necessary time and resources (Heller & Firestone, 1995), would be more difficult without the assistance of the TOSA-an intermediate between the teacher leaders and the district as part of the distributed leadership process. Research shows that early implementation of new curriculum is successful because of intense professional development and support; but more time needs to be spent over a longer time to sustain the changes (Silver et al., 2009). Effective leadership uses the budget to focus on the teacher leaders' needs including time and resources (Harris & Muijs, 2005).

### **Conclusions**

This study has resulted in nine conclusions about the practices, supports, needs and challenges from the analysis of the findings of the described experiences of teacher leaders implementing the CCSS in math in their PLC teams. Enhancing the professional culture helps build productive relationships, engages educators, supports teachers and promotes improvements in the school system and culture (Garmston & Wellman, 2009). In a professional environment, leaders develop and apply systems thinking (Hord, 1997). This particular district used systems thinking and provided ongoing trainings, teacher leader positions (TOSAs) for support through communication, coaching and resources, and the PLC structure. The teacher leaders' practices used in this district also included previous informal PLC or course alike teams and departments with developed professional relationships. Consequently, from the teacher leaders' descriptions,

the important discoveries from this study include four teacher leader practices, three leadership supports and two teacher leader needs and challenges.

**Conclusion one.** The teacher leader practice of obtaining a solid knowledge of the change process, the CCSS in mathematics, helped to lead their team toward the implementation goals. As the content experts of the new curriculum, the teacher leaders shared the common vision and purpose of the change in connection to the student learning that helped focus the work. It is the teacher leaders who provide and sell the vision and purpose, influencing others through their experience and content knowledge (Heller & Firestone, 1995).

**Conclusion two.** The teacher leader practice of using norms, agendas and timelines to organize and move forward is important in implementing the purpose and goals of the new curriculum (CCSRI, 2005; DuFour et al., 1998; Hord, 1997; Schmoker, 2000; York-Barr & Duke, 2004). Designing and facilitating successful meetings, including the use of norms, agendas and timelines, helps facilitate team success (Gordin, 2010). The norms, agendas and timelines may be district driven at the beginning, but they need to be supported and used by the teacher leaders. As the implementation progresses, more autonomy and choice should be given to distribute the leadership among the team members and build capacity around their strengths (Leithwood et al., 2009).

**Conclusion three.** The teacher leader practice of building trusting relationships within teams is important (Slater, 2008). Collaborative teams depend on teachers who respect and trust each other and are able to deal with conflict (Garmston & Wellman, 2009; Gordin, 2010; Harris, 2004; Hord, 1997; LaFasto & Larson, 2001) and work through the uncertainty of implementing a new curriculum. With honest and professional relationships the teacher leaders were able to understand the strengths and weaknesses of their team members and were able to distribute the

workload and provide choices for implementation work. This energized the PLC team members during the implementation process.

**Conclusion four.** The teacher leader practice of providing the collaborative environment and the opportunities for team members to try new things and share their personal experiences was used by all the participating teachers. As PLC leaders, teachers are influential in school reform improvement efforts (DuFour et al., 2010; Katzenmeyer & Moller, 2001). Teacher leaders influence collaborative relationships that allow teachers to engage in collective learning, address problems and improve teacher practices that support student learning (Garmston & Wellman, 2009).

**Conclusion five.** Teacher leaders need ongoing and meaningful professional development related to the new curriculum and focused on instruction and student learning. Firestone (1996) recommends more collegial and collaborative professional development with teachers deciding on how to upgrade their skills. The teacher leaders in this study received more than two years of trainings and were able to build their knowledge and skills to become the experts on the changing curriculum for their teams. In addition, to promote the implementation process all math teachers were offered training (Stein & Kim, 2009). Early implementation of a new curriculum is easy because of the intense professional development, but in order to sustain the change, the professional development needs to continue (Silver et al., 2009).

**Conclusion six.** Teacher leaders need to be provided leadership support through TOSAs or coaches. The TOSAs, teachers with a special role in the district, know the teachers, the curriculum and have the time to support the teacher leaders and their team members (Silver et al., 2009). The leadership support from the TOSAs included the duties of problem solving, providing resources and research, communicating with the administration, providing additional trainings

and focusing on parent engagement (Katzenmeyer & Moller, 2001; Smile et al., 2002; Timperley, 2009). The teacher leaders explained that at the beginning of the implementation process, the TOSAs helped with setting the direction, keeping the focus on the students and helping the teachers understand the CCSS and the new curricular practices. Continuing the TOSAs' leadership support is needed to keep the momentum going throughout the curriculum change.

**Conclusion seven.** Teacher leaders need regularly embedded collaborative time for sharing, developing, monitoring and improving the curriculum. Using the PLC model to promote a professional culture of continuous learning and successful reform is linked to sustaining the change effort (Fullan, 2010; Mulford & Silins, 2003). The work in the PLC teams started “tight” through the use of district developed agendas and timelines: the teams began implementation of the CCSS, they were given more ownership and allowed to chose their areas of work (Mayrowetz et al., 2009). Developing collaborative skills is difficult. The teacher leaders and the PLC team members in this study had past experiences working collaboratively. For new PLC teams, leadership for developing collaborative skills must be provided (Garmston & Wellman, 2009) and collaborative skills must be taught (Hord & Hirsh, 2009).

**Conclusion eight.** Teacher leaders need time, outside the teacher workday that must be intentionally provided. The teacher leaders described how writing new curriculum, the integrated units for the CCSS and writing lessons for new curriculum takes time. Time is needed for teachers to collaborate and share their experiences, plan activities and develop student assessments (Easton, 2008; CCSRI, 2005; DuFour et al., 2010; Harris, 2004). Time is also required for gathering results, discussing, modifying and adjusting the curriculum. Structured time for teachers to work, without being pulled out of the classroom is needed and should be

embedded into the regular school week and even into the school day with common prep periods, extra prep time for writing curriculum or an extra pay stipend.

**Conclusion nine.** Teacher leaders and their teams need to be provided with resources and materials (CCSRI, 2005; Hord, 1997; Leithwood et al., 2007; Mayrowetz et al., 2009; Mizell, 2007; New England Comprehensive Center, 2008; Spillane et al., 2004; Wells, & Feun, 2007). When adopting a new curriculum and writing new units, the first year is overwhelming and difficult. The teacher leaders were inundated with the amount of technology and Internet resources. Teacher leaders needed more time to sort through everything. The TOSAs were a valuable asset in helping provide useful resources. Without a textbook, a structure also needs to be designed for all the additional resources and materials found and developed including those for student intervention and parent support.

### **Implications for Policy and Practices**

This study was designed to discover and describe the practices, supports, needs and challenges of teacher leaders in content teams during implementation of the CCSS for high school mathematics. Implementing curricular changes using the PLC content team structure along with distributed leadership is found throughout the major themes described by participating teacher leaders. The intersection of distributed leadership with the professional development for the new CCSS and the PLC team structure requires building relationships, coaching support and the necessary time and materials. The findings and their analysis can be used to inform school curriculum implementation practices as well as policy recommendations. The conclusions of this study recommend four teacher leader practices, three teacher leader supports and two teacher leader needs. The nine recommended policies and practices-four for teacher leaders to implement and five for administration to implement-are as explained below.

1. Teacher leaders need to update their skills and knowledge regularly. Meaningful and on-going professional development and trainings allow the teacher leaders to be the experts and uphold the vision and purpose.
2. Teacher leaders need to use norms, agendas, and timelines to organize and focus the work towards the implementation goals, including communicating regularly with administration about the team's progress and needs.
3. Teacher leaders need to build strong relationships with their team members in order to determine their team members' strengths and weaknesses to build capacity through sharing leadership and to bring about the leadership abilities of others.
4. Teacher leaders need to develop a culture of collaboration to provide the environment for trying new things and sharing experiences.
5. Administration needs to provide ongoing and meaningful professional development and trainings for all teachers. The implementation of any school curricular change needs all teachers trained in the new curriculum.
6. Administration needs to utilize teacher leaders as coaches or TOSAs to provide support for teacher leaders and their PLC teams and allow for distributing the leadership across administration, coaches, TOSAs, PLC teacher leaders and team members.
7. Because not all sites will have teachers in teams where they have previously established professional relationships, Administration needs to implement a PLC structure at the sites that is embedded into the teachers' work schedule and provide trainings for the teaching of collaborative skills and relationship building.

8. Administration needs to provide and to support the implementation process with on-going additional time and/or compensation for teachers to collaborate and develop, modify and improve the curriculum and assessments as well as student and parent resources.
9. Administration needs to focus their resources to provide teacher leaders and teachers with the necessary materials for curricular implementation.

### **Recommendations for Further Research**

Because this was a study in one specific district, duplicating the study with different districts can benefit and inform further research. Also, studying the implementation over time would also be valuable. Further research ideas include:

1. A longitudinal study of the sustained implementation of the CCSS in high school mathematics in this district over five more additional years. Reform is difficult and time consuming (Fullan, 1991) and knowing whether this effort has been sustained and improves student learning would be valuable and add to the research.
2. A study of other districts implementing the CCSS in high school mathematics without the use of a coach or TOSA. According to Stein & Kim (2009), teaching leaders need coaching support. Understanding how other districts have implemented the CCSS without additional leadership support would be valuable and add to the research.
3. A study of other districts implementing the CCSS in the high school mathematics without the use of a PLC team structure. Many researchers have found the PLC structure to be a successful method for school improvement (Crowther et al., 2002; DuFour et al., 2010; Hord, 1997) so studying districts not using the PLC team structure or some other structure would be valuable and add to the research.

4. A study of other districts implementing the CCSS in high school mathematics with newly formed PLC teams without establishing trusting relationships. Research shows that collaboration requires trust and respect (Garmston & Wellman, 2009; Hord, 1997; LaFasto & Larson, 2001) so studying districts without established trusting teams would be valuable and add to the research.
5. A study of other districts implementing the CCSS in high school mathematics using different structures. Studying other districts to compare and contrast teacher leader practices, supports, perceived needs and challenges would be valuable and add to the research.

### **Final Thoughts**

Reform efforts to implement new curriculum can be a difficult time consuming process that can take five to ten years to accomplish (Fullan, 1991). Teachers are central to improving schools and are the major stakeholders for educational reform (Eisner, 2000). Research on school reform initiatives shows that one successful model is to use teacher leaders in collaborative groups (Crowther et al., 2002; DuFour et al., 2010; Hord, 1997). Teachers want to improve student learning and the PLC team structure has been a successful method to accomplish this. The PLC structure alone is not enough (AISR, 2004). Within the PLC team structure there is a need for building trusting relationships so that teachers can be open and honest and work through the grumblings and concerns that come with a major reform process (McAdams, 1997). Leadership support for the teacher leaders is also needed and a coach or TOSA can provide continued professional development in the form of trainings and coaching that are needed to sustain curriculum improvement (Stein & Kim, 2009). The TOSAs' or coaches' leadership support also includes providing additional resources, knowledge, research and communication

with the site and district office administration. Time is an important resource and will be required for all improvement efforts (Harris, 2004).

This study concluded that the teacher leaders were provided with systems and structures supported by research. The teacher leaders and their team members have attended multiple trainings to develop their knowledge and skills about the Common Core state standards in high school math. The teacher leaders are using their PLC time to collaborate on their implementation work through trying new things, sharing experiences, distributing the work and providing choices for their members. They have trusting professional relationships and a focus on the vision and purpose of the new curriculum intended to improve student learning including using norms, agendas and timelines. The teacher leaders are supported with coaches or TOSAs who have the time to advocate for the teacher leaders and provide needed leadership and resources. The participating teacher leaders are excited about the new curriculum and appreciate the support of their district. This curricular change will be an on-going process and the role of the teacher leader in their PLC content teams with a supportive TOSA or coach is vital for providing the leadership to continue the forward momentum.

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APPENDIX A

Certificate of Training

**CITI Collaborative Institutional Training Initiative**

**Graduate & Professional School Social & Behavioral Research -  
Basic/Refresher Curriculum Completion Report  
Printed on 11/27/2012**

**Learner:** Shelley Klein [REDACTED]

**Institution:** Pepperdine University

**Contact Information:** [REDACTED]

Department: GSEP

Email: sklein@smjuhsd.org

**Social & Behavioral Research - Basic/Refresher:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

**Stage 1. Basic Course Passed on 11/03/12 (Ref # 8986906)**

Required Modules	Date Completed	Score
Belmont Report and CITI Course Introduction	11/03/12	3/3 (100%)
Students in Research	11/03/12	9/10 (90%)
History and Ethical Principles - SBR	11/03/12	4/5 (80%)
Defining Research with Human Subjects - SBR	11/03/12	5/5 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	11/03/12	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	11/03/12	5/5 (100%)
Informed Consent - SBR	11/03/12	5/5 (100%)
Privacy and Confidentiality - SBR	11/03/12	4/5 (80%)
Research with Prisoners - SBR	11/03/12	3/4 (75%)
Research with Children - SBR	11/03/12	3/4 (75%)
Research in Public Elementary and Secondary Schools - SBR	11/03/12	4/4 (100%)
International Research - SBR	11/03/12	3/3 (100%)
Internet Research - SBR	11/03/12	5/5 (100%)
Research and HIPAA Privacy Protections	11/03/12	4/5 (80%)
Vulnerable Subjects - Research Involving Workers/Employees	11/03/12	4/4 (100%)
Conflicts of Interest in Research Involving Human Subjects	11/03/12	4/5 (80%)

**For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.**

Paul Braunschweiger Ph.D.  
Professor, University of Miami  
Director Office of Research Education  
CITI Course Coordinator

## APPENDIX B

## Letter of Approval from IRB

# PEPPERDINE UNIVERSITY

## Graduate & Professional Schools Institutional Review Board

July 15, 2014

Shelly Fetterolf-Klein  
[REDACTED]

Protocol #: E0514D06

Project Title: Teacher Leadership Practices, Supports, and Challenges in Implementation of the Common Core High School Math Standards

Dear Ms. Fetterolf-Klein:

Thank you for submitting your application, *Teacher Leadership Practices, Supports, and Challenges in Implementation of the Common Core High School Math Standards*, for exempt review to Pepperdine University's Graduate and Professional Schools Institutional Review Board (GPS IRB). The IRB appreciates the work you and your faculty advisor, Dr. McCabe, have done on the proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - <http://www.nihtraining.com/ohsrsite/guidelines/45cfr46.html>) that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b)(2) states:

(b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

**Category (2) of 45 CFR 46.101**, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to "policy material" at <http://www.pepperdine.edu/irb/graduate/>).

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact Kevin Collins, Manager of the Institutional Review Board (IRB) at [gpsirb@pepperdine.edu](mailto:gpsirb@pepperdine.edu). On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,

A handwritten signature in cursive script that reads "Thema Bryant-Davis".

Thema Bryant-Davis, Ph.D.  
Chair, Graduate and Professional Schools IRB

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives  
Mr. Brett Leach, Compliance Attorney  
Dr. Molly McCabe, Faculty Advisor

## APPENDIX C

Letter of Permission to Superintendent

PEPPERDINE UNIVERSITY  
Graduate School of Education and Psychology

April 22, 2014



Dear [REDACTED],

My name is Shelley Klein and I am a doctoral candidate at Pepperdine University in the Educational Leadership Administration and Policy Graduate Program. In partial fulfillment of my dissertation requirement I will be completing a research study under the supervision of Dr. Molly McCabe.

I am requesting your support and cooperation in completing my dissertation research. The title of my study is *Teacher Leadership Practices, Supports And Challenges In Implementation of The Common Core High School Math Standards*. The purpose of my qualitative study is to better understand the teacher leaders' perceptions of their practices, supports, and challenges in implementing the high school math Common Core State Standards using content teams. Your school district was chosen because you have the unique qualification of teachers working in content teams with teacher leaders to implement the CCSSM curriculum. My research review has found that collaborative teams help in enacting and sustaining reform initiatives and expert teachers help to influence the change. My goal is to add to the body of research about the use of teacher leaders specifically at the high school level and how the leadership is distributed between the teachers and the administrators. There are very few studies that have documented the teacher leaders' practices, supports, and challenges in math reform initiatives. The findings from this study could help in the implement of future reform initiatives.

I am requesting to interview the nine teacher leaders of your high school math content teams. This phenomenological study will consist of an initial email or phone call conversation with the math teacher, inviting them to participate. After the teacher has agreed to participate they will be emailed the consent form and some demographic questions. Once consent is given, I will contact them for a tape-recorded semi-structured one-on-one interview or phone interview. The interview questions will be emailed to the participants before the interviews so they have time to think about their experiences. The interviews will last from 30 to 60 minutes after the contracted time and will be completed off site. The only risk to the volunteers would be loss of time or

fatigue from answering the questions. The teacher leaders who volunteer to participate in this study will be informed first that refusing to participate would not in any way affect their job status and that they will be given no compensation. The volunteer participants would also be informed that they may opt out of answering any or all questions and that they can withdraw from the study at any time. To protect the participants' privacy, pseudonyms will be used for all interviewees and the school sites. Any and all identifying information in my notes or correspondence will be completely removed prior to publication. All notes, transcripts, tapes, and thumb drives will be stored in a locked container with access only by the researcher. The computer used by the researcher is password protected. The transcripts of the interviews will be sent to the interviewees for confirmation of accurate information before analysis.

If you agree to consent to the participation of your teacher leaders in this qualitative research study, please sign below and return by scanning and emailing or faxing this letter. Please feel free to contact me at any time if you have questions concerning this request. I can be reached at [REDACTED] or by email at [REDACTED]. You may also contact my dissertation chair at Molly.Mccabe@pepperdine.edu.

I appreciate and thank you for your time and support.

Sincerely,

*Shelley Klein (electronic)*

Shelley Klein

Pepperdine University

Graduate School of Education and Psychology

6100 Center Drive

Los Angeles, CA 90045

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*I consent for math team teacher leaders within the [REDACTED] to participate in the study by meeting with the researcher by email or telephone for an initial screening and in-person or on the phone for an individual interview session. I understand that all responses, schools, and the school district will remain confidential through the use of pseudonyms. I understand that the purpose of the study is to further the research of teacher leaders practices, supports and challenges in the implementation of the CCSS in high school math in content teams.*

\_\_\_\_\_  
Superintendent/Assistant Superintendent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Person obtaining consent

\_\_\_\_\_  
Date

*Note: The participant will receive a copy of this letter for his/her information and the researcher will keep a signed copy in her files. Please scan and email or fax this completed form to email [REDACTED] or fax it to [REDACTED] with Attention: Shelley Klein.*

## APPENDIX D

## Email Invitation for Research Participation

*Shelley Klein Researcher: Teacher Leadership Practices, Supports and Challenges in the Implementing the Common Core High School Math Standards*

Dear Teacher Leader,

My name is Shelley Klein and I am a doctoral student at Pepperdine University. I am inviting you to participate in a research project conducted as part of my requirements for a doctorate degree. Your site principal has already given consent to recruit you for this study. I am very interested in how new reforms and curriculums are implemented, especially in high school math. For this qualitative study I will gather data from teacher leaders by conducting multiple interviews in order to examine the practices, supports and challenges of high school math teacher leaders in implementing the Common Core State Standards in math content teams. The course instructor supervising my research is Dr. Molly McCabe.

The purpose of this phenomenological study is to examine the shared experiences of high school math teacher leaders in the CCSS math curriculum implementation in content teams. All information obtained will be treated confidentially.

For this project, you will be asked to answer a few broad interview questions. The entire interview should take between 30 to 60 minutes. This may be done in-person or by phone, after work hours. I will tape record the interview for accuracy, but at any point, you may ask me to turn off the tape or refuse to answer a question. You may stop the interview at any time. After the tape has been transcribed, you will be sent a copy of the transcript to review for accuracy. The tape, transcripts and flash-drive will then be stored in a locked cabinet for five years and then destroyed. You will be assigned a pseudonym to protect your identity. As a token of my appreciation, teachers who participate will be remunerated with a \$10 gift card to Starbucks. The risks are the time you will give to the interview and possible fatigue. The findings of this research will add to the body of knowledge about implementing math reforms at the high school level and may help in future reform implementations. I will be happy to share the summary of my results if you are interested.

Your job status will not be affected by refusal to participate and you are free to withdraw your participation at any time should you decide to do so. Your participation is voluntary. All data will be accessible by my dissertation committee and myself. No identifying names of people or sites will be used for my dissertation and any future publications. This research protocol has been approved by the Pepperdine University Internal Review Board. If you have any questions or concerns, feel free to contact me at [sklein@smjUSD.org](mailto:sklein@smjUSD.org). I hope you will enjoy this opportunity. Thank you for your help. For questions about your rights, please call or write [Molly.McCabe@pepperdine.edu](mailto:Molly.McCabe@pepperdine.edu) or Dr. Thema Bryant-Davis, Chairperson of the GPS IRB at Pepperdine University at [gpsirb@pepperdine.edu](mailto:gpsirb@pepperdine.edu) or 310-568-5753.

Sincerely,  
Shelley Klein, Doctoral Candidate



## APPENDIX E

## Follow up Email for Participants

Dear Participant,

I recently sent you an email asking for your participation in a research study to help me better understand the practices, supports and challenges of teacher leaders working in content teams to implement the CCSS in high school math.

I understand that teacher's time is valuable and that we are very busy. This email is a reminder, if you have chosen to participate in this research study, to send me the best time to contact you in order to arrange a convenient time for your one-on-on interview.

Thank you for your consideration and your support.

Sincerely,

Shelley Klein  
Pepperdine University  
Graduate School of Education and Psychology  
6100 Center Drive  
Los Angeles, CA 90045  


## APPENDIX F

## Letter of Informed Consent

Please read this consent document carefully before you decide to participate in this study.

**Purpose of the research study:**

The purpose of this study is to describe the experiences of Southern California high school math teacher leaders as they work with their content teams to implement the CCSS math curriculum, instruction and assessments, specifically (1) the leadership practices used, (2) the challenges encountered, and (3) the supports they experienced or (4) may need. This proposed research study is being conducted in partial fulfillment for the requirements of a doctoral dissertation at Pepperdine University. The lead investigator conducting this proposed research study is Shelley Fetterolf-Klein who is in Pepperdine's GSEP Educational Leadership and Policy program. The study is being faculty supervised by Dr. Molly McCabe.

**What you will be asked to do in the study:**

Each participant will be asked 4 broad semi-structured questions in an interview. All interviews will be audio (voice) recorded. It is okay if you are unable or chose not to answer every question in the interview.

**Time required:**

The interview may take from thirty to sixty minutes.

**Compensation:**

There will be a \$10 Starbucks gift card for the teacher leaders volunteering to participate in this study.

**Confidentiality:**

Your identity will be kept confidential to the extent provided by law. Your name will not be used in any report, you will be given a pseudonym and your responses will be kept confidential. Your school site and school district will also be given a pseudonym.

**Recording:**

All interviews will be audio recorded. The tapes will be disposed of three years after completion of the study; all recordings will be deleted and thus destroyed.

**Data Security:**

All forms and notes including a flash drive, containing a participant's name will be secured in a locked file drawer at the researchers home. Only the researcher will have a key to this secured locked file drawer. Additionally, only the researcher will have the personal computer identification code to access the transcripts of the interviews. This code will also be kept in the secured locked file drawer. After five years all paper files and notes will be destroyed through shredding services. All electronic files will be deleted after five years. The tape recordings and flash-drive will be destroyed.

**Voluntary participation:**

Your participation in this study is completely voluntary. There is no penalty for not participating. Your job standing will not be affected by refusal to participate or from withdrawing from this study.

**Right to withdraw from the study:**

You have the right to withdraw from the study at anytime without consequence.

**Additional Information:**

The only foreseeable risk associated with participation in this study is the amount of time involved in participating in the interview and possible fatigue. The researcher does not have a supervisory or evaluative role and does not work in the same district as the participants.

**Benefits:**

The benefits of this proposed research study are educational in nature most likely adding to the body of literature regarding this topic. There are no direct benefits to the participants involved in this proposed research study. You may request a summary of the results of the findings.

**Agreement:**

I have read the procedure described above. I voluntarily agree to participate in the procedures and I have received a copy of this description.

Participant: \_\_\_\_\_ Date: \_\_\_\_\_

Lead Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

**Contact Information**

Lead investigator: Shelley Klein Email: [REDACTED]

Faculty Supervisor: Dr. Molly McCabe Email: Molly.McCabe@pepperdine.edu

If I have questions about my rights as a research participant, I may contact Dr. Thema Bryant-Davis, Chairperson of the GPS IRB at Pepperdine University at [gpsirb@pepperdine.edu](mailto:gpsirb@pepperdine.edu) or 310-568-5753.

## APPENDIX G

## Participant Experiences Questionnaire

Review of research and consent completed through email or a phone call.

Thank you for taking the time to complete this questionnaire. You may stop taking the questionnaire at any time.

1. How many years have you been a math teacher? At this school site? Include this year, please. What math classes do you teach?
2. What degrees and credentials do you hold?
3. How long have you been teaching the classes/content area you are leading?
4. What experience and/or trainings have you attended to help you facilitate your content team?
5. What staff developments, trainings or experiences in leading a department or committee have you experienced?
6. Describe, if any, PLC, decision-making or collaboration experiences (classes, books read) or trainings you have experienced?
7. Do you wish to receive a copy of the findings from this study?
8. Do you have any questions about the study? The informed consent form?
9. When would be good time and place for us to meet and complete the research questions? If that is not possible, when would you have between 30 – 60 minutes to complete the questions through a phone call? The best number to reach you is\_\_\_\_\_.

Thank you for agreeing to participate in this study. I will email you the questions this week.

Your role as a participant, including the requirements, rights, risks, and benefits are stated in the

participant letter dated \_\_\_\_\_. If you have any questions, please feel free to contact me. My phone number is \_\_\_\_\_ or email me at \_\_\_\_\_.

## APPENDIX H

## Protocol for Interviews

Research Area:		
Researcher:		
Location:		
Date:	Start:	End:

Hi,

I am studying teacher leaders for my dissertation. I will be asking you questions to help me understand what practices are being used, what supports you have experienced and what challenges you have encountered. If you feel comfortable, may I record our interview? This will take approximately thirty to sixty minutes. Once this data is coded, the original will be destroyed in order to maintain confidentiality. All identifying information will be stored in a locked file and you will be given a pseudonym. You may stop the interview at any time and you do not have to answer every question. Do you have any questions?

My positionality:

I have taught math at a Southern California high school for 22 years. I have attended many framework trainings and implemented many new curriculums since receiving my teaching credential in 1986. I have attended trainings in the Common Core state standards in geometry and statistics. The training began during the summer with fellow teachers from my site in geometry and other sites in statistics and continued with a few days of trainings during the school year. This year I am working with my department chair to help implement the Common Core state standards for geometry. I am very interested in the practices, supports and challenges experienced by teacher leaders as they implement the new curriculum.

Main Questions	Probing Questions	Notes
<p>I. From your perspective as a teacher leader, how might you describe the leadership practices you experienced that have been most helpful in setting the direction with your math content team in the implementation of the Common Core high school math standards into their curriculum?</p> <p>1. Describe your experiences in facilitating setting the direction with your team members through this implementation process.</p> <p>2. Describe your experiences in facilitating the development of positive relationships with your team members through this implementation process.</p>	<p>Reflect on your work as a teacher leader working to adapt the common core curriculum.</p> <p>1. How did you, if you did, facilitate your team in establishing a vision for implementing the CCSSM?</p> <ul style="list-style-type: none"> <li>• Understanding the need for this change?</li> <li>• Establishing and embracing your content team goals with your team?</li> <li>• Establishing the meeting norms with your team?</li> </ul> <p>More probing questions include:</p> <ul style="list-style-type: none"> <li>• Describe how you build and promote an instructional vision among your team?</li> </ul> <p>2. How did you, if you did, facilitate establishing trust within your team?</p> <ul style="list-style-type: none"> <li>• Establishing communication within your team?</li> </ul> <p>More probing questions include:</p> <ul style="list-style-type: none"> <li>• Describe how you promote trust, communication, and</li> </ul>	

Main Questions	Probing Questions	Notes
<p>3. Describe your experiences in facilitating the development of collaborative work groups with your team members through this implementation process.</p> <p>4. Describe your experiences in facilitating the development of monitoring your progress with your team members through this implementation process.</p> <p>II. From your perspective</p>	<p>relationships within your team?</p> <p>3a. How did you, if you did, facilitate establishing collaboration within your team?</p> <ul style="list-style-type: none"> <li>• Sharing of ideas and practices within your team?</li> <li>• Collaborative problem solving within your team?</li> </ul> <p>More probing questions include:</p> <ul style="list-style-type: none"> <li>• Describe how you built collaboration among your team members?</li> <li>• Describe how you give support to teacher development and learning with your team?</li> <li>• Describe how you dealt with conflicts.</li> </ul> <p>4. How did you, if you did, facilitate the collection of data and/or information and/or research within your team?</p> <ul style="list-style-type: none"> <li>• Sharing and analyzing of data within your team?</li> <li>• Giving and receiving of feedback within your team?</li> </ul> <p>More probing questions include:</p> <ul style="list-style-type: none"> <li>• Describe how you monitor this change/innovation with your team?</li> <li>• Describe how you shared results.</li> </ul>	

Main Questions	Probing Questions	Notes
<p>as a teacher leader, how might you describe your perceived supports from both your site and district administrations and from your content team members that you have received during the first year of implementation of the Common Core high school math standards into their curriculum?</p> <p>1. In reflecting on your past experiences, leading your team to adapting the common core curriculum, what leadership support from site and district administration assisted you in this process?</p> <p>2. In reflecting on your past experiences, describe what future leadership support from site and district administration you would need to assist you in this implementation process?</p>	<p>1a. How did your site administration support you in developing your leadership skills with your team including how they distributed leadership?</p> <ul style="list-style-type: none"> <li>• District administration support?</li> </ul> <p>1b. How did you support and share leadership with your team?</p> <p>2a. What supports from your district administration or site administration do you perceive to need in developing your leadership skills with your team?</p> <p>2b. What supports from your team members do you perceive to need in developing your leadership skills with your team?</p> <p>Probing questions:</p> <ul style="list-style-type: none"> <li>• How did your site administration support the process?</li> <li>• How did your district administration support the</li> </ul>	

Main Questions	Probing Questions	Notes
<p>3. In reflecting on your past experiences, what time support from site and district administration assisted you in this process?</p> <p>4. In reflecting on your past experiences, what future time support from site and district administration you would need to assist you in this implementation process?</p> <p>5. In reflecting on your past experiences, what resources and materials supports from site and district administration assisted you in this process?</p> <p>6. In reflecting on your past experiences, describe what future resources and materials supports from site and district</p>	<p>process?</p> <p>3a. How did your site and district administrations support you and your team with meeting and/or collaboration time?</p> <ul style="list-style-type: none"> <li>• With professional development time?</li> </ul> <p>4a. What time supports for meeting and/or collaboration do you perceive to need from your site or district administration?</p> <p>4b. What time supports for professional development do you perceive to need from your site or district administration?</p> <p>More probing questions include:</p> <ul style="list-style-type: none"> <li>• What resources (time, training, materials, assistance) helped with the adaptive process?</li> <li>• Think about developing the curriculum.</li> <li>• Think about developing the assessments.</li> </ul> <p>5. How did your site and district administrations support you with resources and materials?</p> <p>6. What resources and material supports from your site and district administrations do you perceive to need?</p>	

Main Questions	Probing Questions	Notes
<p>administration you would need to assist you in this implementation process?</p> <p>7. In reflecting on your past experiences, what supports in developing or redesigning systems, procedures and professional development structures from site and district administration assisted you in this process?</p> <p>8. In reflecting on your past experiences, describe what future supports in developing or redesigning systems, procedures and professional development structures from site and district administration you would need to assist you in this implementation process?</p> <p>III. In reflecting on your past experiences of leading your team to adapting the common core high school math standards with your math content teams, from your</p>	<p>More probing questions:</p> <ul style="list-style-type: none"> <li>• What resources would help with the adaptive process?</li> <li>• Curriculum, technology, supplies</li> </ul> <p>7. How did your site and district administrations support you in developing or redesigning systems, procedures and professional development structures in this implementation process?</p> <p>8. What supports in developing or redesigning systems, procedures and professional development structures, support from both site and district administrations do you perceive to need that would help?</p> <p>More probing questions:</p> <ul style="list-style-type: none"> <li>• How could your site administration support the process?</li> <li>• Policy, procedures or structures?</li> <li>• How could your district administration support the process?</li> <li>• Policy, procedures or structures?</li> </ul>	

Main Questions	Probing Questions	Notes
<p>perspective, how might you describe the challenges you have encountered during your first year of implementation?</p> <p>1.As you think back on your common core teacher leader work, what would you identify as the most significant collaboration challenges you have encountered?</p> <p>2.As you think back on your common core teacher leader work, what would you identify as the most significant leadership challenges you have encountered?</p> <p>3.As you think back on your common core</p>	<p>1. How did you facilitate conflicts with your team?</p> <ul style="list-style-type: none"> <li>• Within your team?</li> <li>• Challenges of privacy versus collaboration within your team?</li> </ul> <p>More probing questions:</p> <ul style="list-style-type: none"> <li>• Think about developing the curriculum.</li> <li>• Think about developing the assessments.</li> <li>• Think about dealing with conflicts.</li> <li>• Think about sharing results.</li> </ul> <p>2. What leadership challenges did you experience with your team?</p> <ul style="list-style-type: none"> <li>• With your district or site administration?</li> </ul> <p>More probing questions:</p> <ul style="list-style-type: none"> <li>• Think about your role and function.</li> <li>• Think about your relationship with the site and district administration.</li> <li>• Think about your sites authority or hierarchy.</li> </ul> <p>3. What perceived challenges in developing or redesigning</p>	

Main Questions	Probing Questions	Notes
<p>teacher leader work, what would you identify as the most significant system, procedures, policy challenges you have encountered?</p>	<p>systems, procedures and professional development structures from both site and district administrations have the southern California math teacher leaders experienced in the implementation process?</p> <p>More probing questions:</p> <ul style="list-style-type: none"> <li>• Think about current systems, procedures and policies.</li> <li>• Think about staff development needs.</li> </ul>	

Thank you for your time and honesty.