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A TEACHER LEADERSHIP DEVELOPMENT PROGRAM CASE STUDY

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EMPOWERING SOLUTIONEERS:
A TEACHER LEADERSHIP DEVELOPMENT PROGRAM CASE STUDY

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ABSTRACT

Teacher leadership has been a prominent feature of school reform in the United States for nearly three decades. During this time, researchers have identified numerous benefits teacher leaders bring to their school and communities, yet few studies have focused on how teacher leaders are developed or how professional development should be designed to support them. This case study seeks to reveal how one teacher leadership development program affects teacher leaders by addressing two research questions: 1) How does participation in OKMath/OKSci Leadership change a teacher leader's professional practice? and 2) How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice? The data for this case study were gathered from participant's program application responses, from semi-structured interviews with program participants, and from program planning materials. Triangulation of the data revealed seven effects of participation on professional practice: Empowerment, growth, connections, inquiry, support, confidence, and change. These effects were culled from participant interviews which described experiences with specific program features including inquiry experiences, leadership development, opportunities to connect, problem-solving strategies, reflection, mentoring, and a capstone project. The data indicate that teacher leaders benefit significantly from the opportunities to connect with other teacher leaders in settings outside their school contexts.

Keywords: Teacher leader, teacher leadership, professional development program, communities of practice, and teacher network.

DEDICATION

This work is dedicated to

My parents, Hugh and Sharon

My husband, Kris

My sons, Brandon & Harrison

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This journey has been a true adventure, the path of which I could not have predicted, made crazier yet with its conclusion during a global pandemic. I am grateful to everyone who provided guidance and encouragement along the way.

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CHAPTER ONE

Introduction

For the past thirty years, teacher leadership has been an established feature of school reform in the United States. McBee (2014) notes since teacher leaders “play a critical role in moving change initiatives forward successfully, and in strengthening teaching and learning generally, it is incumbent on the education profession to find ways to develop greater leadership skills on the part of more teachers” (p. 19). Teacher leadership “enhances teachers’ status, builds their leadership skills, improves and corroborates their professional knowledge, and enhances their motivation and intellectual stimulation” (Ross, et al., 2011, p. 1213). Nearly two decades ago, Barth (2001) made the case for expanding teacher leadership saying, “All teachers have the capacity to lead their schools down a more productive path, to enlist their abundant experience and craft knowledge in the service of school improvement” (p. 244). Since then, education leaders across the United States have advocated for policies at the federal, state, and local levels supporting the spread of teacher leadership, but it has yet to take hold in a strategic or systemic way (Coggins & McGovern, 2014).

Problem Statement

Teacher leadership is considered a crucial component for effective teaching and learning (Lieberman & Miller, 2004). Yet, after decades of research, there is little information available on the process of teacher leadership development and how professional development might best be designed to support it (Sinha & Hanuscin, 2017). Further, Wenner and Campbell (2017) insist there is a need for future research “to better

understand how climates can be constructed to reimagine the egalitarian norms associated with teaching or to reframe the work of teachers such that the role of a leader is seen not as a hierarchal position, but instead seen as a mechanism for putting everyone in place to take advantage of the skills and commitments teachers possess” (p. 163).

Purpose of the Study

This case study aims to reveal effective features of OKMath/OKSci Leadership, a Teacher Leadership development program, by studying its “intentional, systematic, and systemic development of teachers’ capacity for leadership and teachers’ leadership practice” as called for by Smylie and Eckert (2018, p. 557). Documenting how teacher leaders perceive their experiences in this sustained leadership development program will contribute to the literature by identifying specific program features which influence teacher leaders’ professional practice, leader development, and leadership practice. Through this case study, the researcher will seek to answer following research questions:

-How does participation in OKMath/OKSci Leadership change a teacher leader’s professional practice?

-How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice?

Background

Teacher Leadership (TL) is rooted in the education reform initiatives of the 1980s (York-Barr & Duke, 2004). During these years, the teaching profession faced a variety of threats, from concerns about the status and health of teaching as a career option (Sykes, 1990), to how the culture of isolation diminished teacher growth and professionalism

(Talbert & McLaughlin, 1994). The goal was to overcome these threats by creating opportunities through TL “to increase the status and rewards of teaching to attract and retain intellectually talented individuals, to promote teaching excellence through continuous improvement, to validate teacher knowledge about effective educational practices, and to increase teacher participation in decision making about classroom and organizational issues” (York-Barr & Duke, 2004, p. 256).

In 1996, The National Commission on Teaching and America’s Future focused on raising the professionalism of teaching and encouraged rewarding career-long development through performance-based compensation systems. Later the same year, the Council of Chief State School Officers’ Leaders Licensure Consortium, created standards for school leaders which outlined a collaborative approach to school leadership. These actions transformed how schools operated and led to teacher leadership becoming a support of accountability mechanisms in the early 2000s (Wenner & Campbell, 2017). The creation of teacher leaders became

driven...by the urgent need for expertise to expand instructional capacity within schools. School officiation seeking to substantially increase students’ performance on annual assessments have appointed teachers to serve as instructional coaches, curriculum writers, professional developers, and data analysts (Donaldson et al., 2008, p. 1090).

In 2011, The Teacher Leadership Exploratory Consortium released Teacher Leader Model (TLM) Standards (<http://www.teacherleaderstandards.org>) designed to guide teacher leader preparation, policy, and practice. Under these standards, a teacher leader displays outstanding knowledge and behaviors in the following domains:

- Domain I: Fostering a collaborative culture to support educator development and student learning

- Domain II: Accessing and using research to improve practice and student learning
- Domain III: Promoting professional learning for continuous improvement
- Domain IV: Facilitating improvements in instruction and student learning
- Domain V: Promoting the use of assessments and data for school and district improvement
- Domain VI: Improving outreach and collaboration with families and communities
- Domain VII: Advocating for student learning and the profession

The standards were developed to “stimulate dialogue among stakeholders” about effective TL to “support good teaching and promote student learning” (p.3). The document also included narrative descriptions of TL policy and practice.

In recent years, as TL opportunities expanded, TL began to appear as an element in formal teacher evaluations. One example, The Framework for Teaching Evaluation Instrument (Danielson, 2013) includes a component, 4d, *Participating in the Professional Community* which delineates a Distinguished teacher will

[assume] leadership among the faculty. The teacher takes a leadership role in promoting a culture of professional inquiry. The teacher volunteers to participate in school events and district projects, making a significant contribution and assuming a leadership role in at least one aspect of school district life. (p. 71)

In 2014, the National Education Association along with the Center for Teacher Quality and the National Board for Professional Teaching Standards, launched the Teacher Leadership Initiative. Its purpose was to develop a cadre of new leaders within the profession by “working to define foundational competencies of teacher leadership, developing relevant experiences, and mobilizing teachers to be leaders within their profession (Wenner & Campbell, 2017, p. 135). The following year, U.S. Secretary of Education Arne Duncan, with the help of the National Board for Professional Teaching Standards, launched a new initiative, “Teach to Lead.” The vision of the organization

included “a world in which teachers are valued as foremost experts in instruction, and as such, are leaders of informing, developing, and implementing educational policy and practice to steer systemic improvements to benefit student learning” (TeachtoLead.org). As TL has increased in popularity, university programs, specialized certificates, and endorsements in TL have also increased across the country. Despite the rise in popularity of such programs, however, research on TL has not kept pace.

In 2004, York-Barr and Duke synthesized teacher leadership research from the previous two decades and sought to answer seven questions: Why focus on teacher leadership; how is teacher leadership defined; what do teacher leaders do; who are teacher leaders; what conditions influence teacher leadership; how are teacher leaders prepared to lead; and what are the effects of teacher leadership? Thirteen years later, Wenner and Campbell (2017) examined TL research completed since the work of York-Barr and Duke (2004), and revisited several questions including how teacher leadership is defined, how teacher leaders are prepared, their impact, and what factors facilitate or inhibit teacher leaders’ work. Wenner and Campbell also considered theories which informed TL, looked at TL within disciplinary contexts, and examined the roles of teacher leaders in social justice and equity issues. The findings of both the York-Barr and Duke (2004) and Wenner and Campbell (2017) studies are outlined in detail in Chapter 2.

Teacher Leadership is important because teacher leaders can have a significant effect on a school’s success by using teacher influence to improve student achievement and germinate a collaborative and healthy school climate (Derrington & Angelle, 2013). Barth (2001) notes teacher leaders serve as role models for not only their students, but also their

colleagues, and the more opportunities teachers have in making decisions for the school, the higher faculty morale. When teachers are empowered to lead alongside the principal, collegiality and active participation in schools improves (Derrington and Angelle, 2013).

How can teacher leaders be effectively and efficiently developed, especially given the contextual features of their schools which often inhibit leadership growth? The answer may be found in a state-wide leadership program, operated independently from individual school districts and school sites, with a focus on enhancing teachers' capacity for leadership roles and improving instructional practices.

Context

OK Math/Science Leadership (*OKLeadership*) was a professional development program born of a desire to grow a cadre of teacher leaders specializing in mathematics and science instruction. The program's vision was to create space and time for teachers to see themselves as agents of change in the state. These teacher leaders learned to identify problems related to professional practice and then imagine and carry out solutions to those problems all while strengthening their leadership and communication skills. Teachers who live the critical issues facing education in their work each day are aptly situated to name those issues and then resolve them, far more so than the elected officials, central office staff, or even community members who purport to do so. Growing teacher leaders in these content areas supported standards development and implementation, as well as the spread of effective pedagogical practice and inquiry by those best able to influence positive change in their classrooms and beyond by sharing best practices with colleagues across the state and nation.

After participating in *OKLeadership*, cohort members often shared stories of feeling empowered to work for additional changes in their professional spheres of influence. They sought new leadership roles in their districts and content organizations and continued to influence the development of new curriculum standards and pedagogical practices. This study seeks to understand the influence of *OKLeadership* participation on these teachers' professional and leadership practices.

Definitions

While definitions vary greatly across studies, I have adopted the following definitions for use in this case study:

Community of Practice is a group of people "who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott, & Snyder, 2002, p. 4).

Teacher Leader is "a teacher who maintains K-12 classroom-based teaching responsibilities, while also taking on leadership responsibilities outside the classroom" (Wenner & Campbell, 2017, p. 140).

Teacher Leadership is "the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement" (York-Barr and Duke, 2004: 287-288).

Teacher network is a group of "teachers organized for purposes related to teacher learning, inquiry, support, or school improvement" (Niesz, 2007, p. 605).

Professional development program is “teacher learning that takes place within the context of a professional community that is nurtured and developed from both inside and outside school” (National Science Foundation, 1995, p. 75).

Overview of Theoretical Framework

Several theoretical perspectives frame this study: Social cognitive theory, communities of practice, and teacher networks. However, teacher leadership and professional learning are the central phenomenon of the study through which the theories intertwine and interact. Each are reviewed at length in Chapter 2 of this study.

Overview of Methodology

I selected to conduct a case study on OKMath/OKSci Leadership because I am interested in learning from participants their experiences of the program and how they perceive its impact on their professional and leadership practices. For this reason, I have adopted a constructivist orientation. As a prominent case study methodologist, Sharan Merriam (1998) notes, “the key philosophical assumption upon which all types of qualitative research are based is the view that reality is constructed by individuals interacting with their social worlds (Merriam, 1998, p. 6). Multiple interpretations occur with this approach as Merriam explains:

The researcher brings construction of reality to the research situation, which interacts with other people’s constructions or interpretations of the phenomenon being studied. The final product of this type of study is yet another interpretation by the researcher of others’ views filtered through his or her own. (Merriam, 1998, p. 22)

Further, according to Anderson (2010), “Qualitative research can sometimes provide a better understanding of the nature of educational problems and thus add to insights into

teaching and learning in a number of contexts.” Because I was a participant in *OKLeadership’s* Beta Class, I bring a unique filter to the case an outside researcher could not bring. I am not only familiar with *OKLeadership’s* program components and structure, but also with its facilitators and mentors.

Three types of data will be collected in the study: program application responses, participant interviews, and program planning documents. Semi-structured interviews (Magnusson and Marecek, 2015) with open-ended questions will serve as the primary source of data and consist of formal, face-to-face interviews. Program application responses from participants and program planning documents from facilitators will provide additional evidentiary material. Through analysis and triangulation, I will seek answers to my research questions:

-How does participation in OKMath/OKSci Leadership change a teacher leader’s professional practice?

-How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and Leadership practice?

Summary

Teacher leaders are an important resource for school improvement as they often set the standard for other teachers in their quest for effective learning and academic growth. Research regarding teacher leadership points to numerous positive effects outside instruction including greater job satisfaction (Johnson & Landman, 2000), improved trust and collaborative culture through shared decision making (Harris, 2005; York-Barr & Duke, 2004), and improved teacher retention rates (Ingersoll, 2001).

The purpose of this study is to determine how participation in *OKLeadership* changes teacher leaders' professional practice and contributes to leadership development and practice. Through a case study approach, I aim to identify specific program attributes participants cite as primary contributors to professional change which may indicate ways in which teacher leadership can be enhanced through professional learning. A review of the related literature in Chapter 2 will provide a foundation on which this study was built.

Organization of the Study

This case study will be organized by chapter. Chapter 2 will provide a literature review of relevant research including an overview of the theoretical perspectives which frame this study including social cognitive theory, communities of practice, and teacher networks. The research related to teacher leadership and professional learning, as central phenomenon of the study through which the theories intertwine and interact, will also be summarized.

Chapter 3 will describe the methodology for this case study which analyzes three data sources including program applications, semi-structured interview transcripts, and program planning documents. Chapter 4 will present the findings and will explore the major concepts and categories which emerged. In Chapter 5, the findings will be interpreted through the lens of current teacher leadership literature and the research questions will be addressed. The chapter will conclude with the implications and recommendations for future studies.

CHAPTER TWO

Literature Review

In this chapter, I will review the literature related to my topic including several theoretical perspectives, three of which frame this study: Social cognitive theory, communities of practice, and teacher networks. However, professional development and teacher leadership are the central phenomena of the study, so they will also be explored.

From a theoretical perspective, social cognitive theory plays an essential role in this study. It was the intent of those coordinating the *OKLeadership* program that teacher leaders would learn not only from program participation, but also from the interactions with other *OKLeadership* participants. As this learning occurred, teacher leaders exchanged ideas and experiences and reflected on their own professional capabilities. Then, over the course of the program, teacher leaders developed communities of practice where they were focused on addressing specific troublesome issues they identified affecting their schools and/or students. Collectively, teacher leaders engaged in collaborative networks, both during their time in *OKLeadership* and once their program year ended.

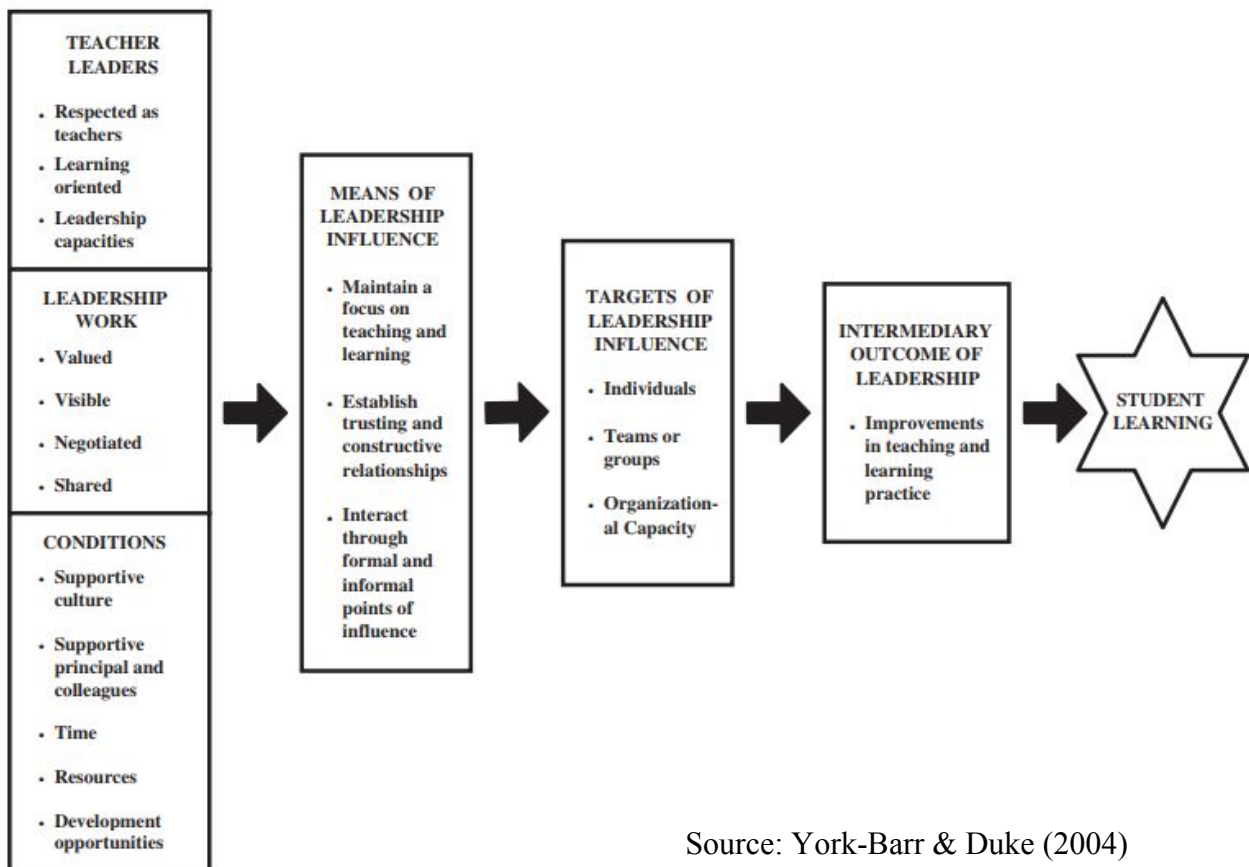
Teacher Leadership

Teacher leadership (TL) in recent years has become an increasingly popular subject among policymakers and educational organizations as an essential component of school reform in the United States (Wenner & Campbell, 2017). Prior to 1980, the concept of teacher leadership was generally studied within the scope of teachers' instructional practices including how teachers responded to students and how they led their classrooms

(Bossert, 1977, Larkin, 1973). In 2004, York-Barr and Duke conducted their review of extant TL literature from 1980 to 2004 where they sought to answer, “What is known about teacher leadership?” They also created a conceptual framework (see Fig. 1) grounded in the findings from their literature review. Creating a framework for TL was called for more than twenty-five years ago when Yarger and Lee (1994) articulated “in the absence of conceptual frameworks for guiding program development and evaluation, teacher leadership programs will continue to be sporadic, idiosyncratic events” (p. 235).

Figure 1

Teacher Leadership for Student Learning: Conceptual framework



for TL programs in colleges and universities. This conceptual framework includes key features of TL and denotes a path in which TL impacts student learning. Of the seven major components, three serve as the foundation and include the characteristics of TL, the type of leadership work engaged in by teacher leaders, and the conditions which support the work of teacher leaders (p. 289). The next three components suggest the pathway to affect student learning. “These components identify the means by which teachers lead, the target of their leadership influence, and the intermediary outcomes of changes in teaching and learning practices” (p. 289). These eventually lead to the last component, student learning, thereby completing the theory of action. This conceptual framework was the first to show a direct path from teacher leadership to student learning.

Following the work of York-Barr & Duke, from 2004 to 2017, no comprehensive literature review of empirical research on TL was conducted due to “tremendous shifts in policy and other influences” (Wenner & Campbell, 2017, p. 135). Whole school reform in the late-1980s to the mid-1990s produced new definitions of leadership as schools put a new emphasis on leadership as part of school reform (Little, 2003). By the late 1990’s, “policy and reform conditions in the USA had shifted dramatically as ‘high stakes accountability’ took hold” (Little, 2003, p. 401). Teachers were recruited into leadership positions by district and site administration to meet the requirements of external accountability such as instructional coaches or curriculum coordinators.

In 2017, Wenner and Campbell in their TL literature review, sought to examine teacher leadership research published from 2004-2013 to reveal how TL is now defined,

how teacher leaders are prepared, their impact, and those factors which facilitate or inhibit teacher leaders' work. The researchers created very specific criteria for their review which included "high quality empirical research that truly focused on teacher leadership (i.e., only teacher leaders, peer reviewed, teacher leadership central to research)" (Wenner & Campbell, 2017, p. 141). As a result, their review included 54 pieces of literature which met this criteria. Thirty-three of these studies relied on theory to support the research, "deploying 25 different theoretical frameworks, further underscoring the continued lack of shared foundation in this field of study" (Berg & Zoellick, p. 3, 2019).

Defining Teacher Leadership

While the concept of TL has never been clearly or consistently defined, (York-Barr & Duke, 2004) hundreds of studies over the past four decades have produced numerous unique definitions. In their literature review, Wenner & Campbell (2017) extracted five general themes from the various definitions: TL goes beyond the classroom walls, teacher leaders should support professional learning in their schools, teacher leaders should be involved in policy and/or decision making at some level, the ultimate goal of TL is improving student learning and success, and teacher leaders work toward improvement and change for the whole school organization (p. 146). Wenner & Campbell choose to define teacher leaders as "teachers who maintain K-12 classroom-based teaching responsibilities, while also taking on leadership responsibilities outside the classroom" (p. 140). This definition allowed the researchers "to consider teacher leaders as not just influencing individual teachers, but also having the capacity to influence the entire school, community, and profession" (p. 140).

In 2019 a new effort to define and frame teacher leadership emerged. Prompted by the “conceptual ambiguity of the term ‘teacher leadership’,” Berg and Zoellick (2019) proposed a conceptual framework which would “clarify key assumptions” thereby “enabling members of the this research community to better understand and build upon each other’s work and to develop a knowledge base on teacher leadership” (p. 2). The framework was based on the ongoing work of a community of researchers, who starting in 2012, began a conversation about the variety of conceptions of teacher leadership during a roundtable presentation during the annual meeting of the American Educational Research Association (AERA).

This conversation continued and in 2013, a community formed with a mission “to improve teaching and learning by providing an interdisciplinary and collaborative network to support high-quality research which informs policy and practice of teacher leadership and guides efforts to maximize the leadership influence of teachers in education” (Berg & Zoellick, 2019, p. 4). This community continued to meet and sought recognition by the AERA as a ‘special interest group’ or SIG dedicated to the study of teacher leadership. While their SIG proposal was denied, a new section within AERA’s Division K: Teaching and Teacher Education was created. In an effort to broaden resource-sharing and networking, however, the group of researchers decided to create a new scholarly community outside of AERA which became known as the Teacher Leadership Congress (Berg, et al., 2018).

Over the course of four years, the Teacher Leadership Congress continued to meet in conjunction with the annual AERA meetings. Their work each year built from the

previous and sought to not only define teacher leadership, but also to collaborate on shared understandings (Berg, et al. 2018). Topics ranged from teacher leader practices to purpose, preparation, development, and impact. By 2017, the planning team was interested in conducting their meeting as a true ‘congress’. They proposed “to provide time for text-informed deliberations that could lead to resolutions, amendments, even a potential vote on key topics and emerging conceptual models that could be the focus of heightened attention in the year ahead” (Berg, et al, 2018, p. 19). Their proposal was rejected by the participants. Instead, attendees “organized themselves around the four pre-identified caucus topics (definition, development, practice, and impact)” (Berg, et al. 2018, p. 19). They collaborated using established literature and shared their opinions on the relative strengths of each in relation to the topics. Unfortunately, their conversations led to more questions than answers so the group “identified and shared out key themes regarding questions that remained and research that was needed. (Berg, et al., p. 19, 2018).

As in previous years, in 2018, the Teacher Leader Congress split its program into two parts: table discussions and an ‘unconference’, where participants determined the topics. During the table discussion portion, participants heterogeneously organized by table shared their perspectives about teacher leadership through four questions:

- “Who/what legitimizes teacher leaders in your context?
- Who/what motivates and supports teacher leaders in your context?
- What is the purpose/objective of teacher leadership in your context?
- In your context, what methods do teacher leaders use when they work with the colleagues?” (Berg, et al., p. 20, 2018).

These four questions grew from the work of the 2016 Congress where participants identified areas in which their definition of teacher leadership varied (Berg & Zoellick, 2017).

During the five years of meetings conducted by the Teacher Leader Congress, the new Division K of AERA had also been meeting and in 2014, a new subsection, Teacher Leadership: Leading Within and Beyond the Classroom was formed. Its focus was to

[Invite] investigations of teachers who demonstrate leadership, expert knowledge, and advocacy both from within the classroom and/or school settings, as well as beyond individual or local school contexts. This could include examinations into the definition and conceptualization of teacher leadership, the impact of teacher leadership on practice/ curriculum/policy, innovative programs and models that support the identification and development of teacher leaders, case studies of teachers who lead, teacher research, etc. (AERA, 2014).

The new Division K, Section 2 program co-chairs set an explicit goal to “select the largest number of quality papers possible for the annual meeting as a way to bring as many diverse voices as possible into the conversation about teacher leader research” (Berg, et al., p. 21, 2018). The results has been a steady increase over the years of proposals which “represent a range of topics, theoretical frames, and methodologies that showcase the growing sophistication and nuance of research on teacher leadership” (Berg, et al., p. 22, 2018).

The simultaneous birth of these two distinct groups provided teacher leadership researchers with two new opportunities. The AERA sanctioned Division K, Section 2 “serves primarily as a venue for public presentation and critique” while the grassroots organized Teacher Leadership Congress “provides new and expanded opportunities for professional learning and networking “ (Berg, et al., p. 22, 2018). The symbiotic

relationship between the groups has led to “three powerful outcomes: the promotion of new scholarship; the strengthening of the community membership; and the emergence of shared understanding and priorities” (Berg, et al., p. 22, 2018).

Building upon the ongoing work of these two organizations, Berg & Zoellick (2019) hypothesized the existence of four explicit dimensions of teacher leadership. These four dimensions will assist researchers by “enabling fruitful comparisons across studies” (Berg & Zoellick, p. 13, 2019). The dimensions include “source of legitimacy, the support to accomplish the work, the objective of teachers’ influence and the method of influence” (p. 7). Legitimacy refers to how a teacher is able or allowed to influence other teachers. It can emerge from a teacher’s own action (e.g., pursuing a teacher-leader program), assigned from others (e.g., asked to chair a department), or something which emerges over time (e.g., peers recognize the influence of the teacher). The second dimension, support to accomplish the work, refers to how a teacher leader’s actions are supported and by whom. Support can come in a variety of forms including time or compensation, collaborative culture, vision and guidance from a principal, and connection to other teacher leaders outside the school.

The third dimension, the objectives of teacher leadership’s activities, can be focused on a variety of levels from instructional practices in a school to lobbying for educational policies at the state or federal level. Objectives are focused on specific change or improvements. The fourth dimension, method of influence, focuses on how teacher leadership is deployed to achieve the stated objectives. Methods of influence might include facilitating, coaching, advocating, inspiring, negotiating, or connecting. How influence

occurs can be self-determined, assigned by an administrator, or requested by a colleague (Berg & Zoellick, 2019).

Berg and Zoellick (2019) suggest each of these four key dimensions of teacher leadership “should be referenced in an empirically-useful definition” for clarity. The researchers go on to explain

It is hypothesized that clarifying one’s assumptions about each of these dimensions and providing descriptive evidence on how they are instantiated will address the conceptual ambiguity that currently stymies the accumulation of knowledge in the field. (p. 2)

In an effort to address and support this new conceptual framework, evidence for each of the dimensions of teacher leadership provided by *OKLeadership* has been delineated in Chapter 5 of this study.

Preparation of Teacher Leaders

Wenner & Campbell (2017) found in recent years teacher leaders are prepared primarily in two ways, either by professional development or through a university Master’s programs. While the majority of the teacher leadership preparation cited included leadership development components, many also included curriculum, pedagogy, and personalized learning. Taylor et al. (2011) noted,

If teacher leaders are told what to learn, how to learn, and why to learn, their learning is controlled by others and their capacity to lead is stunted. To learn to lead, the teachers must place their own issues and concerns at the center of the learning process, know themselves as learners, reflect on their learning, and share it with others (p. 922).

The research of Taylor et al. (2011) also revealed three significant ways TL are developed and enhanced. These included “identifying and amplifying their professional voice, deepening and extending their voice as they plan, and reframing their work/shift responsibility through constructing widening circles of influence and impact” (p. 920).

Regardless of how teacher leaders were trained, Wenner & Campbell (2017) noted specific effects of teacher leadership on the teachers themselves, which they categorized into four general themes: “the stresses and difficulties, the changing relationships with peers and administration, increased positive feelings and professional growth, and increased leadership capacity” (p.150). Teacher leader stress often arose from balancing the workload of a teacher with the additional responsibilities of a teacher leader. Changes in relationships with colleagues was often negative as “peers resented teacher leaders because it disrupted the egalitarian norms typically seen in school” (Wenner & Campbell, 2017, p. 151). Teacher leaders, however, also reported positive effects, such as feeling more empowered and professionally satisfied.

Wenner & Campbell (2017) also found effects of TL on school colleagues. These effects included “feelings of empowerment for all teachers in a school, colleagues receiving support that is relevant and encourages professional growth, and teacher leadership contributing significantly to school change” (p. 152). Teacher leaders often articulate feeling empowered by taking on additional roles and responsibilities, but research also indicates when a school provides opportunities for TL, all teachers feel empowerment and professionalism (Vernon-Dotson & Floyd, 2012). This is a prime example of social cognitive theory in action, which is outlined below.

Teacher Leadership illuminates this study by revealing both the central sources of TL and the central effects TL has on schools and students. Teachers were selected for participation in the *OKLeadership* program based on their existing and potential leadership

abilities. These abilities were then enhanced over the course of the program through specific activities targeting the development of leadership and problem-solving skills.

Professional Development

Professional Development (PD) is the term used to describe a teacher's professional learning which affects classroom practice. Effective PD is "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes (Darling-Hammond, Hyler, & Gardner, 2017). Historically, PD evolved through several cycles which began with a problem or event "pressured by social, economical, political, or demographic changes in the larger society" (Lieberman & Miller, 2014, p. 40). The first cycle was spurred by the launch of Sputnik by the Soviet Union in 1957. In response, President Eisenhower signed the National Defense and Education Act (NDEA) which was originally intended to improve the quality of teaching in math and science, but later was expanded to other subjects. Under NDEA, "professional development became a tool for national policy" (Long, 2014, p. 27). Teacher institutes were held on university campuses across the nation and were focused on helping teachers have a clear grasp on the content of their respective disciplines. Unfortunately, the General Accounting Office concluded "they [teacher institutes] had no effect on science and math learning" (Michelli & Earley, 2011, p. 9).

The second cycle of PD came as a result of the release of *A Nation at Risk*, published in 1983. This educational report was a response to the threat of the economic growth of Japan. The focus of the report's recommendations was on curriculum reform including expanded coursework, the addition of computer science, stricter requirements for

grade level promotion, career ladders for teachers, and an increase in standardized testing. The report stated, “We call upon university scientists, scholars, and members of professional societies, in collaboration with master teachers, to help with this task, as they did in the post-Sputnik era” (p. 25). During this time, schools “depended on outside experts to conduct workshops for classroom teachers on how to implement practices the report recommended” (Lieberman & Miller, 2014, p. 5).

In 2001, with the passage of No Child Left Behind, PD once again became a focus. The law called for “scientifically based staff development approaches that focused on linking student achievement, teacher knowledge and skills, and standards and assessments” (Lieberman & Miller, 2014, p. 6). The bill’s primary goal was to increase accountability through state-level tests which measured teacher effectiveness and student achievement. Teacher workshops with a training approach became prevalent.

The most recent event causing a surge of PD was the roll-out of the Common Core State Standards (CCSS) in 2014. In 2009, in response to the United States’ standing in international comparison of academic achievement, the National Governor’s Association called for the creation of a common set of learning standards and encouraged state legislatures to adopt them. Since then, 41 states and territories have adopted the CCSS, but nine states, including Oklahoma, elected to design their own state standards. This change in standards led to another wave of training which included workshops and courses for teachers to facilitate the implementation of the new standards.

Each of these four cycles of reform describes PD from a deficit model “based on the assumption that teachers need direct instruction about how to improve their skills and

master new strategies” (Lieberman & Miller, 2014, p. 7). This instruction was originally termed “inservice education,” then changing in the 1970s to “staff development” and “professional development.” In recent years, the term “professional learning” has gained traction as it is “a better descriptor of the kind of staff development that best serves teachers and their students” (Lieberman & Miller, 2014, p. 7). Beatrice Avalos (2011), in her review of teacher professional development publications over the course of ten years notes:

Teacher professional learning is a complex process, which requires cognitive and emotional involvement of teachers individually and collectively, the capacity and willingness to examine where each one stands in terms of convictions and beliefs and the perusal and enactment of appropriate alternatives for improvement or change. (p. 10)

Regardless of the name used, PD has been heavily researched over the past forty years. Many studies have come to consensus about the core features of effective professional development (Desimone, 2011). These include content focus, active learning, coherence, duration, and collective participation (p. 69). Although these five features should be present in PD, they will not guarantee effectiveness. Desimone adds, “to study effectiveness, we need a theory—a conceptual framework—of how professional development works to influence teacher and student outcomes” (2011, p. 70). The model proposed by Desimone combines the core features of effective PD with teacher knowledge and beliefs, classroom practices, and student outcomes into four steps:

1. Teachers experience professional development.
2. The professional development increases teachers’ knowledge and skills, changes their attitudes and beliefs, or both.

3. Teachers use their new knowledge, skills, attitudes, and beliefs to improve the content of their instruction, their approach to pedagogy, or both.
4. Their instructional changes that the teachers introduce to the classroom boost their students' learning. (p. 70)

This proposed framework provides a foundation for studying the effectiveness of PD. It identifies three outcome areas for researchers to study: Teacher learning, changes in teacher practice, and increases in student achievement (Desimone, p. 70).

During the four periods of top-down federal reforms impacting PD described above, other reforms were germinating at the school site level. These new reforms, including “whole school change” and “school restructuring,” linked “changes in teaching to changes in school culture” and involved teachers changing the cultures of both their schools and classrooms through collaborative efforts (Lieberman & Miller, 2014, p. 6). Professional development approaches employed by restructuring schools including “team teaching and planning, curriculum writing and assessment development, peer observation, and teacher study and work groups” (Lieberman & Miller, 2014, p. 7). These reforms empowered teachers to expand their content knowledge and strengthen their professional practice through collaboration with colleagues. Over time, research findings highlighted the importance of professional collaboration within a “growth-in-practice” model (Lieberman & Miller, 2014, p. 9).

This professional learning model is distinguished from inservice training and staff development in a variety of ways ((Lieberman & Miller, 2000, 2007; Little, 2003; McLaughlin & Talbert, 1993; Talbert, 2010). The differences are outlined in Table 1.

Table 1

Important Differences between Professional Learning and Inservice/Staff Development

Professional Learning	Inservice/Staff Development
Steady, intellectual work which promotes meaningful engagement with ideas and colleagues over time	Technical, skills-based work which promotes the application of prescribed skills and occurs in fragmented pieces
Involves teachers in knowledge creation through collaborative inquiry into practice	Involves teachers most often in knowledge consumption through the transfer of knowledge by way of direct instruction
Relies on both inside teacher knowledge and outside expert knowledge	Relies on outside expert knowledge
Focuses on specific problems of practice and takes into account the experience and knowledge of teachers	Focuses on general problems of implementation of new programs and policies and tends toward a “one size fits all” approach
Assumes teachers will actively engage in reflection, analysis, and critique	Assumes teachers will passively comply with the delivery of content

Professional learning often occurs within networks, partnerships, and coalitions because they provide “a neutral space for teachers from different settings to meet for the sole purpose of collaborative work and to learn from each other” (Lieberman & Miller, 2014, p. 9). While each varies in format and focus, they do have common characteristics. Allan Parker (1979), in his study of 60 active teacher networks, identified several of these characteristics which included “a strong sense of commitment to an idea or innovation, a sense of shared purpose, a mixture of information sharing and psychological support, leadership by an effective facilitator, voluntary participation, and equal treatment of members” (Lieberman & Miller, 2014, p. 9). Although *OKLeadership* did not officially express itself as a teacher network, it did include each of the network characteristics identified by Parker (1979).

Teacher Networks

Teacher networks are defined as “groups of teachers organized for purposes related to teacher learning, inquiry, support, and school improvement” (Niesz, 2007, p. 605).

Teacher networks vary from traditional professional development experiences like workshops because they invest time and social support to inspire and support meaningful change (Niesz, 2007). Learning experiences inside teacher networks are often “intertwined with interpersonal experiences and relationships (Niesz, 2007, p. 607).

Teacher networks also provide professionalism through a context of dignity and respect. Niesz notes,

“Being treated as a professional, with one’s experiences and perspectives valued, contributes to teachers’ efficacy, agency, commitment, and engagement in the work of the network and the work of teaching; being treated as professional may also help teachers construct an identity that is more rewarding and a better fit with how they see themselves” (p. 608).

When teachers join a network voluntarily, they often do so based on their personal or professional interests. Teachers choose networks which speak to their passions and engage them both personally and professionally. After joining a network, a teacher will often gain new experiences, language, and resources related to their passion. For teachers who often feel isolated in their schools, teacher networks provide powerful connections to others and an opportunity to contribute to ongoing professional conversations.

When it comes to changing professional practice, teacher networks provide an essential opportunity to construct meaning. Practice is shaped when meaning is negotiated between the two communities of the school and the teacher network. For example, a teacher may bring a limited view of a concept to a teacher network, but after interacting

with and developing meaning among network participants, she may return to her school with a changed view. This opportunity to connect not only to other practitioners, but also to research, theory, and scholarship, supports both the network and the teacher.

OKLeadership, although originally a professional learning experience, grew into a professional network especially as an extension online through the *OKLeadership* Facebook group. On a regular basis, teacher participants seek resources and support from colleagues, share upcoming professional growth opportunities, and collaborate on lessons and projects. The network also operates through the *OKLeadership* alumni group called Project Newton which organized to provide intentional support to the *OKLeadership* program and its continued work in the state.

One type of teacher network that has become popular in recent years is the Networked Improvement Communities, also called NICs. Originally developed by the Carnegie Foundation for the Advancement of Teaching in the United States, the focus of NICs is “aimed at continuously improving the quality of practices, processes, and outcomes in targeted areas in educational systems” (LeMahieu et. al, 2017, p. 6). It is distinct from other networks because it “arranges human and technical resources so that the community is capable of getting better at getting better” (Byrk et al., 2011, p. 6). Networked Improvement Communities have a dual-focus: solving complex problems of practice in education while employing “formal methodology for pursuing improvement” (LeMahieu et. al, 2017, p. 6).

According to LeMahieu et al (2011), there are four essential components of well-functioning NICs:

- 1) *focused* on a well-specified, common aim;
- 2) *guided* by a deep understanding of a targeted problem, the systems that produces it, and shared working theory of how to improve it
- 3) *disciplined* by the rigor of “improvement science” principles and methods; and
- 4) *coordinated* as networks to accelerate the development, testing, and refinement of the interventions, their rapid diffusion out into the field and their effective integration into varied educational contexts (Byrk et al., 2015).

While *OKLeadership* did share one component with NICs, a focus on problems of practice, *OKLeadership* did not utilize “improvement science”, nor did it intentionally coordinate with other networks for rapid diffusion of ideas.

Communities of Practice

Wenger, et al. (2002) describe Communities of Practice (CoP) as “groups of people who share a concern, a set of problems, or a passion about a single topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p. 4). As a process of social learning, CoP is when people who have a common interest in a subject collaborate over an extended period of time, share ideas and strategies, determine solutions, and build innovations. The learning does not have to be intentional. In fact, it is often an incidental outcome which comes about during social processes.

CoPs are voluntary, and over time, they only become successful through “their ability to generate enough excitement, relevance, and value to attract and engage members” (Wenger, et al., 2000, p. 50). Many factors can inspire CoPs, but it is the sense of “aliveness” which develops within the group and inspires actions. CoPs vary from traditional organizational designs which tend to focus on specific structures and roles to

reach the organization's goals. Instead, CoPs develop organically by bringing out "the community's own internal direction, character, and energy" (p. 51).

There are three required components which distinguish CoPs from other types of communities and all must be present (Wenger, et al, 2000, p.27). First, there needs to be a domain, or common interest, of which members commit. Second, there needs to be a community which develops from shared experiences as the community members learn, interact, and share with each other. And, third, there needs to be a practice. Members of the CoP are by definition, practitioners. Practice develops when community members problem-solve, seek advice from each other, share strategies, discuss relevant issues, and visit each other.

CoPs are emergent because their structure and membership grows from the process of activity based on the needs of the group's members. CoPs rise from common interest, but sustain from common need as group members interact and problem-solve together. CoPs continue to develop "a rich, fluid, noncanonical world view to bridge the gap between their organization's static canonical view and the challenge of changing practice" (Brown & Duguid, 1991, p. 50). *OKLeadership* does meet the three required components of a CoP and reflects the characteristics of being sustained from shared needs and common interests. *OKLeadership* also operates within a space outside individual school contexts, yet remains connected to the issues the schools face. Because teachers can physically, and generally emotionally, distance themselves from school issues when they attend the *OKLeadership*, they are better able to focus on and solve the problems of practice which

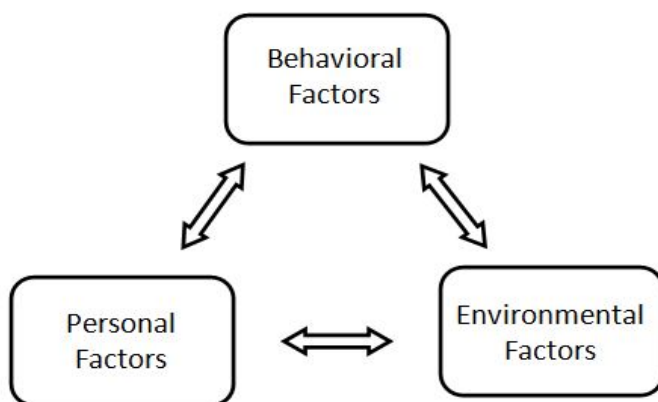
affect their daily work. *OKLeadership*, however, is non-emergent because the size of the group remains relatively constant through the year.

Social Cognitive Theory

Albert Bandura's Social Cognitive Theory (SCT) provides a theoretical foundation for this study. Social Cognitive Theory establishes a model of learning in which "self-development, adaptation and change occur through an interplay of personal, behavioral, and environmental influences... People are producers of their environments, not just products of it" (Davidson & Davidson, 2003). Simply, people learn by doing, by seeing others, and by experiencing consequences. A significant tenant of Bandura's (1977b, 1986, 1997, 2001) social cognitive theory is human behavior which "operates within a framework of *triadic reciprocity* involving reciprocal interactions among three sets of influences: personal (e.g. cognitions, beliefs, skills, affect); behavioral; and social /environmental factors" (Schunk & Usher, 2012, p. 14) as shown below in Figure 2. The interactions between these three influences leads to self-development as people interact within frames of influence.

Figure 2

Triadic Reciprocity



(Adapted from Wood & Bandura, 1989)

Bandura (1988) later delineated how personal factors operating within this interactive model can be altered to improve the level of organizational functioning. These factors include “mastery modelling, strengthening people’s beliefs in their capabilities so they make better use of their talents, and enhancing self-motivation through goal systems” (p. 276). Mastery modelling involved three major elements: 1) initial modelling of the skill to convey basic competency, 2) guided practice under simulated conditions to perfect the modelled skill; and 3) opportunities to apply the newly learned skills which will bring success (Bandura, 1988, p. 276). Teacher leaders in *OKLeadership* experienced these factors when they participated in specific learning activities that first modelled a skill, provided guided practice with mentors, and then allowed the teacher leaders to apply those skills to their practice.

Because human competency requires both skills and self-belief in one’s ability to use those skills well, informative feedback must be provided during each stage of modelling. Social cognitive theory employs an “agentic perspective” for self-development (Bandura, 2001). When a person intentionally makes decisions as an agent to alter their life circumstances, they are acting from a position of self-organizing, self-regulating, and self-reflecting. They are contributing to their life, not just products of it (Bandura, 2005). Because personal agency operates within a network of “sociostructural influences,” people, through agentic transactions, “create social systems that organize, guide and regulate human activity” (Bandura, 2005, p. 10). The interactions within these social systems provide constraints while also providing opportunities for personal growth and development representing a “bidirectionality of influence” (Bandura, 2005, p. 10). Teacher

leaders who chose to apply to *OKLeadership* were acting with personal agency and once selected to participate, became part of the social system which drove their growth and development.

Another factor necessary for self-development is self-regulation. Self-regulation refers to self-generated thoughts, feelings, and action which are planned and cyclically adapted to the attainment of personal goals (Boekaerts, 2005, p. 14). McCormick (2001) notes the social cognitive approach “views the person as being goal directed and proactively involved in shaping the task environment” (p. 26). Throughout *OKLeadership*, participants were asked to set goals, create plans of action to reach those goals, and reflect regularly on their progress toward those goals. Because participants self-selected their goals with the awareness of the contextual restraints their school settings provided, they were able to adjust based on their task environments.

Social Cognitive Theory provides the foundation for this study. Teacher leaders employed agency when intentionally applying to participate in the program. Once selected, participants in the *OKLeadership* program became a part of their working environment by engaging in group interaction. The participants from across the state brought with them their behavioral, personal, and environmental factors and willingly contributed to the goals of the group. Each participant learned from actively participating and watching others. Further, through feedback loops, participants created solutions to problems of practice and then created plans to bring those solutions to life.

Summary

The interconnected links between professional development and teacher leadership are clear, especially when an organization serves as a backdrop for professional learning. How the two concepts interact and affect individual teacher's professional and leadership practices is not so clear. As teachers establish communities of practice and teacher networks, social cognitive theory suggests knowledge is created through triadic reciprocity of personal, behavioral, and environmental practices, and is then shared collectively. This study aims to reveal the way teachers perceive how specific program features during their participation in OKMath/OKSci Leadership impacted their professional and teacher leadership practices.

CHAPTER THREE

Methodology

Introduction

Because I am interested in learning about how participation in OKMath/OKSci Leadership (*OKLeadership*) affects teacher leaders' professional and leadership practices, I chose to conduct a case study. Case study is a common form of qualitative research, with renewed popularity in recent years. Yin (2013), Merriam (1998), and Stake (1995), have all written extensively on how to conduct a proper case study. Although each a prominent methodologist, their approaches to case study vary. After comparing the strategies of each, I selected a combined perspective adopting a constructivist lens which I utilized for my study to seek answers to my primary research questions:

-How does participation in OKMath/OKSci Leadership change a teacher leader's professional practice?

-How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice?

Rationale for Case Study Selection

According to Creswell (2009), a case study is “a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals” (p. 13). The researcher uses a variety of data gathering techniques over a specific period of time (Stake, 1995). Case study research involves collecting a variety of data to provide a more detailed understanding of the research question than what might be revealed in a single data source (Creswell, 2012). Merriam notes the case study “has

proven particularly useful for studying educational innovations, evaluating programs, and informing policy” (2009, p. 51). In addition, case study research is best suited for situations where the main research questions are “how” or “why,” the behavior of those involved cannot be manipulated, and the context is relevant to the bound unit of study or “case” (Creswell, 2012). There are three defining characteristics of a qualitative case study: “*Particularistic* (focusing on particular situation, event, program, or phenomenon); *Descriptive* (yielding a rich, thick description of the phenomenon under study); and *Heuristic* (illuminating the reader’s understanding of the phenomenon under study)” (Yazan, 2015)

This case study focused on a single program, *OKLeadership* which occurred each school year for three years, 2014-15, 2015-16, and 2016-17. Data were gathered through participants’ program application responses, semi-structured interviews, and program planning materials. These sources produced mostly qualitative data. This study also gathered data from the two facilitators who were responsible for the program’s creation and implementation. Both were and are employees of the Oklahoma State Department of Education. A semi-structured interview was conducted with the facilitators simultaneously.

Setting

OKLeadership was a professional development program designed for Oklahoma teacher leaders and facilitated by the Oklahoma State Department of Education. During each of the three program years, 30-37 educators were selected to participate from a competitive online application process. Participants came together in four two-day sessions over the course of a year. The mission of the program was two-fold:

To create and support a dynamic network of Oklahoma math and science educators whose increased awareness and commitment to service will energize Oklahomans to shape Oklahoma's future in mathematics and science education.

OKMath and OKSci Leadership is a statewide leadership program that selects, challenges, develops and educates Oklahoma math and science educators who have demonstrated an interest in leadership skills related to math and science education. (Oklahoma State Department of Education, 2013)

Teachers were selected to participate "based on ability, demonstrated leadership, interest in their community, and insight for effective leadership." (Oklahoma State Department of Education, 2013).

Once selected, participants were brought together over four two-day sessions named Alpha, Beta, Gamma, and Delta meetings. Each session was held in a different part of the state and was comprised of a series of inquiry lessons and activities which served as both models for instructional practice and metaphors for leadership practices. In addition, participants were guided through a process of problem identification and 'solutioneering', the term coined for finding creative solutions to problems. Through a capstone project, dubbed 'Keystone', each participant identified a problem of practice and designed a solution. At the conclusion of the Delta meeting, participants made their 'pitch', a three-minute presentation in front of invited guests which outlined their identified problem of practice and their proposed solution.

Participant Selection

To understand how participation in *OKLeadership* changed teachers' professional and leadership practices, a purposeful sampling technique (Marshall & Rossman, 1999) was used. I wanted a broad variation of viewpoints, so I first sent an invitational email to ninety-eight participants from all classes of *OKLeadership*. While twenty-eight of the

emails were returned undeliverable, the other sixty were assumed delivered to participants. Eight responded with a willingness to participate in the case study. Six were from Beta class, one from Class 1, and one from Class 2.

It was my intent to include four members from each of the three classes of *OKLeadership* and for these participants to represent a variety of school district sizes and locations, and grade levels taught. So, after analyzing the characteristics of the eight volunteers, I sent secondary emails and messages through social media to Class 1 and 2 participants who had characteristics not represented by the previous volunteers. Several additional teachers from each class agreed to join the study. By purposefully selecting participants for my case study, I was gathering perceptions from the broadest variety of perspectives possible to achieve a sufficient depth of information to answer my research questions. The attributes for the twelve case study participant are organized in Table 2.

Descriptions of the Sample

Below is a brief introduction to the twelve case study participants. Each brought a unique perspective to the study based on their years of teaching experience, subjects, and ages taught.

Charlene

With eight years of teaching experience at the time of her *OKLeadership* participation as part of the Beta class, Charlene was a middle school science teacher from a large suburban school district. She was interested in participating in *OKLeadership* as a means to “explore different opportunities.” She was encouraged by her school principal to

Table 2

Case Study Participant Attributes

Name	Class	Content	Yrs Exp	Grade	Setting
Charlene	Beta	Science	11	8th	Suburban
Sol	Beta	Science	6	8th	Rural
Donna	Beta	Math	15	8th	Urban
Gary	Beta	Math	15	10 th -12th	Suburban
Annette	1	Science	26	3rd	Urban
Mandy	1	Math	7	8th	Suburban
Karla	1	Science	15	5th	Urban
Portia	1	Math	11	5th	Suburban
Anthony	2	Math	12	7th	Rural
Christie	2	Math & Sci	12	2nd	Suburban
Gena	2	Math	9	5th	Suburban
Lisa	2	Science	21	5th	Suburban

apply. Since participating, Charlene has become the Curriculum Coordinator for both Mathematics and Science in her school district.

Sol

As a Beta class participant, Sol had four years of teaching experience in a rural middle school as a science teacher. He applied to participate in *OKLeadership* because the program description piqued his interest. After participating, Sol served as a mentor to the next two classes of *OKLeadership*. He also returned to his rural hometown to become the middle school principal and continues to advocate for the use of inquiry-based science practices.

Donna

With twenty years teaching experience, Donna taught math to middle school students in a large urban district. She applied to participate because she wanted to strengthen her leadership abilities. Since *OKLeadership*, Donna has served as math department chair for her school, provided professional development to teachers across her district, and worked on state-level math initiatives. This year, Donna teaches special education science in her middle school because a few days before school started there was a vacancy for that position and she was willing to make the change in content to help her school.

Gary

With nineteen years teaching experience, Gary was the only high school math teacher at his urban technology center. He applied for *OKLeadership* because he was always looking for opportunities to improve himself. After completing his year in *OKLeadership*, Gary served on several statewide committees and worked to make changes in how math is taught in the career tech system. He now serves as an Honors Program recruiter for a private university.

Annette

As a career educator with twenty-six years teaching experience, Annette was a third grade teacher from a large suburban district. She applied to participate in Class 1 of *OKLeadership* because she wanted to expand her impact in education. She was encouraged to apply by one of the *OKLeadership* facilitators and her district's leadership. After participating in the program, Annette became an instructional coach and two years later,

was named the Elementary Science Curriculum Coordinator for a large urban school district. She has also presented at national conferences and serves on several state and local committees.

Mandy

At the time she participated in *OKLeadership's* Class 1, Mandy had seven years teaching experience and was an 8th grade math teacher in a suburban school. She decided to apply to participate after attending a summer math training where a peer described her experience in *OKLeadership*. Since participating in Class 1, Mandy has moved to a new suburban school where she teaches fifth grade math, serves as department chair, and has been named and trained as the teacher leader for her building.

Karla

Karla was a 5th grade science teacher with fifteen years teaching experience when she was a member of *OKLeadership's* Class 1. She applied because she wanted to learn new ways to teach science and was encouraged by her district's Science Coordinator to apply. Since participating, Karla became active in the Oklahoma Science Teachers Association serving as its President, has served on numerous statewide science committees, and creates instructional materials for OpenScienceEd, a free online lesson clearinghouse. She has also moved to a new elementary school, but is still teaching 5th grade Science.

Porctia

As a member of *OKLeadership's* Class 1, Porctia was a 5th grade Math and Science teacher at a suburban elementary school. She applied to participate because she wanted to

learn to be a better leader and continue to grow professionally. Now, Porctia teaches math to 5th graders at a different suburban elementary school. She serves as treasurer for the Oklahoma Council for Teachers of Mathematics, facilitates math workshops for teachers across the state, and continues to serve as a model math teacher in her district.

Anthony

With nine years' experience teaching middle school math in a large rural district, Anthony chose to apply to participate in Class 2 of *OKLeadership* because he wanted to grow professionally. "I wanted to improve in my field and just do what I do. I saw it as an opportunity to take a step forward and try something new." Since attending *OKLeadership*, Anthony has created and leads a parent camp at his school and serves as team leader. He also facilitates professional development for teachers across the country.

Christie

As a participant of Class 2 of *OKLeadership*, Christie was a second grade teacher with twelve years' experience in a large suburban school district. She was drawn to apply to *OKLeadership* because she enjoys professional development opportunities as a means for strengthening her skills. "I look for areas I need help in. It looked interesting." Since participating in *OKLeadership*, Christie has continued to teach second grade and now facilitates her school's STEM club for students.

Gena

With ten years teaching experience, Gena joined Class 2 as a 5th grade math teacher in a suburban school. She applied to attend *OKLeadership* because she was encouraged by one of her colleagues, a Class 1 participant, to do so. Since participating in *OKLeadership*,

Gena has become a National Board Certified Teacher, is active in statewide math and science organizations, and was awarded the Presidential Award for Excellence in Math and Science Teaching. Today, Gena teaches math and science to 5th grade students at another suburban elementary school.

Lisa

A 26-year teaching veteran, Lisa taught science at a suburban elementary school when she was part of *OKLeadership*'s Class 2. Lisa applied to participate because she felt she needed to grow professionally to better serve her students and to be able to network with other teachers. Since attending *OKLeadership*, Lisa started the first STEM program in her district, became a finalist for State Teacher of the Year, and was named to the state Teacher Leader Effectiveness Advisory Board. She has since moved to a new district and is teaching science and STEM to 5th graders.

Data Sources

To increase validity of this study, three data sources were used (Yin, 2014). Case study data were collected through program applications, semi-structured interviews, and program planning documents. All data were then organized in participant narrative topically by theme (Merriam & Tisdell, 2016). I began collecting data through a Memorandum of Understanding with the Oklahoma State Department of Education (See Appendix A). This allowed me access to participant contact information as well as their *OKLeadership* application responses. Additional data were then collected over a three-month period through interviews with participants as well as with the facilitators. One of

the program facilitators provided the program planning materials which included daily agendas, goals, and facilitator notes.

Program Applications

OKLeadership employed an online application process for each of the three program years. In the application, participants who met the eligibility requirement of being a K-12 classroom math and/or science teacher were asked for basic contact information. They then responded to six short essay questions. Although the online application process changed slightly over the three program years, four of the six essay questions remained consistent in the *OKLeadership* applications each year:

1. What is your vision for Mathematics OR Science Education for the state of Oklahoma?
2. In your opinion, what strategies must be implemented to enable your vision to become a reality?
3. How would you characterize effective leadership?
4. Discuss why you would like to participate in OKMath or OKSci Leadership.

Interviews

I conducted semi-structured interviews with twelve *OKLeadership* participants, four from each *OKLeadership* program year. The teachers varied in age, gender, years of teaching, content and grade levels taught. They also represented unique school communities. I also conducted an interview with the two *OKLeadership* facilitators. They were responsible for both the creation and implementation of the *OKLeadership* program on behalf of the State Department of Education.

I gathered interview data through a semi-structured interview protocol with *OKLeadership* participant volunteers (Lichtman, 2014). The participants selected the time and location for the interviews. The ten questions (See Appendix C) asked were aligned to the case study research questions and employed an open-ended design to gather details about specific features of *OKLeadership* influential to participants. (Lichtman, 2014). I digitally recorded participant responses during the face-to-face interviews and then later transcribed them.

Program Planning Materials

The third data source for this study included program facilitator planning documents and the corresponding participant activity pages for their 3-ring *OKLeadership* binder. The planning documents provided the daily agenda and all related activities as well as personal notations and to-do lists. The agendas also delineated how the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional method (Bybee, et al, 2006) was incorporated within each program day.

Methods

Coding Methods

Because each data set was unique in both form and function, I utilized a variety of coding techniques based on Lichtman's six-step iterative process (2014):

- 1) Initial coding. Going from responses to summary ideas of the responses.
- 2) Revisit initial coding
- 3) Developing an initial list of categories
- 4) Modifying your initial list based on additional rereading

- 5) Revisit your categories and subcategories
- 6) Moving from categories to concepts (p. 329)

The methodological differences in coding used for each data set are described below followed by the resulting codes, categories and concepts, and related analysis.

Coding Participant Applications

I was granted access to each participant's *OKLeadership* online application response so I printed each one so I could code them individually by question. Because leadership is one of two central phenomena of this study, I felt it was important to reveal participant thoughts about this topic specifically, so I coded the responses to question 3 separately as described below.

I began coding the applications by reading each one through several times. On the third reading, I began highlighting key words and passages and coding them in the margins while being intentional about keeping the codes consistent across applications. Next I made a list of codes for questions 1, 2, and 4, and grouped the codes by category which generally aligned to the questions being answered. From the categories, three common themes or concepts emerged from the twelve application responses: 1) A common vision for education; 2) A need for an inquiry-focused professional development experience; and 3) A desire to connect with other educators. Analysis of these concepts and how they interact with the concepts and categories of the other data sources is included in Chapter 4.

Coding Application Question 3 Response

Because question 3, '*How would you characterize effective leadership?*' related directly to one of two central phenomena of the study, I felt it important to utilize a

separate coding process to reveal participant thoughts about leadership. To begin, I read the responses several times to listen for common threads. I then reread the responses a third time, highlighting key words and phrases. I coded each word and phrase, remaining consistent across applications. Next, I listed the codes by participant response. I then combined the codes into one list of sixty-four codes before sorting alphabetically so commonalities were more easily revealed.

I used a set of highlighters to cull the codes into broad categories. I then began to organize the codes by concept. Some codes fit easily within concepts, like the code ‘involves others’ fit with the concept ‘fosters collaboration’, but with other codes I had to use broader concepts. For example, I grouped ‘honest’, ‘humble’, ‘trusted’, and ‘good judgement’ under the concept ‘character’. The resulting concept list included seven concepts:

1. Skilled
2. Visionary
3. Effective Communicator
4. Fearless
5. Character
6. Fosters Collaboration

Once I developed my concept list, I returned to the applicant responses to identify phrases from each which would serve as exemplars. I continually moved between the concept list and the application responses to create a representative picture of the data.

Coding Interview Transcripts

After each semi-structured, face-to-face interview was completed, I returned home to transcribe the recordings into a Word document. I then sent the transcriptions out to each participant for respondent validation (Merriam, 2009). I asked participants to make

any corrections, additions, or clarifications they felt were necessary. Several offered clarifications, which I added to the transcripts.

Interview transcripts was the largest of my three data sources with almost fifty single spaced pages of commentary. For data analysis of this source, I again utilized a generic 6-step iterative process (Lichtman, 2014). Each transcript was initially coded using key words and phrases resulting in a list of one hundred ninety-eight codes. I entered each code into an Excel sheet and then sorted the list alphabetically to reveal duplications and commonalities. After revisiting these initial codes and checking for accuracy, I reread each participant transcript and compared the codes with those from other interviews. I grouped the codes pertaining to similar ideas into categories, keeping them consistent across interviews when appropriate. For example, the codes of ‘wanted to better ourselves’, ‘strengthening my skills’, and ‘wanting to improve and do better’ were all recoded to the category ‘growth’. The following categories were revealed:

1. Collaboration
2. Empowerment
3. Growth
4. Change
5. Connections
6. Confidence
7. Reflection
8. Inquiry
9. Productive Struggle
10. Leadership Development
11. Problem Solving
12. Support
13. Trust
14. Networking

As I reviewed the fourteen categories, I saw several were interrelated. For example, collaboration, connections, and networking had similar connotations, so I grouped them

under the concept of connections. Problem solving, productive struggle, reflection, and inquiry held commonalities within the transcripts, so I grouped them as a concept as well. Similarly, I grouped growth and development together and support and trust together. Although there was arguably crossover commonalities within the categories, confidence was the only category which I did not combine with others.

From this review process, I organized the categories into seven collective concepts:

1. Connections
2. Empowerment
3. Growth
4. Inquiry
5. Support
6. Confidence
7. Change

I viewed the list from an *OKLeadership* participant lens and saw each of the collective concepts either described a process which occurred during *OKLeadership* or was the outcome or result of participation in *OKLeadership* from a participant's perspective. I also viewed the list from the perspective of an outsider. Each of the collective concepts was action-oriented. Some were independent actions, while others were group actions. These concepts reflected the overall organization of the *OKLeadership* program: participants working on individual problems of practice, but with the collective support of their peer participants. As Anthony noted, "We were all on our own journey. But at the same time, together on it."

Coding Program Materials

On the first day of *OKLeadership*, each participant received a three-ring notebook which housed daily agendas, activity work pages, resources, and note-taking and reflection

sections. I wanted to code the materials to determine what types of activities were included and the purpose for each. To provide additional insight, one of the OKLeadership facilitators shared the session planning documents. These explicitly denoted goals and intent of each activity within the daily sessions.

To begin the coding process for these documents, I first read through the planning documents while referring to the corresponding participant work pages. I wrote short codes about each activity in the margins denoting the purpose. For example, next to the description of the *OKLeadership* activity *In Full Swing*, I wrote “inquiry experience” because the teacher leaders had to make a prediction and then test their prediction with materials provided. I continued the coding in the same manner through the outlines of each of the four meetings (Alpha, Beta, Gamma, and Delta). I reread the planning documents a third time to verify my initial codes.

Next, I listed the activity codes by meeting. Then, using a highlighter, I color-coded each code according to type. For example, all leadership development codes were highlighted pink, inquiry activities, orange, and so forth. After completing this step, seven categories of activity codes had emerged:

- 1) Leadership Development
- 2) Inquiry Experience
- 3) Opportunity to Connect
- 4) Problem-Solving Strategy
- 5) Keystone Project
- 6) Reflection
- 7) Mentoring

Interestingly, each meeting of *OKLeadership* included activities from all seven categories. This data source was solely descriptive and lacked the narrative components of the other

three sources, so I felt confident that I had attached appropriate meaning to the data with these categories (Lichtman, 2010).

Researcher's Role

Because research is the primary instrument in data collection and analysis in any qualitative research (Bogdan and Bicklen, 2007), this study was highly influenced by my role as a researcher. I was a participating member of the Beta class of OKMath Leadership, so I have first-hand experiential knowledge of the program and its influence on my own teaching and professional practice. This was what drew me to study the program. I watched, firsthand, how many teacher participants entered the first day of the program full of anxiety and apprehension about their participation. This anxiety, over the course of four meetings during a school year eventually turned to excitement about their purpose. Then, finally, upon graduation from the program, participants revealed strong self-efficacy and a willingness to take on new and challenging leadership roles, not only in their schools and districts, but also across the state and even nation.

While conducting the case study as a former participant, I was familiar with *OKLeadership* program activities and experiences teachers described during their interviews. This familiarity allowed me to understand when participants used program-specific language (e.g., 'solutioneering' and 'pitch') and allowed me ask appropriate follow-up questions to gain more specific details from participants.

Limitations of the Research Design

This study examined teacher leaders' perceptions of their experiences in a professional development program and how their professional and leadership practices

were affected by such participation. I assumed the participants answered their interview questions honestly. The timeframe of this study was approximately five months with the majority of data collected through interviews occurring over the course of three weeks. Data analysis took approximately three months. This study was limited to *OKLeadership* participants who were all public school teachers in Oklahoma.

Credibility

The six-step process used for coding all data came from Lichtman (2012). The steps were prepare and organize the data, read through the data, begin a detailed analysis by coding, generate categories and themes, advance how these themes will be represented in the analysis, and making an interpretation of the data. This process was used for coding participant interview transcripts as well as participant *OKLeadership* applications. Program planning materials supplied by one of the *OKLeadership* facilitators added a third data source allowing for triangulation of data which lent credibility to the study (Merriam, 1998)

To increase credibility, I sent each participant the transcription of their interview for respondent validation (Merriam, 2009). I asked participants to make any corrections, additions, or clarifications they felt were necessary. Several offered clarifications, which I added to the transcripts. As Stake (1995) noted, participants should “play a major role in directing as well as acting in case study” research (p. 155). For this reason, once formally drafted, I sent study findings to the participants for additional member checking prior to finalizing the study. Maxwell (2005) explains that member checking is “the single most

important way of ruling out the possibility of misinterpreting the meaning of what participants say and do and the perspective they have on what is going on” (p. 111).

Transferability

According to Lichtman (2012), transferability “is the extent to which the results can be transferred to other settings (p.330). This study focused on teacher leaders’ perceptions of the effects their participation in a professional development program had on their professional and leadership practices. These perceptions were then culled from participant interviews to gain insight into which *OKLeadership* program features were cited as having an impact on professional and leadership practices. Readers will need to determine the transferability of the results of this study based on the similarity of contexts and settings.

Expected Findings

As a researcher, I expect to gain an understanding of the sources of any changes in professional practices and teacher leader development and practices among participants which they attribute to *OKLeadership*. By examining teacher leaders’ perspectives, I expect to gather data to inform the structure of future professional development opportunities for teacher leaders which could have a greater influence on teachers’ approaches to teaching, instructional problem-solving, and leadership practices.

Ethical Issues

Researcher’s position

It was my intent with this case study to examine teacher leaders’ perceptions of their experiences in OKMath/OKSci Leadership. This was appropriate because “qualitative researchers are interested in understanding how people interpret their experiences, how

they construct their worlds, and what meaning they attribute to their experiences (Merriam, 2009, p. 5). I chose to conduct this study to understand if participants in *OKLeadership* felt their professional and leadership practices were impacted by their experiences in the program. My role was to analyze the details and stories shared by participants to find common patterns and themes to inform my research question.

Ethical procedures

The research application to conduct this study was submitted to the University of Oklahoma Institutional Review Board. Each participant signed a consent form which described the study, its purpose, and the procedures to be followed. All participants agreed to openly share the data collected from them. Once collected, all study data were kept confidential and secured on a password-protected file on my laptop computer. All participants gave permission for me to use their full names, but I limited use to just their first names to protect their identities. In addition, individual school district and school names were not used.

Summary

The purpose of this qualitative case study was to understand how teacher leaders viewed the impact of their participation in OKMath/OKSci Leadership on their professional and leadership practice. Data sources for the study included participants' program application responses, semi-structured interviews, and program planning documents. Once data were collected, they were coded and categorized to draw out meaning and inform the research questions. Through data collection and my analysis

outlined in Chapter 4, I expect to provide insight into teachers' perceptions of how participation in *OKLeadership* changed their professional and leadership practices.

CHAPTER FOUR

Data Analysis and Results

The primary purpose of this case study was to determine how participation in the OKMath/OKSci Leadership (*OKLeadership*) program changed a teacher leader's professional practice and contributed to leadership growth. Individuals within the boundaries of this study included twelve teacher leaders, four from each of the three *OKLeadership* classes: Beta (2013-14), Class 1 (2014-15), and Class 2 (2015-16). Each teacher taught at a different school from different parts of the state which provided varied perspectives and experiences. Included in this chapter are a brief review of the research methodology, analysis of the data from the *OKLeadership* program applications, interview transcripts, and program materials, and study results.

Data Analysis

Each of the three data sources were coded individually. They were then analyzed separately and then collectively through triangulation to reveal study results as outlined below.

Analysis of the Application Data

Three common themes or concepts emerged from the twelve participant program application responses: 1) A common vision for education; 2) A need for an inquiry-focused professional development experience; and 3) A desire to connect with other educators.

Application responses revealed a shared a vision for math and science education in the state which included the need for students to learn how to be as Annette described, "discovery thinkers and problem solvers." Christie wanted "students to feel comfortable

discovering and exploring math and science wherever they go,” while Gary would like to see mathematics education “become more relevant to the learner.” Lisa feels that “science education is the perfect catalyst for creative thinking and problem-solving” and went on to explain

We asked Boeing engineers what they wanted to see in their future employees. Creativity and thinking outside the box was their answer. Science education fosters that kind of thinking and encourages the “communication” and “working as a team” skills necessary for successful employment in any field.

A second common concept from the group of participant applications was revealed in their responses to the question, ‘In your opinion, what strategies must be implemented to enable your vision to become a reality?’ Many of the participants wrote about the need for the development of teacher resources and training with an inquiry focus. Karla was interested in organizing and implementing a “Science revolution”: “I want to be a part of getting teachers excited and interested in teaching science so our students will have a solid foundation when they get to middle school, high school, and college.” Mandy added the importance of building “high-quality, research based lessons and projects to ensure our student truly understand and learn from each standard to mastery level.” Christie explained it this way: “We need people to understand that we are no longer training and educating students to see and do things that are already there. We are training and educating them to create a place in a world that is constantly transforming itself.”

A final common concept from the applications revealed itself in the responses to the statement, ‘Discuss why you would like to participate in OKMath or OKSci Leadership.’ Every participant described a desire to connect with other educators in the state as a way to make a difference in education. Gena explained: “Surrounding myself

with like-minded teachers who are excited about what we do will allow me to be more creative and productive. I live for collaboration opportunities and activities that challenge me to be a better educator.” Christie also has a desire to connect and make a difference:

I want to share what I’ve learned, and I want to learn from others. It is important to stretch ourselves. This is a chance for me to learn from the best of the best in Oklahoma education and take what I’ve learned out to the community to help others grow.

Mandy shared her thoughts on connecting and making a difference in the state: “The Leadership Class is an amazing opportunity to work with a strong group of educators from across the state. It is a very innovative, proactive approach to improving education.”

Analysis of Leadership Question

Because question three on the program application related directly to one of two central phenomena of the study, I felt it important to code these responses separately to reveal participant thoughts about leadership. After employing the coding process outlined in Chapter 3, the resulting concept list included

1. Skilled
2. Visionary
3. Effective Communicator
4. Fearless
5. Character
6. Fosters Collaboration

Utilizing this concept list, I returned to the applicant responses to identify phrases from each which would serve as exemplars which I outlined below by concept.

Skilled. The concept of ‘skilled’ incorporated many single word responses from participants related to leadership skills such as ‘experienced’, ‘data-driven’, and

‘inspiring’. These skills are typically learned, so ‘continued learning’ was also coded to this concept. As Gary shared,

It is important for leaders not to get caught up in the busyness of life, but to advance themselves by learning through professional development. My goal is to find some kinds of professional development every month, whether that be reading a book on leadership, having a conversation with someone I want to emulate, or finding some kind of webinar that promotes getting better professionally.

Visionary. Karla explained that leaders should “keep focused on the task and vision of what the group needs to accomplish without being overbearing.” Anthony and Donna both noted that visionary leaders also “see the big picture” which allows them to lead others. Annette adds “Effective leadership is when you can inspire others to follow you. It is when you can get others to see your vision.”

Effective Communicator. Communication is a key skill for leaders. As Donna explained

I believe the most important characteristic of an effective leader is communicator. You must be able to communicate well with all stakeholders in order for them to buy into your leadership. After all, if no one is following, then you are not leading.

Modeling as a means of communication is also important as explained by Annette:

“Modeling is what is needed so that others will know what to do.” Christie concurred that leaders “model what they want others to do.”

Fearless. Mandy explained, “An effective leader cannot be afraid to fail” while Christie wrote “A good leader can’t be afraid to make changes (or to continue with what works!) for fear of failure. I can’t expect my students to be fearless in their learning if I’m not being the same in my leadership.” Anthony agreed when he explained a leader often “sees a need to step up” and does so.

Character. Portcia noted that “an effective leader is someone who exemplifies good judgement and character.” Gena explained that for her, great leaders “lead by example and make themselves available to assist others in accomplishing their goals. Sol shared advice from a mentor: “A good leader works as hard as his/her staff. A great leader worker harder than his/her staff.” Having a servant attitude is also important from Donna’s perspective. She adds, “This is a very humbling quality that does not come easy to all.”

Fosters Collaboration. Charlene wrote “Effective leadership fosters a collaborative atmosphere in which ideas and discussions can take place.” Porctia added that leadership is “steering others on a guided path toward a common goal with knowledge and expertise.” Gena explained that in a group, “everyone’s opinions are valued” by a strong leader. Mandy felt strong leaders also had “to know how to work with others and how to involve others in decisions.” From Anthony’s perspective, a leader “works with others to find a solution.”

The applicant responses to question 3 revealed these *OKLeadership* participants held many, and often times common beliefs about leadership. They also show participants were open to sharing those beliefs with others before entering the program. This ability to think about and reflect on leadership plays an important role in leadership development. As Komives et al. (2005) indicated, reflection prompts individuals to be self-critical of their leadership beliefs and activities which grows their perception of it.

Analysis of Interview Transcripts

Through the coding process of each of the participant interview transcripts, seven collective concepts were revealed:

1. Connections
2. Empowerment
3. Growth
4. Inquiry
5. Support
6. Confidence
7. Change

Each of these concepts was illustrated through narrative excerpts of the transcripts delineated below.

Connections. ‘Connections’ was the most common code among the transcripts and revealed itself as a key concept as well through other codes in the category including relationships, community, and comradery. Each participant mentioned the impact of the connections made and how those connections strengthened over time in *OKLeadership*. Charlene noted, “I gained friendships and connections with teachers across the state.” Christie mentioned, “It was one of the bigger ones [professional development] I’ve had for ongoing networks and building those connections...It’s the one where I’ve had the longest connections with the people around.” Comradery grew from those connections as Mandy explained, “I remember the comradery between us. Like when you get like-minded individuals in a room, what that feels like. That was a nice change.” Karla also remembered the comradery that developed:

We had this group of people that we learned to depend on and talk to and collaborate with. As those relationships solidified, then it became even more exciting and instead of being scary, it was, ‘Ooooh, what are we going to do next?’ And, ‘I can’t wait to go this weekend and see what the next piece is going to be!’

Sol explained the benefits in those connections for him: “There have been times where I have had questions and I’ve thought, ‘I don’t know the answer to that, but I probably know someone who does. So let me shoot them an email and figure out what to

do.” Lisa had a similar experience: “We built bonds. You built, I don’t even want to call them networking groups, but they are. They are your friends. I’ve made strong friendships through the *Leadership* program and we help each other out!” The connections benefitted Gena as well:

Leadership gave me connections with people I could talk to about how to make my teaching better. By the end of Leadership, personally, I felt like my classroom gained a better teacher. I understood where my kids were coming from more, and I also now had a network of people that I still talk to today. Like, ‘Here’s my lesson plan. What else are you guys doing in your classroom?’ And I incorporate a lot of their ideas. It just gave us a cohort of thinking.

Connect was one of three original, but not articulated, philosophies of *OKLeadership* when first conceptualized by the program creators/facilitators:

...my three goals were connect, organize, empower. Eventually, we added the ‘R’ to the acronym so it became CORE. ‘R’ for recognize...But the CORE idea isn’t like a research-oriented idea, but it is a philosophy which is, number one, to connect. People have to know each other because this idea that no teacher is an island. First understand that other people are doing what you are doing, are struggling with the same things. Organize was around creating space for people to come together...a form of organizational structure. We were trying to put in place reliable places where people could connect and be together.

Connections continue, even four years after the program’s last class, through various means including a Facebook page and Alumni group, Project Newton.

Empowerment. For the *OKLeadership* facilitators, empowerment was part of the CORE philosophy. As Levi explained, “Empower, which is really to say [to participants], you really do have the right skills. This is the kind of person you are...that people feel like they are in charge of their own destiny.” Sol captured his *OKLeadership* experience as “finding a problem and then being empowered that no matter what the problem is, you can find a solution to it.” Christie also explained empowerment as a benefit of *OKLeadership*:

“I think it was a valuable thing. Even if all you got out of it was the idea that sometimes the impossible is possible.” Karla also felt *OKLeadership* “made you feel empowered, that you could do this, even though you really weren’t sure. You were excited to go do it.”

One unanticipated result of this empowerment was some teacher leaders left the classroom after participating in *OKLeadership*. As Levi, one of the facilitators explained:

One of the original goals was that classroom teachers were more empowered. I think what ended up happening is a lot of the same people who were empowered left the classroom. They became instructional coaches or administrators or curriculum coordinators. And that was an unexpected thing for us because we thought there’d be all these super happy and wonderful teacher leaders who would stay in the classroom forever. That doesn’t seem to have been the case.

Of the twelve teacher leaders interviewed for this case study, three have left the classroom.

This rate is fairly consistent across all three *OKLeadership* classes.

Growth. Participants mentioned the desire to grow as a reason for applying for *OKLeadership*. Lisa explained she applied to participate “because I knew I needed growth. I like to search out opportunities to grow, not only for myself, but it benefits my students to have the cutting edge or most current ways to teach.” Anthony said he applied, “because I wanted to grow myself. I wanted to improve in my field and just do what I do. I saw it as an opportunity to take a step forward and try something new.” Porctia “wanted to be more into the community of math at the state level and keep growing to make myself better.”

Christie had a similar sentiment:

It [*OKLeadership*] was more about changing who you are to be better. It can’t ever be wrong for a teacher to say, ‘Hey, this is something I am going to do better!’ It was good people getting better, not because it was doing something for them, but because it was a chance to get better. And I think it has made me better.

Later in his interview, as Anthony explained how *OKLeadership* was different from other professional development, he noted,

So we were all trying to do something new. It wasn't just a sit-and-get... It was a stretch. All of us had to stretch our minds and try something new and really discuss it with each other what we were going to do. It wasn't just regurgitating of information which is what we get a lot of the time. So all of us were really soul-searching and wanting to improve and do better.

Karla saw tremendous growth from participation as she explained:

I have grown exponentially from Leadership. I mean if it hadn't been for that program, I wouldn't be involved in any of the things that I'm involved in now. I'd probably still be teaching in my little classroom, ignoring the world and doing my thing. I've grown so much not only as a teacher, but as a person.

For Mandy, *OKLeadership* continued to contribute to her professional growth:

I honestly think it was probably the best professional development that I have done. I feel like I grew so much as a person and as an educator over the year. And it kept going. We did retreats [with Project Newton, *OKLeadership*'s alumni group] for a while which always refilled my bucket.

Inquiry. Each of the four two-day *OKLeadership* program meetings was designed with an inquiry-based activity at the core. The activities often became the metaphor or theme for the *OKLeadership* learning target. For example, one of the initial activities of the Alpha Meeting was called *In Full Swing*. Participants were provided a formative assessment probe about angular velocity. The problem involved a giant swing ride at a state fair. After deciding on a response, participants were given materials to test their ideas including string, washers, plates, and tape to help them answer the question, "What would happen to the speed of the riders if all the cables were twice as long?" Participants worked collaboratively to justify their answers. After conclusions were drawn regarding the scientific concept, participants were then asked to reflect on how angular velocity related

to teachers. Mandy's reflection explained, "As teachers, the more we can come together in a tighter group, the more progress we can make in a shorter time with less effort."

Because *OKLeadership* was highly inquiry-focus, Sol added, "I would like to think that it [*OKLeadership*] helped me to create even more inquiry opportunities in the classroom. Even before *OKLeadership*, that is how I taught Science, but I think I probably did even more so afterwards."

Support. Participants describe support coming from two distinct groups: peer participants and *OKLeadership* facilitators and mentors. Annette cited a specific example when Tiffany, one of the *OKLeadership* facilitators told her, just before Annette was to go on stage and give her pitch to the audience of invited guests, "I promise you, you've got this and this is just the beginning." Annette explained the power of those words of support:

I didn't have the self-confidence, even though I had won the Presidential Award [for Excellence in Science Teaching], even though I had done other things. It was someone actually just believing that I could do it and supporting me all the way. Just to see how it has changed not just my teaching, but even when teaching to adults.

Support also happens outside of *OKLeadership* as Donna explained:

Leadership participants from across the state...have always supported me like when I went for awards or whatever. They've always been willing, if nothing else, to look over my presentation when I presented at conferences. They will also sit on the front row and be supportive of me.

The other *OKLeadership* facilitator, Levi, shared a story about support:

One of the things that I think I hear from people when we talk with them or check in with them, or whatever, catch up at a conference. There is some version of what they say that is basically, "That was one of the first times in my professional career that I felt that somebody was consistently telling me that they believed in me and that I could accomplish my goals."

Confidence. Gaining confidence was another common concept noted by *OKLeadership* participants. Charlene explained, “Getting that knowledge and energy from everybody just kind of put me in a position where I thought, I really can! If I need to do something, I can do it.” Reflecting on his experience, Sol noted, “I’ve always said that that one year gave me confidence that I wasn’t too young or too inexperienced. That ideas I had, or thoughts I had weren’t ludicrous.” Mandy shared, “It just gave me the confidence. I’ve always felt like I was a decent teacher, but I felt like it give you the confidence to really try new things.” Anthony echoed this idea when he shared, “It pushed me to actually try and do things and realize that it can be done and to be a leader for that stuff.” Gina pointed out: “It gave me the confidence to be wrong. I can be reflective without apologizing. It’s okay to make mistakes and here is what I learned from it.”

Lisa explained how a change in confidence changed her ability to help others: “I went from having very little self-confidence, especially since the standards were changing at the time, to really feeling like I was in the forefront of understanding how the three dimensions worked. I loved being able to help other teachers!” Mandy describes how participation in *OKLeadership* affected student outcomes: “I think if anything, it gave me more confidence. It gave me the confidence to believe that I could change a student [mindset] no matter if I got them in 5th grade or 8th grade.”

Gary explained how increased confidence affected his willingness to share:

Being from a Career Tech community, I saw things differently than other people. It [*OKLeadership*] allowed me to feel confident, more confident in my voice...It gave me an inner confidence that what I brought to the table was strong and worthy.

Change. Change, another concept revealed from coding transcripts, manifested in professional practice for several participants. Some changed their instructional approach like Sol, who added more inquiry opportunities, and Porctia, who began asking students to do more peer work and “learn how to learn from each other.” Annette, changed the way she taught based on assessments by asking herself, “How do I need to teach differently based on what they [students] didn’t get?” Gary changed his planning process so he was able to “get into deeper learning...like helping them see something like a frog jumping as a parabola’s path.” Gena explained the change in her pedagogy this way:

It [*OKLeadership*] changed my frame of thinking in that making mistakes is okay. I had always told my kids, “Now show me your work.” Now I tell them, “Show me your work so we can help you find your mistakes.” Or, “Your brain is plastic so it is okay to modify your thinking and change your ideas.”

Mandy also made changes to her practice based on her experiences in *OKLeadership*:

...they [*OKLeadership* facilitators] made us do all the thinking, all the action part of it, really helps me when I’m trying to guide my students but want them to do the thought process. So just thinking back to how they got us to do things we didn’t know we could do. I use that a lot.

Donna changed her classroom practices when during *OKLeadership* she made an important realization:

...I kept everything on a safe plane for my students so they were always successful. Learning how to introduce math discourse so that they were uncomfortable, not so much that they got frustrated, but you want them to be just comfortable enough that they have a mind shift and they see. Especially my gifted kids, I think I made the biggest change there because everything always came so easily to them. For them to see something and to struggle just a little bit and grow, I think that is the best thing.

Lisa identified several changes in her practice. “I feel like we were on the cutting edge or the first group to learn what the three dimensions of science looks like before

everyone else did. So that completely changed my vision for science, my goal in teaching science, and how I taught science to kids.” Karla, after making changes to her instruction is now seeing changes in her students: “They are learning how to think. They are learning how to do scientific processes instead of just memorization of vocabulary and facts. They are learning to think like scientists.” For Anthony, the changes he made are “keeping parents knowledgeable about what’s happening in the classroom. I actually have parent days where parents come in for math...they jumped on board and really liked it.”

For Christie, change came in ways beyond her classroom. “The interesting thing to me was it was a math and science leadership class, but it changed my views about far more than math and science” She explained, “It made me more able to skip over the impossible and at least try. The worst that could happen is it doesn’t work, so I kind of changed my mindset which changed a lot of what I do.”

Analysis of Planning Materials

Through coding of the program planning materials and the related pages from participant program notebooks, seven categories of activity codes emerged:

- 1) Leadership Development
- 2) Inquiry Experience
- 3) Opportunity to Connect
- 4) Problem-Solving Strategy
- 5) Keystone Project
- 6) Reflection
- 7) Mentoring

These categories represented the various instructional pieces that were utilized during the *OKLeadership* program. A description of each of these activity types as well as the significance of each is outlined below.

Leadership Development. Because teacher leadership was a focus of *OKLeadership*, it is no surprise activities to develop leadership skills in participants played a large role in the program. From early on day one of the program, participants reflected on their own leadership skills and practices, learned new leadership practices, and thought about ways to overcome leadership barriers. Even activities which were not specifically focused on leadership development often included a reflective piece that asked participants to think about how the various concepts applied to leadership.

Inquiry Experience. Activities which modeled inquiry experiences were also embedded in the daily agendas of *OKLeadership*. These inquiry experiences served several purposes. First, they were model classroom lessons in both science and math which participants could take back and use with their students. Second, they often served as metaphors for the two-day meeting's theme. For example, during the third meeting of *OKLeadership*, called "Gamma Meeting", participants were given three photos of objects with different forms of decay and after a series of interactions in which participants explored, explained, and elaborated the concepts of decay, they came to understand how alpha and beta particles decay, but gamma particles burst with intense amounts of energy. Gamma burst (with intense amounts of energy) became the theme for the Gamma Meeting.

Opportunity to Connect. Throughout the daily agenda of *OKLeadership* were embedded opportunities to connect with other teacher leaders, teacher leader mentors (former *OKLeadership* participants), and the *OKLeadership* facilitators. Sharing in pairs, small groups, and by table allowed individuals to develop collegial relationships with their peers. The connections were not limited to each day's activities. All meals were collective

events where participants could join a table discussion by pulling up a chair. As Anthony explained,

Every time we got together, even in evening when everyone went their separate ways or went back to the hotel or whatever, the conversations continued. It wasn't just conversations about what happened in Leadership. It was conversations of education and helping each other. A support group that we always had.

Levi, one of the *OKLeadership* facilitators spoke about the idea of connection when he reflected on what went well in the program:

I think that the logistics part of it was another feature that was right. Like the 2-days where you got to be there with people and spend time and have meals with them. And like late nights hanging out talking with some people. I don't think there is anything that can replace what real time together allows.

Problem-Solving Strategies. *OKLeadership* participants were given opportunities to regularly learn about and employ new problem solving strategies. Much time and emphasis was given to finding and defining the problem. As Levi, one of the facilitators explained:

So I think there is a conceptual part of it that I think is really powerful. We were responding to research about developing solutions...understanding problems as a part of ecosystems and understanding that classic Einstein quote: "If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and five minutes doing the work." I think that conceptual feature of the work was really important for us. It was coming to understand the problem was a priority. And only then, start thinking about the possibilities, and only then, act on one of them.

Participants also learned about logic models and action plans to help them organize their thinking. They were given 'Leader Logbooks' where they could record their ideas on problems they wished to work.

Keystone Project. One way teacher leaders could put their new or enhanced problem-solving abilities to work was on their Keystone Project, a capstone activity for

OKLeadership. Each participant identified a problem of practice and then worked over the course of the four sessions of the program to develop innovative solutions to the problem. They were then encouraged to enact one of their solutions and affect change. Teacher leaders adopted the moniker of “Solutioneer” as they began crafting innovation solutions to the problem of practice they selected to address. Anthony explained his Keystone

Project experience:

Leadership pushed me to know I could try new things and do new things. For instance, parent camp and bringing parents into the classroom was something I kind of had in my head ...with Leadership, it pushed me to actually try and do things and realize that it can be done and to be a leader for that stuff.

Once participants selected a solution, they crafted their ‘pitch’ which was a three-minute presentation communicating the story. It included a quick introduction, a compelling argument about why the problem was important to address, and the proposed solution.

Pitches were delivered on the last day of *OKLeadership* before participants graduated from the program.

Reflection. Participants were given opportunity to reflect multiple times each day. Sometimes, they were asked to reflect on a particular activity or concept. Other times, they were asked to reflect on their professional practices or personal experiences. Karla explained her thoughts on the being asked to reflect:

They made you go deep, instead of the superficial stuff that you take back home and put over in the corner and maybe look at in the summer if you have time. It was something that was so self-reflective and challenging of “What can you do better?” It was so different than anything I had attended.

At the end of each program day, participants were asked to complete a program reflection as well. This form provided sentence starters for participants to explain their thinking.

Examples included “By participating in the meeting, I realized...” and “At the meeting I found myself wondering...” Finally, participants reflected verbally with the *OKLeadership* mentors on a regular basis whose jobs were to ensure participants felt they had the support needed throughout the program.

Mentoring. Participants had numerous opportunities for both formal and informal mentoring throughout the *OKLeadership* program. While each participant was assigned a formal mentor who checked in and worked with him/her during and between sessions, informal mentoring also occurred regularly. For example, Charlene got a lot of new ideas “just talking to teachers about what they were doing in their schools and classrooms.” During many sessions, participants were grouped at tables according to the content and grade levels of the students they taught. This allowed a great deal of idea exchange, resource sharing, and relationship building. Because participants varied greatly in years in the profession, some participants became natural mentors due to their heightened level of experience.

Results

The purpose of this case study was to determine how participation in the OKMath/OKSci Leadership (*OKLeadership*) program changed a teacher leader’s professional practice and contributed to leadership growth. I collected data from three sources: program application responses, semi-structured interviews with participants, and program planning materials. The data from these sources were coded and analyzed to reveal key concepts and categories as shown in Table 3. The concepts and categories were in congruence across the data sources. First, the application concept of *problem-solving*

Table 3

Case Study Concepts and Categories

<p>Application Concepts (Q 1, 2, & 4)</p> <ul style="list-style-type: none"> • Science & Math Instruction focused on Creative Thinking and Problem-Solving • Inquiry-based Teacher Resources & Training • Connecting with other Teachers 	<p>Application Concepts (Q 3 Leadership)</p> <ul style="list-style-type: none"> • Skilled • Visionary • Effective Communicator • Fearless • Character • Fosters Collaboration
<p>Interview Concepts</p> <ul style="list-style-type: none"> • Connections • Empowerment • Growth • Inquiry • Support • Confidence • Change 	<p>Planning Materials Categories</p> <ul style="list-style-type: none"> • Leadership Development • Inquiry Experiences • Opportunities to Connect • Problem-Solving Strategies • Keystone Project • Reflection • Mentoring

linked with the category of *problem-solving strategies*. The application concept of *inquiry-based teacher resources and training* linked with the interview concept of *inquiry* and the program material category of *inquiry experiences*. Finally, the application concept *connecting with other teachers* linked to the interview concept of *connections* and the program materials category of *opportunities to connect*. Triangulation of the data sources helped to ensure the credibility of the data (Yin, 2003).

In answering the first research question, *How does participation in OKMath/OKSci Leadership change a teacher leader's professional practice?* I referred to the concepts which were culled from the transcripts of the interviews held with program participants. There were three concepts that reflected change in teacher leaders' professional practice. These included the concepts of connections, empowerment, and change.

The concept of connections manifests itself in classroom practices as participants collaborated and sought each other's professional advice on instructional issues. One example developed around lesson design as described by Lisa:

I had this idea for teaching matter. I wanted it to be a CSI forensic [lesson]. It's perfect with physical properties of teaching science. So I put it out there on OKSCI [Facebook Page]. "I need help at the 5th grade level. What do you recommend?" And somebody popped on there, well there were several responses. Someone said, "Have someone take your cake. You can leave icing finger prints. Have cocoa so you can leave foot prints out of that and you can leave cocoa in the other classrooms. Have it be your teachers." I had this big idea, but I needed help with the details and that is where I struggle. They laid it out for me and the kids loved it!. That was from OKSci and that is just one of many, many examples.

The concept of empowerment can be seen in how teacher leaders address problems in their own practice. After being empowered by *OKLeadership*, they now see all problems as solvable. Growth as a study concept revealed itself as teachers adopted new and innovative teaching practices. Teachers also expressed growth through their willingness to take on new leadership roles. The concept of inquiry had a direct effect on instructional practices as teachers began incorporating an inquiry approach to facilitating learning in their classrooms. Gaining confidence was another concept that affects professional practice as teacher leaders continue to step up and take on more challenging leadership roles in their schools. As Lisa explained:

[OK]Leadership was truly life changing. I just can't emphasize that enough. It built me into a strong science teacher. My kids are the ones that benefit from that and I feel like because I get to present, other kids will get to benefit from it, too. So Leadership was like a ripple effect.

Finally, the concept of change had a significant effect on teacher leaders' professional practices. Many expressed how they experienced a change in vision for instruction and how that change impacted what occurred in their classroom daily. Each of these examples reflects changes to *OKLeadership* participants' classroom practices.

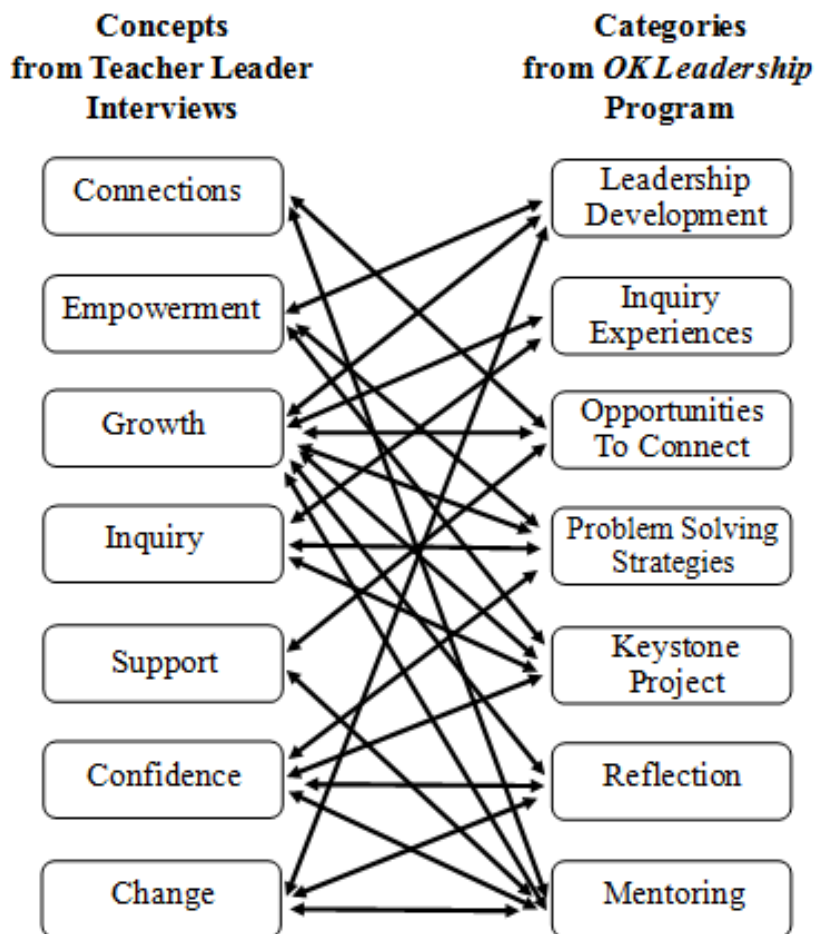
In answering the second research question, *How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice?*, I considered the concepts and categories that were culled from all three data sources. Before teacher leaders even started in *OKLeadership*, they had ideas about the qualities effective leaders possessed. These qualities revealed themselves as concepts which resulted from coding one question about effective leadership on the *OKLeadership* application. The concepts included skilled, visionary, effective communicator, fearless, character, and fosters collaboration.

Through active participation in *OKLeadership*, teacher leaders learned strategies that enhanced several of these qualities. Participants also learned a variety of new leadership skills, especially related to adaptive leadership. They learned to cast a vision for others and design a process for achieving the vision. Participants cite learning the power of being fearless in their pursuits, especially when 'solutioneering', or being solutions-focused. From effective models throughout *OKLeadership*, participants learned to foster collaboration in their own ways.

Further evidence that the *OKLeadership* program changed teacher leaders' professional practice and leadership skills was revealed when the program materials categories linked consistently with one or more of the concepts culled from the participant interview transcripts as shown in Figure 3. These two-way linkages show how teacher leader experiences connected to the *OKLeadership* program features organized by category and vice versa. These connections among data sources also offers validity to the study's findings.

Figure 3

Two-way Linkages between Teacher Leader Concepts and Program Categories



Summary

This case study sought to answer two questions about the OKMath/OKSci Leadership (*OKLeadership*) program: *How does participation in OKMath/OKSci Leadership change a teacher leader's professional practice?* and *How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice?* After coding three data sources and analyzing the results, concepts and categories were revealed.

From the *OKLeadership* application response data from three of the four application questions, three concepts emerged: participants shared similar visions for math and science education in the state, they communicated a belief in the need for the development of teacher resources and training with an inquiry focus, and they expressed a desire to connect with other educators in the state to make a difference in education. These codes revealed the similarities in professional perspectives among the applicants.

After coding the responses to the question 3 on the *OKLeadership* application, "How would you characterize effective leadership?" separately, the resulting concepts were skilled, visionary, effective communicator, fearless, character, and fosters collaboration. Each of the concepts except character were also found when cross-referenced with the activity categories of the *OKLeadership* program which included leadership development, inquiry experience, opportunity to connect, problem-solving strategies, Keystone Project, reflection, and mentoring. These findings indicate that from the perspective of participants and their conception of effective leadership, the

OKLeadership program did contribute to teacher leadership development and leadership practice.

Finally, the concepts revealed from the coding process applied to the participant interview transcripts were connections, empowerment, growth, inquiry, support, confidence, and change while the categories revealed from the coding of the program planning documents identified leadership development, inquiry experiences, opportunity to connect, problem-solving strategies, Keystone Project, reflection, and mentoring. Multiple two-way linkages between the interview concepts and the program categories of the *OKLeadership* program indicated consistency between program design and perceived outcomes. Additionally, three concepts and categories were consistent across all data sources: problem-solving strategies, inquiry, and connections.

CHAPTER FIVE

Discussion and Conclusion

Purpose of the Study

Teacher Leadership is a crucial element for effective teaching and learning (Lieberman & Miller, 2004). Research on teacher leaders has shown the power of their influence in schools, from serving as role models to improving student achievement (Barth, 2001; Derington & Angelle, 2013). However, very little research is available on the process of teacher leader development and how professional development might best be designed to support it (Sinha & Hanuscin, 2017). The facilitators of *OKLeadership* created the program in an effort to grow a cadre of teacher leaders across the state who had the skills necessary to address problems of practice and influence change in their classrooms, schools, and beyond.

This case study examined the experiences and perceptions of teacher leaders participating in OKMath/OKSci Leadership (*OKLeadership*) and how those experiences and perceptions changed their classroom and leadership practices. As a teacher leader and former participant of *OKLeadership*, I was drawn to study the program as I watched three different cadres of teacher leaders experience change in their professional practice and leadership skills. I designed this case study in an effort to capture evidence of those changes by gathering data to inform my research questions:

-How does participation in OKMath/OKSci Leadership change a teacher leader's professional practice?

-How do the program features of OKMath/OKSci Leadership contribute to teacher leader development and leadership practice?

A purposeful sampling technique was used to select twelve *OKLeadership* program graduates. The data for this study came from three sources: program application responses, semi-structured interviews with program participants, and program planning documents. Data from each of the three sources was coded and revealed concepts and categories relevant to the study. This chapter includes a summary of the results, a detailed analysis of the findings, and how those results relate to current literature. Limitations of this study, implications for current practice, and suggestions for future research are also included.

Interpretations of the Findings

Before interpreting the study results, I will say I make no claims about the generalizability of the findings beyond this case. However, while the qualitative nature of the study restricts generalizability, “data based on human experience that is obtained [through qualitative research] is powerful and sometimes more compelling than quantitative data” (Anderson, 2010, p. 4). Readers will need to determine the transferability of the results of this study based on the similarity of contexts and settings.

The results of this study revealed participation in *OKLeadership* did change participants’ professional practice and contributed to their leader development and leadership practice in multiple ways. By actively participating in *OKLeadership*, teacher leaders experienced program elements embedded in the coded concepts of leadership development, inquiry experiences, opportunities to connect, problem-solving strategies, Keystone Project, reflection, and mentoring.

Analysis of the Findings

Through coding of the data sources, specific categories and concepts were revealed. From the participant interviews, seven concepts surfaced including *connections*, *empowerment*, *growth*, *inquiry*, *support*, *confidence*, and *change*. *Connections* was a code that appeared in every participant interview transcript. Teacher leaders described the importance of connecting with other like-minded teachers, both through the formal program activities and during the ‘off hours’ like during meals and evening opportunities for fellowship. Connections continue even after program graduation as participants seek each other’s advice and support.

Empowerment was reflected in the transcripts in several ways. One was the belief that as teacher leaders, they no longer needed permission to create an outside-the-box plan and then pursue it. Another way empowerment was expressed was from participants who encouraged each other to be fearless in their professional efforts.

Growth was a code which captured teachers’ desires to improve professionally both in their classrooms and in their leadership roles. Teachers expressed their recognition of improvement through participation in program activities as they described new ways of teaching and leading they had implemented and the resulting positive effects.

The code of *inquiry* was drawn from examples as teacher leaders described their experiences in *OKLeadership* that had an intentional inquiry model. Because the facilitators regularly employed the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional method (Bybee, et al, 2006), participants had multiple opportunities to experience the power of the inquiry process. They recognized the value of the high order

thinking which occurred through inquiry and many eagerly brought those experiences to their students.

Support was coded from several participant perspectives. The first was the support felt from fellow participants and mentors. Because strong relationships grew through connections made in the program, teacher leaders could seek collegial support when they needed it. A second type of support described came from the *OKLeadership* facilitators. Participants provided specific examples of how they felt continuously supported by the words and actions of the program facilitators.

The code *confidence* was used when participants expressed their ability to be self-assured when they wanted to try new things in their practice. They had a belief in themselves to accomplish the tasks they planned. Further, they recognized a new willingness to introduce their ideas confidently to their principals and then back up their ideas with evidence to garner support.

Finally, the code *change* represented a shift in thinking within participant responses. Several teacher leaders explained how their classroom and leadership practices changed because of their experiences and new understandings which occurred through *OKLeadership*. Some participants even noted change in their personal lives as a result of participation.

The coding process used with the program planning documents revealed seven overarching categories: *Leadership development, inquiry experiences, opportunities to connect, problem-solving strategies, Keystone Project, reflection, and mentoring*. The

activities within each of these categories provided influential experiences for participants who reported the effects of each on their professional and leadership practices.

Leadership development activities were embedded in each session and varied from being explicitly focused on strategies of leadership to the continual modeling of leadership attributes. Because the cadre was comprised of teacher leaders, models and mentors were readily available to support the enhancement of leadership skills. Models with varying approaches to leadership provided each participant multiple opportunities to learn and grow from those they felt best matched their own leadership skills.

Also embedded throughout each session were *inquiry experiences*. Specific inquiry-focused lessons were used to both model effective instructional practices and to serve as metaphors for the key leadership practices. Participants were engaged by a particular problem, asked to record their thinking about the problem, given opportunities explore their ideas through hands-on design, and encouraged to reflect on their original ideas and make modification if necessary. Then key concepts about the problem were explained so participants could relate their thinking to those concepts through elaboration. This process was repeated during each session so participants were provided multiple models to utilize with their students in their own classrooms.

Opportunities to connect was a category of activity infused both intentionally and unintentionally throughout each program session. Within session agendas, specific time was set aside for pairs and small groups to interact intentionally. However, as participants became familiar with each other and with the mentors and program facilitators, relational trust formed so even when not intentionally planned, participants found opportunities to

connect through conversation and sharing. Participants continued to connect even after program graduation through collegial friendships which strengthened over time through continued interactions.

Specific *problem-solving* strategies were also included in each session. Participants were exposed to a variety of problem-solving approaches and then were given opportunities to practice them. Often, the strategies were predicated on participants solving specific problems they were most passionate about. This provided buy-in for participants who were eager to address their personal and professional problems. Two specific strategies, including time for incubation and combining ideas in expected ways, were intentionally embedded in the program sessions.

The capstone activity of the *OKLeadership* program was the *Keystone Project*. Participants selected a particular problem of practice they wanted to address, spent months thinking about solutions to the problem, then settled on one approach to address it. One of the final activities of the *OKLeadership* program was the opportunity for participants to “pitch” their solution through a brief presentation. The projects tackled a wide range of professional issues from school level problems to those impacting education at the state level. Participants expressed an appreciation of the process used to develop their Keystone Projects and articulated the important professional and personal growth which occurred because of their experiences.

Reflection was another program feature embedded throughout the sessions. Participants were asked to reflect on the various activities through the sessions, but were also asked to reflect daily through meeting feedback. The process of formal reflection was

a new experience for some teachers and they shared stories of the impact reflection had on their thinking process and professional growth.

The final program category culled from the data was *mentoring*. While the program did utilize formal mentors who were Beta class graduates for both Class 1 and 2, informal mentorships also developed. As trust between participants grew over the course of the program, the teacher leaders began to seek each other's advice and guidance with issues they were facing. The two program facilitators also served as mentors to all the program participants through their supportive attitudes, words, and actions.

Data analysis revealed many concepts and categories which interacted within the sources. Learning experiences embedded throughout the *OKLeadership* program focused specifically on *leadership development* yet supported other categories as well. For example, early in the Alpha meeting (first two-day session), teachers were led through an exercise encouraging them to use reflective practices to identify their core leadership characteristics and record them on a visual model of concentric circles in their participant notebooks shown in Figure 4. They were then asked to identify their desired leadership characteristics and record them on the model.

Finally, they were asked to think about a leader they greatly admire and record the leadership characteristics of the person. This exercise laid the foundation for reflective practices on leadership growth throughout the remaining sessions. Several more times, teachers were directed to their Leadership Characteristics model to reflect and make modifications as their thoughts on leadership changed. In addition, participants learned

Figure 4

Core Leadership Characteristics



(Oklahoma State Department of Education)

about several other leadership strategies (e.g., transformation leadership) over the course of the program. Through these strategies, participants reflected on their leadership development over time.

Inquiry experiences was another category with embedded activities throughout the *OKLeadership* program which supported other categories as well. Tied to standards-based math or science concepts, these lessons provided hands-on problem-solving experiences for teachers. The lessons were usually unfamiliar to participants so they provided a true inquiry experience. Teachers often reported taking these lessons to their schools to share with their students. This shows yet another way *OKLeadership* changed teachers' professional practice.

The category of opportunities to connect was exemplified in a variety of ways throughout the *OKLeadership* program yet was also related to the categories of reflection

and problem solving. Connections occurred formally with peers, mentors, and facilitators, but also informally as well. Formal opportunities to connect were embedded within the program agenda as targeted activities with intentional outcomes. For example, Speed Dating was an introductory activity where participants were directed to think about a successful project they had worked on and reflect on the role their participation had in the success. They were then asked to think of a project or program they had been a part of which wasn't successful and then reflect on the factors which may have played a part in the lack of success. Then they were asked to think about what action they could have done to get the unsuccessful project on track. Participants were directed to respond to each prompt on a 3" x 5" card. Once their answers were recorded, they partnered with a peer for a "speed date" where one partner shared and the other recorded their responses before switching roles. Through this activity, participants were able to reflect before making connections with others.

This activity exemplifies how connecting strategies often served a dual purpose: To model cooperative learning techniques and to strengthen relationships among participants. Teachers could incorporate the connecting strategies in their classrooms which affected classroom practices. As participants connected with each other throughout the sessions and during times of fellowship afterward relational trust improved.

After completing the *OKLeadership* program, participants described examples of influence in seven conceptual areas: connections, empowerment, growth, inquiry, support, confidence, and change.

The category of problem-solving strategies was evidenced throughout the *OKLeadership* program and connected directly to the category of inquiry. Brainstorming, ‘solutioneering’ (finding creative solutions to problems), and creativity processes like ideation were part of the problem-solving strategies. Over the course of the program, participants were also introduced to multiple real-life examples of people who found outside-the-box solutions to their problems.

One example was borrowed from Google. Participants watched a brief introductory video about Google’s ‘Loon initiative setting the stage for the problem of internet connectivity in remote areas of the globe. Table groups were told to brainstorm solutions. Then the Google solution was revealed by video which showed large weather-type balloons, or ‘loons,’ which carry transmitters into the upper atmosphere creating a network. Internet providers on the ground send signals up to the ‘loons which transmit the signals back down over large areas of sparsely populated lands providing internet connection. *OKLeadership* facilitators tied this “pie-in-the-sky” idea to the importance of rejecting false negatives, also known as betas, during the problem- solving process. This lesson specifically resonated with several *OKLeadership* participants who even years after the program, still embrace pie-in-the-sky ideas and a fearless approach to problem solving in their leadership.

The category of Keystone Project encompassed all the steps necessary for *OKLeadership* participants to identify a problem-of-practice they wished to solve and then set about doing it while incorporating the strategies learned from the problem-solving category. The problems-of-practice selected for Keystone Projects varied in scope and

complexity. Some problems targeted were at the classroom level (e.g., creating a system for better access to learning resources in cooperative groups by changing table designs), while others targeted problems in statewide systems (e.g., connecting teachers in small, rural schools with the training and resources needed to implement inquiry-based lessons for their students). Regardless of the size of the problems tackled, all participants felt the satisfaction of planning an idea through to fruition, from concept to pitch to reality.

Participants reported the culminating activity of the process, giving their ‘pitch’ or three-minute speech about their project, was one of the more stressful, yet rewarding, experiences of *OKLeadership*. They reflected on how using their leadership voices, they were able to communicate their ideas efficiently and effectively which was a strong example of the influence of *OKLeadership* experiences on teacher leader development and practice.

The category of reflection was represented through multiple opportunities throughout the each program day as either a singular response (“Take the next five minutes to reflect on your Keystone Project”) or embedded in another activity (“Look at the ideas generated and expand on one in your Leader Logbook”). Participants recorded thoughts on previous session activities, revised their thinking on their Keystone Projects, and formulated ideas about inquiry lessons. These actions parallel the idea that reflecting on your work is an analytical exercise which allows the adult learner to revisit experiences, create plans, and take action (Merriam et. all, 2007).

Mentoring concepts could also be found throughout each program day’s agenda and was connected to each of the other categories. Mentoring was a part of leadership

development since teacher mentors, who were *OKLeadership* program graduates, returned the following year to assist the current participants. Keystone Projects also connected to mentoring as feedback and advice helped participants perfect their “pitches.” And certainly opportunity to connect concepts happened in most mentoring situations since effective mentoring can rarely occur without the opportunity to connect.

Connections to Literature

This case study is situated in the literature among the topics of both teacher leadership and professional learning. The results inform current teacher leadership research by revealing seven areas of practice participants expressed as influential to their growth. Research on professional learning was also expanded as seven specific categories of program activities were delineated and then referenced by program participants as effective in promoting growth in teacher leadership.

The findings outlined above connect to current literature from Chapter 2 in several ways. After decades of research, there is little information available on the process of teacher leadership development and how professional development might best be designed to support it (Sinha & Hanuscin, 2017). Data analysis, however, revealed all seven of the collective concepts culled from the participant interview transcripts from this study supported teacher leadership development. These included connections, empowerment, growth, inquiry, support, confidence, and change.

Further, Lieberman and Miller (2014) established an alternative model of professional learning which included five key features. Table 4 compares these five key features with the seven *OKLeadership* Program Categories. This comparison shows how

Table 4

Comparing Professional Learning Model Features to OKLeadership Program Categories

Professional Learning Model Features	<i>OKLeadership</i> Program Categories
Steady, intellectual work which promotes meaningful engagement with ideas and colleagues over time	Opportunities to Connect
Involves teachers in knowledge creation through collaborative inquiry into practice	Inquiry Experiences
Relies on both inside teacher knowledge and outside expert knowledge	Leadership Development Mentoring
Focuses on specific problems of practice and takes into account the experience and knowledge of teachers	Problem-Solving Strategies Keystone Project
Assumes teachers will actively engage in reflection, analysis, and critique	Reflection

Lieberman & Miller (2014)

each category revealed from coding the program planning materials directly aligns with research-based professional learning features outlined by Lieberman and Miller (2014). This alignment provides additional evidence the program features of *OKLeadership* were effective and influenced change in participants' professional practice and leader development.

Researchers over the past forty years have come to consensus about features of effective professional development (Desimone, 2011). These include content focus, active learning, coherence, duration, and collective participation. *OKLeadership* incorporated these five features as evidenced by planning documents and participant interviews. Further Desimone (2011) proposed a conceptual framework for effective professional development. The model included four steps: 1) Teachers experience professional

development; 2) The professional development increases teachers' knowledge and skills, changes their attitudes and beliefs, or both; 3) Teachers use their new knowledge, skills, attitudes, and beliefs to improve content of their instruction, their approach to pedagogy, or both; and 4) The instructional changes that teachers introduce to the classroom boost their students' learning. (p. 70). Using this proposed model, it can be inferred *OKLeadership*, because it has been shown to change teacher leaders' professional practice, will also benefit student learning.

Finally, as was noted in Chapter 2, Berg and Zoellick (2019) proposed a new conceptual framework for teacher leadership. They suggest for any teacher leadership study each of these four key dimensions of teacher leadership “should be referenced in an empirically-useful definition” for clarity (p. 2). These dimensions include legitimacy, support, objective, and method. For this *OKLeadership* case study, each of the dimensions is addressed as follows.

For legitimacy, participants were selected through a competitive application process which included a required letter of support from each candidate's principal. The second dimension, support, occurred throughout the *OKLeadership* program through release time, the development of a strong, collaborative culture, opportunities for leadership skill development, and connection to other teacher leaders outside school. For objective, *OKLeadership* participants each selected a problem of practice to address through a systematic plan (Keystone Project) developed during the program. Regarding the fourth dimension of teacher leadership, method, *OKLeadership* participants used a variety of influential methods to address their problems of practice including educating, coaching,

advocating, inspiring, and connecting. By providing space for each of the four dimensions of teacher leadership, *OKLeadership* provided teacher leader legitimacy for program participants.

The findings of this case study contribute to existing literature by providing insight about the categories of activities which affect change in a teacher leader's professional practice and contribute to teacher leader development and leadership practice. The study also provided insight into teachers' perceptions about which *OKLeadership* program concepts affected change as well.

Implications for Policymakers and Practitioners

The results from this case study provide several implications for policymakers and practitioners. Wenner & Campbell (2017) found in their extensive literature review of teacher leadership studies that teacher leaders are predominantly being prepared in one of two ways: Local training/professional development/conferences or through a university Master's program. *OKLeadership* was not a local training, at least for the majority of participants and the location changed each quarter. The sessions were held in a variety of conference centers, hotels, and state resorts which meant teacher leaders had the opportunity to leave the context of their school buildings behind and travel a reasonable distance to attend the program sessions. Because the majority of participants traveled to the host facility and stayed overnight, the opportunity to connect did not end with the closing activity day one. Instead, the group members remained together enjoying family-style meals and later in the evenings, gathering for conversation and fellowship. These opportunities to connect well beyond the typical work day contributed to the growth of

strong professional relationships and improved relational trust. Friendships were forged and a stronger sense of community developed. The opportunity to distance themselves from their schools and even families and focus on professional growth was cited as an important program feature by several study participants and should be considered when designing future professional learning.

A second implication for policymakers and practitioners is the unintended consequences which came with teacher leader empowerment. On average, twenty-five percent of *OKLeadership* participants went on to accept roles in administration within two years of their program graduation. Although the roles varied from principals to curriculum coordinators, the hit on classrooms was hard. In a time when teacher shortages are at an all-time high, policy-makers and practitioners must collaborate to raise the appeal of remaining in the classroom. Wenner & Campbell (2017) note “the egalitarian norms associated with teaching” need to be reimagined so teachers’ work is reframed and the role of a leader “is seen not as a hierarchal position, but is instead seen as a mechanism for putting everyone in place to take advantage of the skills and commitments teachers possess” (p. 163). Salaries and respect should be raised accordingly so teacher leaders can remain in their classrooms.

A third implication for policymakers and practitioners pertains to funding. The *OKLeadership* program was initially funded from the State Superintendent’s Office instead of as a line item in the state budget. Because of this, when education budget cuts were needed, programs like *OKLeadership* were some of the first cuts made. It is important

policymakers understand the value strong teacher leadership brings to schools across the state and fund these development programs accordingly. As Smylie & Eckert noted:

Developing leadership for the future requires something different—efforts that are ‘proactive’ and oriented towards ‘unknown’ and ‘open’ problems. It requires building orientations and capabilities to identify and understand new problems and opportunities, to envision and assess potentially efficacious strategies, to analyze, to create, to adapt and improvise, to transform” (p. 565).

At a time of unprecedented changes for education, it is more important than ever teacher leaders are able to receive the training they need to become “solutioneers” who can creatively address educational problems of today and the future.

Recommendations for Future Studies

This study examined how participation in a teacher leadership development program changed the classroom and leadership practices of twelve teachers who sought an opportunity to grow professionally. Each was confident enough in their professional abilities to apply to become a participant in the professional learning provided by *OKLeadership*. These teacher were ripe for growth and willingly sought to enhance their professional practice and leadership skills. Because strengthening teacher leadership opportunities has been shown to enhance job satisfaction and retention, future research is needed to validate this model for new or even pre-service teachers, as educational systems work to ameliorate poor attrition rates.

A second recommendation for future studies involves the impact of teacher leader practices, which this study did not address. Additional studies are needed to learn how teacher leaders and their leadership skills affect their colleagues, students, schools, and

broader communities. This would provide additional evidence of program impact beyond teacher leader participants.

Another study recommendation would be one focused on the change in collective teacher efficacy of a teacher leadership development program like *OKLeadership*. Collective Teacher Efficacy (CTE) studies have almost exclusively examined the effects on teachers at a school or district level. However, examining the impact of professional development on teachers from varying schools across a region or state could provide valuable insight in ways to enhance CTE more efficiently and effectively.

Context often plays an important role in teacher leadership professional development occurring at the local level. Smylie, Conley, & Marks (2011) determined “the culture and social norms of schools conspire against leadership development” (p. 279). Because of this, state level programs like *OKLeadership* may be more effective at assisting teacher leaders as teachers can be separated, temporarily, from their teaching contexts to participate. Additional studies are needed to compare outcomes of school and community level programs which operate within those contexts with those coordinated at the state level in which teachers can be temporarily distanced from their school contexts.

Conclusion

OKMath/OKSci Leadership was a program with a mission to create and support a dynamic network of teacher leaders who could help shape Oklahoma’s future. Over the course of three years, ninety-six teacher leaders from across the state applied and were accepted to attend an eight-day leader development program spanning the course of a year. During four two-day sessions, these teacher leaders went on a journey with the highly

engaging program facilitators who had worked to write a story with ongoing lines of inquiry which set the stage for what they really wanted to do: Empower solutioneers capable of addressing the problems of tomorrow's educational landscape.

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APPENDICES

Appendix A: Memorandum of Understanding

OKLAHOMA STATE DEPARTMENT OF EDUCATION AND HEATHER SPARKS MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (“MOU”) is entered into by and between the Oklahoma State Department of Education located at 2500 North Lincoln Boulevard, Oklahoma City, OK 73105 (hereafter, “OSDE”) and Heather Sparks located at 828 East Drive, Edmond, OK 73034 (hereafter, “researcher”).

WHEREAS the OSDE sponsored the OKMATH/OKSci Leadership Program from 2013 to 2016 that provided professional development to K-12 and Career Tech math and science teachers to develop solutions for their classrooms, schools, and/or districts related to mathematics and science education.

WHEREAS researcher is a National Board Certified teacher and 2009 Oklahoma Teacher of the Year. In 2014, researcher participated in the OKMath Beta group and is familiar with the OKMath/OKSci Leadership Program.

WHEREAS researcher wishes to conduct a case study on the OKMath/OKSci Leadership Program. Researcher will use survey data to measure participant’s self-evaluation of their own leadership skills and capacity. This data will be utilized in researcher’s dissertation.

I. PURPOSE

The purpose of this MOU is to delineate the responsibility of each party with regard to an embedded case study of the OKMath/OKSci Leadership Program conducted by the researcher.

II. TERM

The term of this MOU shall be effective upon signature of the state Superintendent of Public Instruction and Heather Sparks and shall remain in effect until June 30, 2021 to allow researcher to analyze data and report findings. OSDE or researcher may terminate this MOU if it is deemed no longer necessary, with or without cause, upon 30 days written notice to the other party. If the MOU is terminated by OSDE or researcher then researcher shall immediately return all data collected to OSDE and shall not maintain any copies nor share any data with any other party.

III. ROLES AND RESPONSIBILITIES

a. The OSDE agrees to provide researcher with program components, including presentations, applications, and data from applicant submissions from each of the three cohorts. Data includes personal information, such as phone numbers and

email addresses. Responses to open ended questions will also be provided. No student-level data will be provided.

This MOU does not create an employment relationship between OSDE and researcher. At no time during the performance of this MOU shall either party have authority to obligate the other for payment of any goods or services.

VIII. CONFIDENTIALITY

In accordance with requirement of the University of Oklahoma Institutional Research Board (IRB), researcher will safeguard the integrity of all data and the confidentiality of all program participants will be maintained throughout the embedded research case study. In the study's final report, no identifiable information about the participants shall be included.

IX. AMENDMENT TO MOU

Any change to the MOU must be approved in writing by both parties. No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in the MOU. OSDE or researcher may initiate a request to amend this MOU. All amendments shall be made in writing, dated, signed by both parties and identified as an amendment.

X. DISPUTE RESOLUTION

Any claims, disputes, or litigation relating to execution, interpretation, performance, or enforcement of the MOU shall be governed by the laws of the State of Oklahoma. Venue for any action, claim, dispute, or litigation relating in any way to the MOU shall be in Oklahoma County, Oklahoma.

In witness thereof, the undersigned parties agree to the terms and conditions of this MOU and this MOU is binding on the respective parties as evidenced by their respective signatures:

Heather Sparks, Researcher

Date

Joy Hofmeister, State Superintendent of Public Instruction
Oklahoma State Department of Education

Date

Appendix B: Recruitment Letter and Consent Form

OKMath/OKSci Leadership Participants,

My name is Heather Sparks, and as many of you know, I am working to complete my doctorate at the University of Oklahoma. As partial fulfillment of the degree, I am conducting a case study on OKMath/OKSci Leadership. I will be interviewing members from each of the Leadership classes (Beta, Class 1, and Class 2). The interviews will be audio-recorded and should last about an hour. They will be scheduled at a time and location most convenient to you. Participants are encouraged to bring any artifacts from Leadership (e.g. notes, journal responses, keystone project materials) that you are willing to share. In addition to the interview, I will ask participants to complete a graph of their perceived self-efficacy over the course of their teaching career.

Through analysis of the data collected from participants, I seek to answer the following research questions:

-How does participation in OKMath/OKSci Leadership affect a teacher leaders' individual and collective efficacy?

-How does participation in OKMath/OKSci Leadership affect a teacher leaders' professional practice?

If you are willing to participate in this study, please respond via the link below:

<https://forms.gle/ehgxrsR39JoFJ9Wd9>

I will be in contact with you to set up an interview.

Thank you, in advance, for considering your participation in this study. It is my intent to contribute to existing research on teacher leadership programs and their affects on teacher practice and efficacy.

Sincerely,

Heather Sparks, NBCT
405-620-0656
okhisparks@gmail.com

IRB NUMBER: 11119
IRB APPROVAL DATE: 10/09/19
701-A-1

Page 1 of 2

Signed Consent to Participate in Research

Would you like to be involved in research at the University of Oklahoma?

I am Heather Sparks, a doctoral student from the Educational Administration, Curriculum and Supervision (EACS) department, and I invite you to participate in my research project "A Case Study of Teacher Leadership Program Participation and Its Effects on Teacher Efficacy and Professional Practice". This research is being conducted across Oklahoma. You were selected as a possible participant because you were a member of either the Beta, Class 1, or Class 2 of OKMath/OKSci Leadership. You must be at least 18 years of age to participate in this study.

Please read this document and contact me to ask any questions that you may have BEFORE agreeing to take part in my research.

What is the purpose of this research? The purpose of this research is to determine the effects of participation in OKMath/OKSci Leadership program. I am looking specifically at a teacher's perceived change in his/her personal and teacher efficacy and professional practice after a year of participation in the program. My research design involves collecting three types of data: interviews, documents, and participant efficacy perception graphs.

How many participants will be in this research? Six people will take part in this research.

What will I be asked to do? If you agree to be in this research, you agree to be interviewed by me. I will ask a series of questions that will include references to your experiences during your Leadership year as well as questions that will ask you to reflect on any changes you feel you experienced either personally or professionally through your participation. I will also ask you to complete an efficacy perception graph in which you will document what you believe to be your efficacy levels over the course of your career including before, during, and after participation in Leadership. Finally, I will ask you to bring any artifacts from your Leadership experience that you wish to share (e.g. your participant notebook, reflection journal, or Keystone project materials).

How long will this take? Your participation will take no more than one hour and fifteen minutes. Additional time may be needed to reply to follow-up questions I may have after your interview session. The purpose of these questions will be for clarification only.

What are the risks and/or benefits if I participate? There are no risks and no benefits from being in this research.

Will I be compensated for participating? You will not be reimbursed for your time and participation in this research.

Who will see my information? In research reports, there will be no information that will make it possible to identify you. Research records will be stored securely and only approved researchers and the OU Institution Review Board will have access to the records. You have the right to access the research data that has been collected about you as a part of this research. However, you may not have access to this information until the entire research has completely finished and you consent to this temporary restriction.

What will happen to my data in the future? We will not share your data or use it in future research projects.

Do I have to participate? No. If you do not participate, you will not be penalized or lose benefits or services unrelated to the research. If you decide to participate, you don't have to answer any question and can stop participating at any time.

Will my identity be anonymous or confidential? Your name will not be retained or linked with your responses unless you specifically agree to be identified. The data you provide will be retained in anonymous form unless you specifically agree to data retention or retention of contact information at the end of the research. Please check all of the options that you agree to:

I agree to being quoted directly. ___ Yes ___ No

I agree to have my name reported with quoted material. ___ Yes ___ No

I agree for the researcher to use my data in future studies. ___ Yes ___ No

Will my personal records be accessed? If you approve, your confidential records will be used as data for this research. The records that will be used include the application you submitted to be considered for inclusion in your class of OKSci/OKMath Leadership. These records will be used for the following purpose(s): Coding of your application responses that may inform the research questions.

I agree for my records to be accessed and used for research purposes. ___ Yes ___ No

Audio Recording of Research Activities To assist with accurate recording of your responses, our interview session will be recorded on an audio recording device. You have the right to refuse to allow such recording without penalty.

Photographs If you choose to bring Leadership artifacts to share (e.g. Leadership notebook, notes, draft documents of your Keystone project), I would like to photograph them as additional data. I agree to have the artifacts I share photographed for research purposes. ___ Yes ___ No

Will I be contacted again? The researcher would like to contact you again to recruit you into this research or to gather additional information.

_____ I give my permission for the researcher to contact me in the future.

_____ I do not wish to be contacted by the researcher again.

Who do I contact with questions, concerns or complaints? If you have questions, concerns or complaints about the research or have experienced a research-related injury, contact me at (405) 620-0656. You can also contact my research advisory, Dr. John Jones, at jjones@ou.edu. You can also contact the University of Oklahoma – Norman

Campus Institutional Review Board (OUNCIRB) at 405-325-8110 or irb@ou.edu if you have questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than the researcher(s) or if you cannot reach the researcher(s).

You will be given a copy of this document for your records. By providing information to the researcher(s), I am agreeing to participate in this research.

Participant Signature	Print Name	Date
_____	_____	_____
Signature of Researcher Obtaining Consent	Print Name	Date
_____	_____	_____

Appendix C: Interview Questions

Interview Questions Leadership Case Study conducted by Heather Sparks

1. Is there a pseudonym you would like me to use in this study?
2. Do you have any questions about this study before we begin?
3. Please share some basic information with me: Where and what do you teach? How long have you been teaching? Has your position changed since you participated in OKMath/OKSci Leadership?
4. Reflecting on your experiences during OKMath/OKSci Leadership, what do you remember most?
5. Why did you apply to participate in Leadership?
6. In what ways, if any, did your participation in Leadership affect your classroom practice?
7. In what ways, if any, did your participation in Leadership affect your ability to positively influence student outcomes?
8. In what ways, if any, did your participation in Leadership affect your professional practice? (e.g., participation in professional organizations, serving on district or state-wide committees, or applying for awards or scholarships?)
9. In what ways, if any, did participation in Leadership affect your self-efficacy? (Self-efficacy is the belief in one's capacity to organize and execute courses of action required to produce given attainments.)
10. In what ways, if any, did Leadership differ from other professional development you may have participated in the past?
11. Have you, or do you currently, collaborate with others who attended Leadership?
12. Is there anything else you would like to share with me about your experience participating in OKMath/OKSci Leadership?