

1-1-2012

An Exploration Of The Relationship Between Mentoring Of New Teachers And Student Performance

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AN EXPLORATION OF THE RELATIONSHIP BETWEEN MENTORING OF NEW
TEACHERS AND STUDENT PERFORMANCE

A Dissertation

Presented to

the Faculty of the Morgridge College of Education

University of Denver

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

David Shadwell

June 2012

Advisor: Kent Seidel, PhD

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Title: AN EXPLORATION OF THE RELATIONSHIP BETWEEN TEACHER MENTORING AND STUDENT PERFORMANCE.

Advisor: Kent Seidel, PhD

Degree Date: June 2012

Abstract

While much research has explored the positive correlation between mentoring programs and resulting reduction in teacher attrition, the relationship between mentoring activities and student learning remains equivocal. The purpose of this study was to investigate the possible relationship between frequency and depth of mentoring activities in which high school teachers in their first three years of teaching report engaging, on the 2011 Colorado TELL (Teaching, Empowering, Leading and Learning) Survey, and examining concurrent student achievement growth and shifts in growth gaps as measured by the Colorado Growth Model in those teachers' schools. This mixed methods study also entailed open-ended interviews of five high school teachers in their first three years of teaching regarding their mentoring experiences. Responses were coded and themes were captured to add depth of understanding regarding the dynamics of mentoring of teachers and their students' achievement. As 50% of teacher evaluation in Colorado will be anchored to student academic growth by 2014, the relationship between mentoring and student learning is especially salient for school districts implementing mentoring programs, as well as for teachers who are relying in part on mentoring to help them positively impact student learning.

Acknowledgements

This study was completed with the tremendous help and expertise of Dr. Linda Brookhart and Dr. Kent Seidel. Linda has been invaluable for her suggestions, recommendations, and gentle urging for changes that impacted the overall direction of this study. I especially want to thank Linda for staying on for the duration of this work. Kent has served as an advisor on whom I could depend for substantive feedback to improve both the logic and data on which the study was built. Kent offered numerous insights and suggestions for which I am extremely indebted. I would also like to thank my committee members, Dr. Susan Korach and Dr. Marian Bussey for their help and contribution in suggesting I give more thought to the interpersonal aspects of mentorship within the study.

My wife, Stephany, has stood by me throughout this journey with love, patience and restraint. She has wisely kept her distance while still quietly insisting that I be present for my family in all the important ways that a husband and father should be. My children, Keana, Sophia, and Nick have been amazing in their ability to give their father time to work, even when that was a very boring thing for them to do. I thank both my children and wife for providing me with continual love, thoughtfulness, and inspiration to complete this work.

Finally, this work would never have been completed without the unconditional faith, love, and encompassing support of my parents, Fred and Margaret Hoepfner.

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Chapter One: Introduction

Background

This study examines the relationship between mentoring aspects of new teacher induction and student academic growth. Completed in a Colorado metropolitan school district, this study adds to the body of knowledge regarding support necessary for teachers to be effective instructors capable of fostering adequate academic growth in their students. The purpose of this study was to investigate the relationship between frequency and depth of mentoring activities in which high school teachers in their first three years of teaching report engaging on the 2011 Colorado TELL (Teaching, Empowering, Leading and Learning) Survey, and examining concurrent student achievement growth and shifts in growth gaps as measured by the Colorado Growth Model in those teachers' schools. This mixed methods study also entailed interviewing five high school teachers in their first three years of teaching regarding their mentoring experiences through open-ended question interview. Very few studies have been conducted to examine directly the possible links between mentoring and student learning (Villar & Strong, 2007; Rockoff, 2008; Fletcher & Strong, 2009). As 50% of teacher evaluation in Colorado and many other states will be anchored to student academic growth by 2014, the relationship between mentoring and student learning is especially salient for any school district inducting novice teachers into the profession, just as it is of prime importance to those

novice teachers who are relying on the induction process and mentoring they will receive to help positively impact student learning.

One of the guiding principles of the American Recovery and Reinvestment Act focuses on the necessity of improving U.S. public education in order for the U.S. to maintain a competitive position amongst other global powers. According to the Whitehouse.gov:

Providing a high-quality education for all children is critical to America's economic future. Our nation's economic competitiveness and the path to the American Dream depend on providing every child with an education that will enable them to succeed in a global economy that is predicated on knowledge and innovation. President Obama is committed to providing every child access to a complete and competitive education, from cradle through career. (Whitehouse.gov, n.d. para 2).

In the midst of increasingly globalized knowledge and technological prowess, schools and the teaching profession continue to attract scrutiny as nations strive to gain an advantage over one another in the global market. The United States' recent efforts to improve education may be seen as having initiated with the No Child Left Behind (NCLB) legislation that was signed into law in 2001. Yet the overarching concern for the work being carried out in American schools extends further back to the National Commission of Excellence in Education's (1983) report entitled *A Nation At Risk: The Imperative for Educational Reform*. The impetus to improve schooling remains central in President Obama's current Race to the Top initiative that is part of the American Recovery and Re-investment Act. This initiative encourages states to more narrowly define what students need to know and are able to do by grade level while also coupling assessment data with teacher evaluation. The thought behind linking assessment data with teacher evaluation is that it will introduce a greater degree of accountability in ensuring

that effective instruction is occurring in the classroom. According to Barber and Mourshed in the McKinsey Report, “The quality of an education system cannot exceed the quality of its teachers”. (2007, p. 19) The capacity to provide effective instructional training to teachers is one of three traits the McKinsey Report finds common to the top performing school districts around the globe (Barber & Mourshed, 2007). The report calls for initial teacher training and professional development that is delivered with greater precision to the classroom, with emphasis on authentic modeling and practice as central to any effective effort to improve instruction (Barber & Mourshed, 2007).

List of Terms

1. *School Academic achievement*: % of students performing at the proficient or advanced level on CSAP in reading, mathematics, writing and science for each grade level (3-10) in which students are assessed (Schoolview.org Performance, June 2011).
2. *Academic growth*: Colorado’s Growth model utilizes a combination of two measures to define academic growth according to its website: “1. Median growth: how the academic progress of the students in this school compared to that of other students statewide with a similar CSAP score history in that subject area, and 2) adequate growth: whether this level of growth was sufficient for the typical (median) student in this school to reach an achievement level of proficient or advanced on the CSAP within three years or by 10th grade, whichever comes first” (<http://www.SchoolView.org/performance.asp>).
3. *Academic growth gap*: Difference in Median student growth percentile in reading, mathematics and writing of White/Asian students as compared to growth percentile of different racial/ ethnic groups of students.
4. *CSAP*: Colorado State Assessment Program through which testing for public school students’ annual achievement and growth is assessed.
5. *Induction*: processes and systems that a school implements to help support teachers new to the profession to increase new teacher effectiveness, promote teacher well-being, and reduce attrition while also transmitting important aspects of school culture (Brooks, 1987; Huling-Austin, 1990; MacIsaac & Brookhart, 1994)

6. *Mentoring*: activities between mentor and inductee involving developing lesson plans, being observed by the mentor, observing the mentor's teaching, analyzing student work, reviewing results of students' assessments, addressing student or classroom behavioral issues, and reflecting on the effectiveness of the inductees teaching together with the inductee's mentor (Colorado TELL Survey Question 11.2, 2011).
7. *Mentoring depth*: the sum of the variety and frequency of mentoring activities in which the mentor and inductee engaged, defined in Chapter 3: Methodology.
8. *Mentoring frequency*: how often a given mentoring activity or set of activities was engaged.
9. *New teacher*: Teachers within their first three years of teaching.
10. *Gaps in academic growth*: Median Student Growth Percentile in reading, mathematics and writing for the following groups of students: free/reduced lunch eligible, minority students, students with disabilities, English language learners, students with below proficient performance. (Schoolview.org Performance, June 2011.)

Professional Development

Garet, Porter, Desimone, Birman, & Yoon (2001) venture that high quality professional development entails training for teachers that focuses on content, promotes active learning by teachers, fosters coherence in a program of teacher learning in terms of connecting overall instructional goals and alignment with state and district standards and assessments. Borko (2004) notes:

No Child Left Behind (NCLB) Act of 2001 requires that states ensure the availability of 'high-quality' professional development for all teachers. NCLB does not, however, address questions such as what constitutes high-quality professional development or how professional development should be made available to teachers (Borko, 2004 p.3).

According to the Colorado State Department of Education (2011):

High Quality Professional Development incorporates the national staff development standards as well as the state content standards. High Quality Professional Development works to improve the qualifications of teachers as well as the quality of teaching.(CDE Induction Guidelines, n.d.).

Such improvement of teacher qualification includes increasing teacher content knowledge, connecting training to school and district improvement plans, having a sustained focus on the classroom, and working to advance research-based instructional strategies. This view of professional development is in close alignment with the federal definition of professional development (Elementary and Secondary Education, 2004 Sec.9101.34). While the purpose of professional development is clear, it should also be noted there are distinct stages in the professional development spectrum depending on where a teacher may be within their career path. Ingersoll & Strong (2011) suggest that pre-service professional development pertains to theoretic training given to a teacher prior to their entrance into their first teaching assignment, including their student teaching experiences. Induction bridges this pre-service training to practice in the classroom as teacher during the first three years of the profession, while in-service professional development is continuous following the period of induction for the remainder of the teacher's career (Ingersoll & Strong, 2011).

Induction

Induction generally refers to the processes and systems that a school district and school implement to help support teachers new to the profession. Induction is intended to increase new teacher effectiveness, promote teacher well being, and reduce attrition while also transmitting important aspects of school-culture (Brooks, 1987; Huling-Austin, 1990; Macisaac & Brookhart, 1994). While a mentorship may be a large component of an

induction programs a school implements, induction refers to the full spectrum of supports intended to help acculturate new teachers. With the advent of NCLB, an added goal of the induction process is often how to support student achievement. Griffin (2003) emphasized that the primary goals and purposes of induction consist of improving student achievement through enhancing teacher effectiveness, increasing retention of new teachers, transmitting school systems and culture, and promoting, "...personal and professional well-being of beginning teachers" (Griffin. et.al. 2003. p.10).

Of greatest concern to this study is how induction impacts the State of Colorado. Colorado's revised state statute 22-60.5-102 (7), defines "Approved Induction Program" as:

a program of continuing professional development for initial licensees that meets the standards of the State Board of Education and that upon completion leads to a recommendation for licensure by the school district or districts providing such induction program. (Michie's Legal Resources, 2011).

The aspect of induction this study focuses on is that of mentoring, which research indicates constitutes the primary method of induction (Fideler & Haselkorn, 1999; Ingersoll & Smith, 2004; Smith & Ingersoll, 2004; Stanulis & Floden, 2009).

Mentoring

While induction and mentoring have been used interchangeably in much of the literature (Fideler & Haselkorn, 1999; Ingersoll & Strong, 2011), the manner in which mentoring is subsumed as one component within a myriad of possible supports in the CDE induction guidelines (2010) suggests that mentoring is only one of a number of possible supports needed in a successful induction program. According to the adopted induction rules of the Colorado State Board of Education and Colorado Revised State Statute 22-60.5-R-13.01,

criterion for approval and review of induction programs includes requiring school districts to establish standards for selection, training, and release time for mentors from some portion of their regular duties, along with matching mentors with inductees, and establishing the role of the mentor in the induction program. Within this same document CDE explains:

Mentoring is an essential component of induction, but is treated as a one-on-one support mechanism for individual inductees; induction is a sustained, comprehensive activity involving multiple educational professionals.” (CDE Induction Guidelines, 2010).

Other research supports the idea that induction denotes a broader range of strategies than mentorship through the observation that, “Mentoring is considered an effective component of new teacher induction programs” (Griffin, et. al. 2003, p. 10).

Mentoring is difficult to pin down as characteristics of what may constitute mentoring vary slightly from one research study to the next (Macisaac & Brookhart, 1994; Hargreaves & Fullan 2000; Ingersoll & Kralik 2004; Hudson 2004; Long 1997; Ingersoll & Strong 2011). According to Macisaac and Brookhart (1994):

...mentors share a common planning period with their partner teacher, are in close proximity to their partner teacher’s classroom, and are teaching at the same grade level or are teaching the same subject as their partner teacher (p.9).

While Hargreaves & Fullan (2000) emphasize emotional support, collaboration, recognition and engagement as pillars of mentoring. By contrast elements of support, socialization, adjustment, development and assessment are noted by Ingersoll and Kralik (2004) as essential features of mentorship. Hudson (2004) is in close agreement with Ingersoll and Kralik in finding emotional support, curricular knowledge and pedagogy, while Hudson also adds modeling as an important feature of mentorship. This coincides with findings of Long (1997) that emotional support, curriculum knowledge, pedagogical

practices, and role modelings are primary to successful mentoring. As this study specifically concerns the state of Colorado, the activities of mentoring included in the 2011 Colorado Teaching, Empowering, Leading and Learning (TELL) Survey serve to define mentoring for this study.

The activities included in question 11.2 of the TELL survey involving mentor and inductee consisted in:

- developing lesson plans,
- being observed by one's mentor,
- observing one's mentor's teaching,
- analyzing student work,
- reviewing results of students' assessments,
- addressing student or classroom behavioral issues and
- reflecting on the effectiveness of the inductees teaching together
- Aligning my lesson planning with the state curriculum and local curriculum

(Colorado TELL Survey, 2011. p18).

Student Achievement

Although the Colorado Department of Education has not incorporated strategies to improve student performance as an integral component of what should be addressed in high quality mentoring this change is sure to come with recent shifts in the manner by which teachers will be evaluated. Student Performance generally refers to how students score on high-stakes state testing. While NCLB legislation requires the testing of reading and math in grades 3-10, Colorado's more stringent law dictates the testing of reading, writing, and math in grades 3-10, along with the testing of science in grades 5,8, and 10 with the Colorado Assessment Program (CSAP). The State of Colorado has recently embraced a move away from focusing on percent of students demonstrating proficiency in the core academic areas of math and literacy in favor of a growth model that

emphasizes whether a student attained appropriate academic growth in these core areas over time, as measurement of growth more accurately reflects the overall educational environment of both the student and the school in which they are being educated.

While there are four areas The Colorado State Department of Education monitors for student performance, the two that are relevant to this study are:

academic growth: Median Student Growth Percentile in reading, mathematics and writing

gaps in academic growth: Median Student Growth Percentile in reading, mathematics and writing for the following groups of students: free/reduced lunch eligible, minority students, students with disabilities, English language learners, students with below proficient performance.

(Schoolview.org Performance, June 2011.)

Statement of the Problem

Induction programs are designed for probationary teachers: those teachers in their first three years of teaching. Induction programs typically implement a mentorship between a veteran teacher and the probationary teacher as a primary component of that induction program (Fidellar & Haselkorn, 1999). Yet Eaton and Sisson (2008) point out that, "...diversity in the implementation of mentoring and induction programs, combined with a lack of rigorous research on program effectiveness, makes it difficult for researchers to truly determine the impact of induction and mentoring" (p.1). According to several research reviews (Ingersoll and Kralik 2004; Totterdell et al. 2004; Lopez et al. 2004), little of the research on teacher induction to date has been conclusive or rigorous. In addition, very few studies have demonstrated a positive link between mentoring and student learning (Villar & Strong, 2007; Rockoff, 2008; Fletcher & Strong, 2009). As Colorado has recently signed Bill 10-191 into law that effectively ties 50% of teacher

evaluation to student academic growth as of 2014, this question of the connection between mentoring and student performance holds particular significance to probationary teachers. The stakes for new teachers in Colorado to being able to demonstrate their effectiveness in pushing student academic growth have never been higher. The primary support within induction programs most districts have in place is that of a mentorship. Yet those activities within a mentorship that are most likely to lead to positive student performance remain veiled, even while it is clear that Colorado schools need to make a concerted effort to provide support for teachers as this shift in evaluation takes hold.

Research Questions

1. Does evidence of depth of mentoring exist concurrently with evidence of school academic growth?
2. Does evidence of depth of mentoring exist concurrently with evidence of closing the growth gap within groups of students in a school?
3. What are new teachers' perspectives of the relationship between mentoring, student growth, and their ability to narrow the growth gap?

Chapter Two: Literature Review

This chapter presents the difficulties being encountered in retaining good teachers in their profession, and an examination of what supports teachers may be given as they enter the profession to make their jobs feasible. Following that information, the role of mentoring as a primary component of induction programs and an overview of models of mentoring are explored. Current research on the impact of mentoring on student achievement is examined, with an eye towards the increased accountability requirements to which teachers will be held in the future in order to demonstrate instructional effectiveness. Finally, the state of mentoring in Colorado is presented, as this study concerns the impact of mentoring on student performance in Colorado.

Why mentor teachers?

Among many other challenges with which the nation is grappling in recent efforts to improve education stands the high rate of teacher attrition. In 1999 it was reported that more than 20% of public school teachers were estimated to have left their positions within three years and 9.3% quit before finishing their first year (Recruiting New Teachers, Inc., 1999). By comparison, more recent research finds that 50% of all certified public school teachers permanently leave the teaching profession before the end of their fifth year of teaching (American Association of State Colleges and Universities, 2006; Ingersoll, 2001; Ingersoll & Smith, 2004; The National Foundation for the Improvement of Education, 2002). Some studies suggest that it is the most intelligent of

these new teachers as indicated by their SAT scores who are the most likely to exit the profession early (Henke, Geis & Chen, 2000; DeAngelis & Presley, 2007; Murnane et al., 1991; Schlechy & Vance, 1981). The North Central Regional Education Laboratory (NCREL, 2001) found that 75 to 100 percent of teachers who leave are effective or very effective. The lack of support given to teachers was noted in this NCREL report as a primary reason for teachers leaving the profession. This failure of support is again cited by the president of The National Commission on Teaching and America's Future as the main cause for the high level of attrition of new teachers (Carroll, 2005, p. 199).

Along with the growing recognition that U.S. education efforts must be improved if the nation is to keep its competitive edge globally, awareness is rising that more must be done to attract and keep good teachers in the profession. One of the primary means that has been utilized in easing the entrance of new teachers into the profession has been through induction programs. Ingersoll & Smith (2004) point out that unlike other professions, teaching has not traditionally embraced an induction process. Rather, teachers in the past have been placed in the classroom in Darwinian fashion to fend for themselves in negotiating the trials and complexities of teaching. In one recent study researchers found that while pre-practicing physiotherapists, occupational therapists, social workers and teachers were all given high levels of support prior to entering their respective profession, teachers were alone in having little or no support as they began work in their professional role (Le Maistre & Pare, 2009). Recognition of the difficult nature of the role of a new teacher is not new, and although mentoring was present in the 1970's and 1980's (Ganser, 2002), interest ramped up significantly with the 1990's National Commission on Teaching and America's Future recommendation that, "...we

must create and support mentored induction programs for new teachers and create peer assistance programs to provide support for experienced teachers” (National Commission on Teaching and America’s Future, 1996 p. 38).

Background and Practice of Mentoring Teachers

While mentoring between more experienced and novice teachers was to a small extent present in schools in the 1970’s, it gained substantial ground in the 1980’s and 1990’s as a method of induction (Ganser, 2002). Mentoring has taken such a prominent place in teacher induction programs over the last two decades as to make mentoring and induction largely interchangeable concepts (Fidellar &Haselkorn, 1999; Ingersoll & Strong, 2011). Support for mentoring began in part with the recommendation in *A Nation at Risk* (1984) that veteran teachers should have a hand in designing teacher preparation programs and in supervising teachers during their probationary years (National Commission on Excellence in Education, 1984). By 1986, 17 states had pilot mentoring programs and 14 states were developing programs. By 1990, only three states had no form of mentoring/induction program (Brown, 2003). Progressing forward a decade to 2000, mentor training was required in 18 states but varied in depth from a tool for orientation to a year-long course for graduate credit (Ganser, 2002). Although mentoring has become prevalent across the nation as a means of induction for new teachers, the term is applied to a large array of practices. Ingersoll and Smith (2004) note that mentoring may range from a one-time meeting between two teachers to a comprehensive support system that might potentially last over several years (p.30). Ingersoll and Smith (2004) used national Schools and Staffing Survey (SASS) data to focus on the cumulative effect of various induction components on the retention of new teachers after their first year.

They begin with a basic level of induction as one in which a mentor who is in supportive communication with an administrator is assigned to a new teacher. A slightly more in-depth category is when, working with the mentor, the new teacher is involved in seminars and common planning time or time to collaborate with other teachers. At the next level of depth, participation in an external teacher network is added to the previous supports, along with a reduced number of class preparations. The researchers were able to draw a correlation between low attrition rate and depth of mentoring interventions that had been implemented (Ingersoll & Smith, 2004).

That mentoring has been increasingly embraced by education as an excellent tool for induction speaks to the general acceptance that the outcomes of mentoring are positive. Yet there remain some researchers who harbor serious reservations about mentoring. For instance, Long (1997) expressed concern at the possibility that the mentor relationship could be detrimental to both mentor and protégé if not supported with appropriate resources. Long (1997) also worries that the indoctrination that may occur through mentoring might serve to stifle the innovation and creativity of the protégé in a field that is most in need of those open-minded qualities. Carter & Francis (2000) expressed dismay over mentors who are not trained or indoctrinated in reflective teaching. Here again the concern is that mentoring could stifle a budding teacher's newly acquired but never practiced constructivist and inquiry-based pedagogy. So instead of fostering reflective practice, mentoring would in such an instance perpetuate the status quo (Carter & Francis, 2000). Yet much of the research on mentoring (Brown & Wombach, 1987; Gold & Pepin, 1987; Cheng & Brown, 1992; Odell & Ferraro, 1992; Spuhler & Zetler, 1993, 1994, 1995; Eberhard Reinhardt – Mondragon & Stottlemeyer,

2000; Henke, Chen & Geis, S. (2000); Ingersoll, 1997, 2000, 2001; Ingersoll & Smith, 2004; Fuller, 2003; Charles A. Dana Ctr, 2002.) does support the meta-analysis on induction carried out by Ingersoll & Kralik (2004) in which they found, “collectively the studies do provide empirical support for the claim that assistance for new teachers and, in particular, mentoring programs have a positive impact on teachers and their retention” (p.2).

Models of Mentoring

According to Ehrich, Hansford & Tennet (2004) “The original meaning of the word *mentor* refers to a father figure who sponsors, guides, and develops a younger person” (p.519). For teachers, mentoring would usually be thought to consist of an older or more experienced teacher helping a younger or less experienced teacher learn what they need to know to be successful in the classroom. Alongside the question of what is meant by mentoring stands the question of what the implementation of a mentoring program should look like. Similar to other professions, there may be a variety of intents behind launch of such a program. Support, socialization, adjustment, development and assessment may all be reasons why an organization would embrace a mentorship program (Ingersoll & Kralik, 2004). Wood & Stanulis (2009); Hargreaves & Fullen (2000); Hudson (2004) collapses possible categories into fewer, more primary categories.

Wood & Stanulis (2009) break induction down into three primary areas that include transitioning between pre- and in-service professional growth, the process of acclimating to the teaching profession, and the deepening of pedagogic skills and content knowledge. The most prominent component to the induction process within their system is the preparation of the mentor teacher and work with new teachers (Wood & Stanulis,

2009). Other researchers focus on the importance of emotional support, collaborative rather than hierarchical mentoring relationships, along with recognition and engagement with the community both inside and surrounding the school (Hargreaves & Fullan, 2000). Hudson (2004) finds five areas emanating from a constructivist approach to mentoring. These consist of emotional support, sharing of curricular knowledge, sharing of pedagogical practices, modeling, and feedback. Long (1997) agrees that emotional support, curriculum knowledge, pedagogical practices, and role modeling are all central. An aspect that most of the models have in common is a component of mentor preparation. It would make sense that clear delineation of those areas in which the mentors are to coach their protégés in any program would be helpful to the collaborative process. There is growing support for the idea that mentor training is an essential feature of an effective induction program (Fletcher et al., 2005, Scherer, 1999, Evertson & Smithey, 2000).

An extreme example of a mentoring program that stands outside the bounds of this study may be found in The Boston Teacher Residency program. This unusual preparatory program in association with Boston Public Schools is currently drawing national attention for the frequency and intensity of mentoring to which teacher candidates are exposed. The mentorship component of this 3 year program is held in such high regard that the bi-weekly meetings between mentor and protégé are referred to as, "Sacred Time" (Solomon, 2009, p.483). The vision on which the internship was founded emphasizes the development of inquiry, equity, and community. Solomon notes these themes were determined to be essential based on backwards planning for what a BTR candidate should know and be able to do as a successful teacher in the Boston Public

Schools. Again, this program highlights the degree of training mentors are given through the program as a fundamental aspect that makes the program effective (Solomon, 2009). The urban residency model of mentoring is one amongst a variety of other models that include alternative licensure mentoring, district mentoring programs, and even building-level mentoring programs. Depending on which of these a teaching candidate enters, their mentoring experience can vary to a wide degree from that of their colleagues.

Mentoring Impact on Student Achievement

Attention has recently turned from whether mentoring programs can curb teacher attrition to the question of what effect mentoring may have on student achievement. Wang, Odell & Shrew (2008) carried out a comprehensive review of mentoring research in which they failed to find a single study that addressed the effects of induction programs or their components on student achievement. Yet five years earlier researchers in Texas had already found that while districts ranked teacher improvement as the primary reason why they implemented induction programs, increasing student achievement was the second most sought after effect of such an implementation (Pan, 2003). The connection between a strong mentoring program and a result of increased student performance is an intuitively logical one and has already been embedded as a component of plans looking to improve the lot of public education by leveraging the federal fiscal package money to make broad changes in education. For instance, The Strategic Management of Human Capital in Education Project has set as its one goal the improvement of student achievement in the 100 largest urban school districts across the US. This organization recommends that states and districts should:

Require an intensive induction/residency program for all new teachers until they meet a minimum standard of performance and impact on student learning and require that successful candidates exit the program within a fixed number of years (Consortium for Policy Research in Education, 2009, p.9).

This recommendation aligns well with that of another researcher, Ngwudike, who in looking over the data from high performing nations in the Trends in International Mathematics and Science Study (TIMSS) 2003, makes the advisement that countries flagging behind in the math and sciences should put emphasis on new teacher induction and support.

These induction and support programs should include seminars and workshops, mentoring, observing veteran teachers in classrooms, team teaching, peer interactions, lighter teaching load, and assignment to less challenging classrooms. New teacher induction and support programs should be used as a means of reducing new teacher attrition rate, thereby increasing teacher retention. (Ngwudike, 2009 p.12)

In a recent randomized study that did take a specific look at the question of whether teacher participation in an intense induction program impacted student achievement on test scores, as compared to teachers who had a more standard induction process, no positive correlation was found (Black, Neel & Benson 2008). Another study that has looked at aspects of this same vein of questioning is the Teacher Advancement Program (TAPS), which has shown promise as a system to elevate the expertise of novice teachers. While this study is ongoing in the Chicago Public Schools, it was unable to document in the first year of implementation a substantive difference in student test scores for those students who are taught by teachers in the Chicago Teacher Advancement Program as compared to students who are with teachers not associated with the program.

The authors of this study indicate:

While the introduction of TAP led to reported changes inside the school, these changes did not produce measurable impacts on student test scores as of March of the first year of the program. Student achievement growth as measured by average math and reading scores on the Illinois Standards Assessment Test (ISAT) did not differ significantly between TAP and non-TAP schools (Glazerman, McKie & Carey, 2009, p.x).

In the 2010 second year follow-up to this study it is again reported that no substantive differences were found in student achievement or growth scores, nor in teacher retention between TAP and non-TAP schools (Glazerman, & Seifullah, 2010). By contrast Rockoff (2008) studied the impact of mentoring for beginning teachers in New York City on both teacher retention and student achievement. He found retention of beginning teachers within a school to be higher when a mentor had previous experience working in that school. Rockoff's findings also support a relationship between an increase in student performance in reading and teachers receiving more hours of mentoring, lending affirmation to the idea that the intensity of mentoring may lead to improvement in teaching skills that result in student achievement (Rockoff, 2008). Fletcher, Strong, and Villar (2008) studied three models of teacher induction, the first involving a mentors working full time over the course of two years with 15 teachers, while the second and third models veered course after the first year of mentoring to a much more diluted level of support in the second year. The authors found higher student achievement gains resulting from those teachers who had received the higher level of support for both their first and second years. This finding of the higher efficacy of full time mentors on student achievement is again supported by Fletcher & Strong (2009) in a study in which they looked at a comparison of student achievement in fourth and fifth

grade students of new teachers. The students whose teachers were supported by full-time mentors able to devote their energies solely to mentoring again demonstrated greater achievement gains than students associated with site-based mentors who were not released from their regular duties for the purposes of mentoring. These two studies lend weight to the argument that a more intense mentoring process in which the mentor can fully attend to the protégé leads to gains in achievement for that protégé's students.

A recent study by Villar & Strong (2007) carried out a cost-benefit analysis of a mentoring program in California. They specifically looked at the rate of return after five years of a comprehensive model of new teacher induction. Although significant differences between new induction teachers and veteran teachers emerged in pre- and post-achievement rates, the study found that classes taught by new teachers in the comprehensive mentoring program realized reading gains that were equivalent to the gains of classes taught by more experienced teachers, despite being assigned to classrooms that had lower initial achievement and higher representation of English language learners (Villar & Strong, 2007). In addition the study found that the formal induction program halved the teacher attrition rate over a five-year period. Ultimately the analysis finds that the district gains \$1.88 per dollar invested, while the state recovers 98% of the money it invests in the induction program. After five years, society gains 30% on what it invested in the form of improved student achievement and lower teacher attrition, making focused induction programs an excellent value for all (Villar & Strong 2007).

Mentoring in Colorado

As in other states in the nation, impetus towards improving education in the 1980's resulted in a push in Colorado towards induction programs designed to help new teachers' entry into the profession. As early as the 1970s school districts in Colorado were proceeding with efforts to better support their teachers through the introduction of professional development programs. One instance of this is Jefferson County Schools' Staff Development Academy, developed in 1973 in response to growing concerns by the community regarding the state of education (Elias, McDonald, Stevenson, Simon & Fisher, 1980). By the 1980's a branch of this program had emerged that was strictly concerned with inducting new teachers into the profession. One component of this induction program involved principals pairing new teachers with veteran teachers of the same subject area for purposes of guidance (Elias, et.al, 1980). It is worth noting that in July of 1994 when the state of Colorado mandated that school districts provide induction support for new teachers, one of the primary teaching universities in Colorado already had mentoring as an integral component of that program's induction model (Macisaac & Brookhart, 1994).

The typical path towards teacher licensure that continues to be the primary means by which teachers enter the field of teaching in Colorado, entails an individual's enrollment in a teacher preparation program at an approved institution of higher education. This involves, among other requirements, a minimum of 800 hours of "field based training" by the candidate (Colorado Educator Licensing Act, 1991, p. 7). The majority of hours for this training requirement are usually met through student teaching in the latter part of the candidate's academic preparation. A vital element of this

experience is the mentoring the teacher candidate receives from the cooperating professional teacher. Within this time, the student teacher works closely with the professional teacher to first observe, and then move towards completely taking over teaching duties for a specified period of time, after which teaching duties are then returned to the supervising teacher. When candidates are hired into a school district, they enter the district's induction program that allows the candidate to move from a provisional license to a professional license, through a program that CDE has indicated should include, "supervision by mentor teachers, ongoing professional development and training, including ethics, and performance evaluations" (http://www.cde.state.co.us/cdeprof/Licensure_provtoprof_faq.asp). In addition to variations in district induction programs, individual schools may have their own twist on mentoring which can again widen the possible field of experiences that a new teacher may encounter. In addition to formal mentoring that may be made available by the district and school, it is common for new teachers to credit colleagues who fill the role of informal mentors in their school setting as the individuals who lend them the greatest practical help in learning the ropes of the profession. This study is directed at the preparation experience most commonly encountered by new teachers in Colorado. This normally entails a path through a university teacher preparation program that leads to district and school mentoring as those teachers find job placement. There are a variety of mentoring programs with varying degrees of depth currently in practice in Colorado. All of these differing mentoring experiences will have informed the responses to the TELL Survey that served as an integral data source for this study.

The most in-depth mentoring program currently in operation in Colorado focuses on a one-year apprenticeship like the residency model mentioned earlier involving the Boston Schools. This Boston program has a counterpart in both the Denver Teacher Residency Program as well as the Denver Boettcher Teachers Program. According to the Urban Teachers Residency United website, all three are partners in the Urban Teachers Residency United Network made up of several other programs throughout the country (<http://www.utrunited.org/the-network>). Both Denver programs require a five-year commitment from participants and involve a partnership between an urban school district and a university. The programs begin with one year spent by the teacher candidate working closely on a full-time basis with an experienced mentor teacher in the classroom of a high-needs school. During this time the candidate takes classes on the side and earns their provisional teaching license. In the second year the candidate is placed as a first year teacher at a high-needs school and may then complete their MA within the next two years. According to the UTRU partner website all these programs are oriented towards alleviating the high teacher attrition rate in urban districts with high-needs schools. (<http://www.utrunited.org/the-network>). The number of candidates in these programs remains small in comparison with other paths to licensure.

The urban residency programs fall under the more general umbrella of alternative licensure in Colorado. Alternative licensure is an avenue different from the teacher preparation programs offered by institutions of higher learning by which an individual may obtain licensure in Colorado. According to the Colorado Department of Education website FAQ on alternative licensure, whether the candidate enters the one-year alternative licensure track or the two-year teacher in residency alternative track, both

options require the candidate to have procured their bachelors degree, employment to teach, and to have passed the Praxis II or Place test (http://www.cde.state.co.us/cdeprof/Licensure_alt2_faq.asp#2). Induction and mentoring in the one-year alternative licensure path, while presumably meeting requirements of CDE, is largely dependent on the district and school in which the alternative candidate finds work. While this is also true of the two-year Teacher in Residency option, this path does pair the alternative candidate with a professional teacher who serves as the teacher-of-record for the first year of this option. The candidate then becomes the teacher of record in the second year, and in this way has greater exposure to in-depth mentoring.

Although there are a variety of mentoring experiences available in Colorado depending on a teacher's path into the profession, it remains true that those completing licensure in 2010 – 2011 through alternative licensure programs including the urban residency programs make up only 15% of the total number of candidates receiving educator licensure (Colorado Commission on Higher Education, 2012). In light of this the responses reported in question 11.2 of the TELL survey would be expected to be a fair representation of what most new teachers in Colorado experience.

With the recent passage of the Ensuring Quality Instruction Through Educator Effectiveness Bill 10-191 that will take effect in 2014, Colorado has embraced a teacher evaluation system that will be heavily anchored to student achievement. This new law mandates that at least 50% of an instructor's overall rating will be determined by student growth. In addition, teachers will be evaluated annually, and even the most veteran teachers may lose their tenure status if they acquire two years of partially effective or ineffective evaluation ratings (Colorado Department of Education, 2012). Among other

ramifications of this law, one outcome that might be expected is greater concern over teacher induction that is supportive of new teachers in being able to positively impact student growth and achievement. What will sharpen this concern further are recent results from the Colorado TELL (Teaching, Empowering, Leading, & Learning) survey.

According to the 2009 TELL survey executive summary report,

New teachers are not systematically supported. Almost one-fifth of new teachers report not being assigned a mentor. Of those who were mentored, more than one-quarter never developed lesson plans, were observed by or analyzed student work with their mentor. New teachers reporting sufficient support are significantly more likely to indicate their intent to remain teaching in their current school.

(Hirsch, Sioberg, & Germuth, 2010, p.viii)

Having noted these results, the summary report makes the recommendation that school districts should,

Ensure that every teacher is inducted into the profession and receives more frequent support to improve instruction. The State Board of Education should reassess adopted rules and the approval process for district and BOCES (Boards of Cooperative Educational Services) programs. Programs should provide data that demonstrate that all new teachers are provided a mentor who provides regular support to help enhance instructional practices and teacher effectiveness.

(Hirsch, Sioberg, & Germuth, 2010, p.viii).

While the state of Colorado has identified a need to improve systems of induction that are currently in use, such changes must be oriented towards increasing student achievement and growth if they are to be helpful to new teachers, since it is student growth that will determine at least half of any teacher's yearly evaluation. Yet a literature search for studies linking specific mentoring practices to increased student achievement or growth uncovered only four articles (Rockoff, 2008; Fletcher, Strong, & Villa, 2008, Fletcher & Strong, 2009; Villa & Strong, 2007). This study is investigating the

concurrency between Colorado's Growth Model data for student growth and shift in achievement gap with frequency and depth of mentoring practices reported by new teachers in the Colorado 2011 TELL survey. The source of data for this study is the Colorado Department of Education (CDE). House Bill 08-1384 authorized CDE to conduct biennial surveys to research the teaching and learning conditions in the state. CDE has made available to the public data to the 847 schools where more than half of the school faculty responded to the 2011 TELL Survey (Hirsch, 2011). It is hoped that findings will then serve as a starting point for determining those characteristics of mentoring that should be incorporated into district plans for new mentoring and induction initiatives that will help improve the educational practices of schools in Colorado and result in improved student growth, and narrowing of the achievement gap.

Chapter Three: Methodology

Most studies that have been carried out on mentoring have been primarily interested in the relation between mentoring practices and the effect on teacher retention (Hargreaves & Fullan, 2000; Hudson; 2004; Ingersoll & Kralik, 2004; Ingersoll & Smith, 2004). The widespread implementation of mentoring as a central part of induction programs may be broadly seen as a system-wide response to alarm over high rates of teacher attrition. As there is little research linking depth and frequency of mentoring with resulting student growth and achievement, it remains difficult to determine whether mentoring may be said to impact student achievement. In recognizing that 50% of teachers leave the profession within five years of beginning their teaching career, the ability for school districts to be able to leverage induction programs to maximize student growth remains essential if the movement towards improving education is to be sustainable. While this study is not able to conclude that mentoring is changing student achievement, the exploration of concurrent data and accompanying in-depth interviews provides evidence that mentoring is probably a valuable part of a comprehensive strategy to impact student achievement.

Research Questions

Colorado has two instruments, the Colorado TELL (Teaching, Empowering, Leading and Learning) survey, and the Colorado Growth Model, which allowed the question pertaining to the relation between depth and frequency of teacher mentoring and

corresponding impact on student learning to be addressed. The research questions asked in this study were:

1. Does evidence of depth of mentoring exist concurrently with evidence of school academic growth?
2. Does evidence of depth of mentoring exist concurrently with evidence of closing the growth gap within groups of students in a school?
3. What are new teachers' perspectives of the relationship between mentoring, student growth, and their ability to narrow the growth gap?

Background

The positivist-leaning view of the universe predominant in much scientific research continues to generate a wealth of useful information as it enlightens humanity as to which levers may need to be pulled to produce certain outcomes through the paradigm of causality. Yet qualitative research has also blossomed with the recognition that an event experienced as a phenomenon is a rich source of information offering an understanding of an event no less than a causal account of that same phenomenon. Creswell (2007) notes that qualitative research by its very nature demands that the researcher embrace, "the idea of multiple realities" (Creswell, 2007 p.16) One analogy encapsulating both the qualitative and quantitative approach suggested by Rolston (1987) is that of a girl waving to her friend. While the positivistic interpretation of this event might look at the underlying physiological workings of the body, seeking to causally connect nerve impulses across synapses from the eyes, to the brain, and then from the brain to the arm with the resulting sequence of muscle and skeletal interactions involved in the motion of the wave, the phenomenological or qualitative lens would look for the meaning behind the wave as experienced by the person waving and the person receiving

that wave. Although the two accounts of a wave to a friend may be very different, together they serve to enrich one another and give a fuller understanding of both how the wave occurred, and what it meant to the persons involved in the exchange.

Firestone (1986) notes that while quantitative research assumes a separate and objective reality that stands apart from the observer, qualitative research embraces a reality that arises socially from the views of participants in that reality. Firestone observes, “Where studies using different methods have similar results, one can be more certain that the findings are not influenced by the methodology” (Firestone, 1986 p. 20). Firestone goes further to suggest a complementarity that qualitative and quantitative gestalts may offer when merged. One manner by which this may be done is in a mixed methods design.

logic model.

The logic model this study sought to probe was the causal relationship between depth and breadth of new teacher mentoring and resulting student academic growth and closure of growth gaps between different ethnic students and their White/Asian counterparts. Within this causal model increase in student performance would be a consequence of an improvement in the new teacher’s instructional efficacy as a result of mentoring that teacher had received. When coupled with field interviews of new teachers that were expected to reveal mentoring as a fundamental strategy utilized by schools towards school improvement, it was anticipated that a relation between depth and breadth of mentoring and both student growth and closure of growth gaps would be found. Equally, findings in which depth and breadth of mentoring were found with negative student growth or increases in growth gaps would be contrary to this logic model.

Research Design

Johnson & Onwuegbuzie (2004) define mixed-method research as:

The class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. Mixed-methods research design is an attempt to legitimize the use of multiple approaches in answering research questions, rather than restricting or constraining researchers choices. It is an expansive and creative form of research, not a limiting form of research. It is inclusive, pluralistic, and complementary, and it suggests that researchers take an eclectic approach to method selection and the thinking about the conduct of research (Johnson & Onwuegbuzie, 2004 p. 17).

Johnson & Onwuegbuzie (2004) argue that disparate sources of data, methods and research approaches that lead towards a common conclusion serves as justification for mixed methods research because the product offers greater explanatory power than what mono-method studies may offer (Johnson & Onwuegbuzie, 2004, p.18). Teddlie & Tashakkori (2008) clarify that while mixed-methods research, “emerged partially out of triangulation literature, which has commonly been associated with the convergence of results”, they also note new awareness of the importance of divergent results in mixed-methods research. Specifically, Teddlie & Tashakkori (2008) argue:

Divergent results often provide greater insight into complex aspects of a phenomenon, which can then lead to more in-depth investigation of previously unexplored aspects of that phenomenon.

(Teddlie & Tashakkori, 2008 p. 9)

Teddlie & Tashakkori (2006, 2009) suggest five areas of research design in mixed-methods research: parallel, sequential, conversion, multilevel, and fully integrated. This research study design consisted of two phases, a quantitative followed by a

qualitative. Quantitative extant data were accessed and utilized in a secondary analysis. Then the qualitative data were collected and analyzed to help deepen understanding of the quantitative results obtained in the first phase (Creswell, 2007). In this way the analysis of quantitative data provides a general understanding of the research questions, while the qualitative data analysis helps to interpret those statistical results through the provision of an overlying narrative derived from some participants similar to those in the quantitative datasets. This approach would then be classified as a quan→QUAL sequential study.

The quantitative component of this study was descriptive and non-experimental as the study utilized the comprehensive set of data presented by the Colorado TELL survey and the Colorado Growth model in a secondary analysis approach. Descriptive research is concerned with describing that which currently exists (Haller & Kleine, 2001; Hittleman & Simon, 1997). Dependent and independent variables were selected rather than experimentally manipulated. Because there were eight independent variables as mentoring activities that might be linked to the respective dependent variables of student growth and shift in the growth gap, the method of statistical analysis chosen was multiple regression as this allowed for the analysis of multiple independent variables as an account for the variance in a dependent variable (Mertler & Vannatta, 2005). This point is again reiterated by Kerlinger (2000) where it is explained that multiple regression analysis is a method for studying the effects of more than one independent variable on one dependent variable. Separate multiple regressions were run for each of the two respective dependent variables. Quantitative findings from this data analysis were supplemented with in-person interviews with five new high school teachers to derive a narrative account that would

help inform the relation between mentoring, student growth, and narrowing of the achievement gap to a greater extent. Interviews were conducted in accordance with a basic protocol recommended by Creswell (2007) in which interviewees were identified through purposeful sampling. An interview protocol was designed and pilot tested with two new teachers chosen through convenience sampling (Yin, 2003). While all interviewees were offered an off-site location at which to conduct interviews, all chose to be interviewed at their school site either during or at the end of the school day. All interviewees signed an informed consent form indicating their approval to conduct an audiotaped interview with the researcher. Interviews were digitally audio-recorded and then transcribed verbatim. These transcripts were member-checked, coded, and analyzed for pervasive themes found to exist across the interviews. The common themes that emerged from this analysis were then placed on a matrix with the studies' three research questions (See appendix C) to help inform the creation of the overarching qualitative narrative. Common themes that emerged to formulate the narrative from the interviews were then compared and contrasted against the statistical analyses of the extant data of the Colorado Growth Model and Colorado 2011 TELL survey in order to seek a deeper understanding of the trends made evident in the quantitative data analysis.

Sample

While the quantitative data used in this study pertains to a body of data collected by the Colorado Department of Education from the entire state of Colorado, the qualitative component of the study was carried out at a large urban district in Colorado from whom permission was gained to conduct the study.

The TELL Colorado New Teacher Research Brief (2011), makes clear that roughly 12% or 3,379 of 30,000 respondents of the 2011 TELL Survey were in their first three years of teaching. This same percentage answered the specific question relevant to this study, question 11.2 of the 2011 TELL survey. All school-based licensed educators in public schools in the state of Colorado received a unique anonymous access code to take the online survey. According to The Colorado TELL survey by The New Teacher Center.org (2011), approximately 30,000 Colorado educators (47 percent) responded to the survey. Within the TELL Colorado General Trends presentation of the survey Hirsch (2011) reports 26,092 teachers (including instructional coaches, department heads, vocational, literacy specialists, etc.), 667 principals, 426 assistant principals, and 2,2080 other education professionals (school counselors, school psychologists, social workers, etc.) completed the survey (Hirsch, 2011. p.3). Since this study focused specifically on new teacher responses on question 11.2 of the survey, and only those schools with populations of new teachers responding that were large enough to maintain criteria for confidentiality were made public, the sample size for this study was 32 schools. The other primary source of CDE data was the Colorado Growth Model. Participants in the growth model were made up of all schools and students who participate in state assessments in Colorado.

Site Selection

The site of the qualitative component of this study was a large, high-performing urban school district in Colorado. Interviews were conducted by purposeful sampling at four different high schools within the district. Principal permission to conduct the study was obtained at each site following district approval. Five new high school teachers from

four different high schools were interviewed. An email invitation was sent out to forty-three teachers identified by their principals as having probationary status. In Colorado, probationary status identifies a teacher as being within their first three years of service in a given school district. Probationary status then signifies the possibility that a teacher might be within his or her first three years of the teaching profession, although this status is equally given to veteran teachers new to a school district. Of the forty-three teachers invited to participate, twelve responded. Five of these twelve respondents were excluded from the study since they were not probationary but had veteran status having been in the profession more than three years. Seven teachers responded fitting the criteria of being within their first three years of the profession. Five of these seven teachers proved to be available and were interviewed for the study. All five teachers taught at the high school level with two of the participants in their first year of teaching, two in their second year, and one in his third year of teaching. While one of the participants had earned a doctoral degree, two had an MA, and two were operating with their Bachelor's degree. None of those interviewed were direct reports of the researcher. Each teacher was interviewed one time, with interviews being carried out between March and April of 2011. While the investigator offered all interviewees to meet at the location of their preference, all participants chose to carry out the interviews at their school site either during their planning period or at the finish of their school day. Participants were given the project information sheet and signed the informed consent waiver in which they agreed to give an audiotaped interview prior to the interview. Interviews ranged in length from 30 to 40 minutes, depending on the length of the interviewees' responses. Interviews were digitally audio-recorded and then transcribed verbatim by the researcher.

Statement of bias

This researcher did not have a highly supportive mentoring experience when first inducted into teaching in Colorado, and there is a chance this may color my perceptions of what teachers shared with me in the interviews, as well as the manner in which I report out the quantitative component of the study and the synthesis of quantitative and qualitative data. Yet my recognition that current conditions in teaching are far different from when I entered the profession should have helped ameliorate this bias to a large extent. In addition, my current role as an administrator may have had an effect on what interviewees felt they could share with me, as well as the overall communication patterns between us since there is traditionally a power differential recognized between administrator and teacher. Efforts were made prior to each interview to ensure that the interviewee recognized the confidential nature of what they said in an effort to alleviate tension this power differential might otherwise bring about.

Instrumentation.

This study utilized three different instruments. The quantitative portion of the study used both responses to question 11.2 of the Colorado TELL survey as well as district-level data on growth and achievement gap closure available through CDE's SchoolView.org website. The third instrument used was the interview protocol developed for the qualitative portion of the study for the purpose of constructing an overlying narrative of the mentoring experience and how it may impact student performance.

Colorado TELL Survey.

The independent variables, the variables under study for their probable influence on the dependent variables, are the eight mentoring activities as listed on question 11.2 of the Colorado TELL Survey. (See Table 1).

Table 1						
Colorado Teaching, Empowering, Leading & Learning Survey Question 11.2						
On average, how often did you engage in each of the following activities with your mentor?						
	Never	Less than once per month	Once per month	Several times per month	Once per week	Almost Daily
a. Developing Lesson Plans						
b. Being observed teaching by my mentor						
c. Observing my mentor's teaching						
d. Analyzing student work						
e. Reviewing results of students' assessments						
f. Addressing student or classroom behavioral issues						
g. Reflecting on the effectiveness of my teaching together						
h. Aligning my lesson planning with the state curriculum and local curriculum						
i. Other						

(TELL Colorado.org, 2010, p.18)

The Colorado TELL Survey is administered for the Colorado Department of Education by the non-profit independent organization, The New Teacher Center based out of Santa Cruz California. Colorado House Bill 08-1384 authorized CDE to conduct biennial surveys to research the teaching and learning conditions in the state. The first TELL survey was conducted in 2009, while the 2011 survey was administered in February of 2011. CDE made available to the public data to the 847 schools where more than half of the school faculty responded to the 2011 TELL survey. What was highly relevant to this study was that only teachers in their first three years and those indicating that they served as mentors were asked about induction. Because CDE made public only those schools' data on new teacher responses where the pool of new teachers responding was great enough to ensure confidentiality, only 32 high schools had responses reported out that could be utilized for this study.

Colorado's schoolview.org.

The 2011 TELL survey data was correlated with publicly available 2010-2011 Colorado State schools performance data available through the Colorado Department of Education's SchoolView.org website. The purpose of this correlation was to explore whether evidence of depth of mentoring exists concurrently with evidence of school academic growth and closure of academic growth gaps. The Colorado Growth Model details median student growth and achievement gap data for individual schools. Data from 2010-2011 were accessed through the SchoolView Data Center (SchoolView.org, 2011).

interview protocol.

Permission was obtained from a large urban Colorado school district to approach new high school teachers to interview regarding their mentoring experiences and perceptions related to the impact of mentoring on student performance. As the review of literature on mentoring and induction revealed little that would help guide the formulation of questions focused on the relationship between teacher mentoring and student growth (Villar & Strong, 2007; Fletcher, Strong & Villar, 2008; Rockoff, 2008; Glazerman, Mckie & Carey, 2009, Glazerman & Seifullah, 2010), the researcher developed questions that would probe teachers on their perception of this relationship. While question 11.2 of the 2011 TELL Survey was one of the interview questions placed on the protocol, the surrounding questions were designed to garner greater explanation, description, and understanding of the perceived mentoring experience and impact on student performance. The questions were then refined through two pilot interviews, resulting in a set of questions the researcher felt confident would generate a clear picture of the teachers' perceptions of the relationship between teacher mentoring and student performance. Participants were asked the following eight questions:

1. What supports do you need to increase student growth and close the achievement gap?
2. Please talk about what supports your school has in place that help you increase student growth and close the achievement gap.
3. Please describe the relationship you have with your assigned mentor.
4. Describe how your mentor relationship helps you increase student growth and close the achievement gap.
5. 2011 TELL Survey question 11.2 (See Table 1).

6. Describe the activities you engaged in with your mentor and share what impact those activities had on the academic growth of your students?
7. What impact have those activities had on the achievement gap within your classroom?
8. If you were able to design your own mentoring experience that would result in high student growth while also serving to shift the achievement gap, what would it look like and how might it differ from your current experiences?

The protocol underwent two pilot tests with two new teachers who were sampled by convenience for the purpose of honing the interview protocol questions to align squarely with the research questions of this study.

Data Analysis Procedure

The mixed methods approach to this study required analysis of both the quantitative and qualitative components of the study prior to integrating the results of each to construct a larger picture of the relation between mentoring and student performance.

schoolview.org and TELL survey analysis.

The quantitative portion of this mixed methods study was based on data collected and made available to the public by the Colorado Department of Education. The goal of the study was to investigate connections between the depth and frequency of mentoring of new high school teachers, median student growth and shift in growth gaps in those teachers' schools through two different instruments that CDE uses to assess the status of the educational system in Colorado. The 2011 TELL survey data which is publicly available and provides information that reliably drills down to the school level in relation to new teachers' mentoring experiences was used in conjunction with publicly available

2010-2011 Colorado District Performance data. The SchoolView.org website details median student growth and achievement gap data for schools, delineating growth gap information by “Subgroups that include students eligible for Free/Reduced Lunch, minority students, students with disabilities (IEP status), English Language Learners, and students needing to catch up” (Schoolview.org, 2011). For the 2011 Colorado TELL survey the eight of the nine mentoring activities specified in question 11.2 of the survey were entered into version 19 of The Statistical Package for the Social Sciences (SPSS) software program with a numeric coding corresponding to the Likert scale in the survey question. On this scale a 1 referred to an activity that was never engaged, while a 6 referred to a mentoring activity that was engaged almost daily.

In order to calculate an overall value for question 11.2 of the 2011 TELL survey for those schools where participation and response rate was high enough for the data to be made public, each sub-question a-h was calculated through weighting the responses by the percentage of respondents who answered each question. A Likert-scale-approach was utilized for each mentoring activity with a response of never = 1, and a response of daily = 6.

In the instance of the following example data for sub-question a of 11.2 from the TELL survey :

Never (1)	>1x per month (2)	1x per month (3)	Several/month (4)	1x per week (5)	Almost daily (6)
13%	25%	24%	19%	16%	4%

Weighting was calculated as:

$$(.13 \times 1) + (.25 \times 2) + (.24 \times 3) + (.19 \times 4) + (.16 \times 5) + (.04 \times 6) = 3.15$$

When the weighted total of each mentoring activity letters (a-h) were summed together, an overall score was obtained indicative of both the breadth and depth of mentoring activity for that respective school. This number was referred to as the cumulative weighted mentoring activities score.

bivariate regression.

Due to the relatively small sample size (n=32 schools with a total number of teachers = 213) available through the TELL survey, bivariate regressions were run between each of the individual mentoring activities with average academic growth, as well as between each of the individual mentoring activities with shift in the growth gap. In addition, a bivariate analysis was run prior to the multi-linear regression for both depth of mentoring with average academic growth, as well as for depth of mentoring with shift in academic growth between White/Asian and other ethnic populations. The purpose of carrying out these bivariate regression calculations was exploratory (the general recommendation in multi-linear regression is to add 8 additional samples to a base of 50 samples for every added coefficient within such a regression model (VanVoorhis & Morgan, 2001). In addition the last bivariate analyses run offered an opportunity for analysis by reduction of the number of variables using a new constructed variable, the cumulative weighted mentoring activities score. The level of significance was set at $\alpha = .05$, and p values were reported in accordance with 2-tailed testing. A squared multiple correlation coefficient (R^2) was used to determine what percentage of variance of the

dependent variable (student growth and shift in achievement gap) was concurrent with the independent variable. While in the first eight analyses the independent variable consisted of the specific mentoring activity, in the last analysis the independent variable was the cumulative weighted mentoring activities score derived from eight of the nine mentoring activities of question 11.2 on the 2011 TELL Survey.

multiple linear regression

Following the bivariate regression analysis the multi-linear regression analysis was carried out. Here too the level of significance was set at $\alpha = .05$, and p values were reported in accordance with 2-tailed testing. A squared multiple correlation coefficient (R^2) was used to determine what percentage of variance of the dependent variable (student growth and shift in achievement gap) could be related to the independent variables, which were eight of the nine mentoring activities of question 11.2 on the survey. The statistical significance and relative import of each independent variable was then examined using the respective standardized regression coefficient beta (β) weights. The relative magnitude of beta (β) weight indicated the importance of the variable with which that weighting was associated. Beta (β) weights were then analyzed for their respective contribution to the overall model.. The statistical model used was a linear combination of the independent variables:

$$\hat{Y} = B_0 + b_1X_1 + b_2X_2 + \dots + b_8X_8$$

Where \hat{Y} represents the dependent variable, B_0 represents the y-intercept, b represents the regression coefficient for each independent variable, and X represents independent variables (X_1 = developing lesson plans, X_2 = being observed teaching by mentor teacher, X_3 = Observing mentor teacher, X_4 = analyzing student work, X_5 = reviewing

results of student assessments, X6 = addressing student or classroom behavioral issues, X7 = reflecting on effectiveness of teaching, and X8 = reflecting aligning lesson planning with the state curriculum and local curriculum.

teacher interview analysis.

The data analysis approach for the qualitative component of this study is what Creswell (2007) refers to as the Data Analysis Spiral. This approach acknowledges the recursive path of the researcher between organizing, categorizing, interpreting, and then ultimately working out a narrative account of the uncovered data (Creswell, 2007 p.151). Interviews were digitally audio-recorded and then transcribed by the researcher verbatim. Transcripts were member checked with interviewees to ensure accuracy. The transcripts were then read multiple times, and marked with memos and labels in the margins to help in identifying categories or themes. Simultaneously, the researcher listened to each interview in entirety several times to ensure that the categories from the written transcript aligned with the verbal nuances heard on the audiotape. While several categories naturally arose based on the research questions being asked, other categories emerged from the data itself when notations across transcripts were compared. Based on the developed categories a Table of Codes (Appendix C) with subsidiary themes was created as a coding key that was directly linked back to the research questions being asked in the study. Transcripts were then coded using this key. In this way the thematic analysis of the interview responses allowed categorization and an overall picture that informed the resulting narrative of the researcher (Seidman, 1998; Maxwell, 1996).

integrating the data.

Following both the qualitative and quantitative analyses, the data derived by the two approaches was integrated through the examination of data points arising from the school-level TELL Survey responses with themes that had emerged from the interviews. Overlapping data points and themes were then linked back to the research questions the study sought to address.

Timeframe for Study

This study was carried out between the Spring and Fall of 2011. Interviews were conducted in March and April of 2011, while quantitative data was pulled from the Colorado Department of Education website and analyzed in August through December of 2011.

Ethical Considerations

The primary ethical consideration in the quantitative portion of the research was to be sensitive with the data and analysis so that individuals or schools were not identifiable though the Colorado Department of Education information utilized in this analysis was readily accessible to the public. The area of greatest ethical concern overall in the study pertained to the interviews that were carried out with new teachers. The identity of these persons, as well as the school in which they were working was protected and held confidential by the researcher so as to protect these teachers' from any perceived concern.

Limitations

Because the New Teacher Support portion of the TELL survey is designed to find out about the induction experiences of new teachers as a whole, excising questions that

pertain purely to mentoring activities while excluding other induction components may exaggerate the influence of mentoring on student growth and reduction in the growth differential in respect to other induction experiences. It should also be noted that the schools included in this study may be the likeliest to have mentoring activity supports in place due to the relatively large numbers of new teachers in these schools. Conversely, large numbers of new teachers in a school might be interpreted as indication that teacher transience is high and academic achievement low. Another significant limitation to the quantitative portion of the study is the lack of a direct link between the data from the TELL survey and the Colorado Growth Model. Both datasets come from the same school at about the same time, however there are a large array of variables and individual non-respondents that are also part of the impact on student growth and the growth gap changes, not represented in these data. Perhaps the greatest limitation to this study comes from the TELL Survey data on question 11.2. Because the survey lumps together teachers in their first three years of teaching, even while mentoring would normally only occur in the first year of a teacher's entry into the profession, the results from this question are not concise to the level that would have been most illustrative of mentoring in Colorado.

Summary

In order to investigate the question of how the frequency and depth of mentoring of new teachers impacts student performance as indicated by academic growth and closure of the achievement gap, a mixed methods study was undertaken utilizing a quan→QUAL sequential approach. Data available through the Colorado TELL survey and the Colorado Growth Model were pulled and analyzed using both bivariate and multiple linear regression models. Findings were then given richer context through

interviews carried out with five new teachers. Interviews were transcribed, analyzed, coded, and then sifted for emerging themes from which an overall narrative was fashioned. This narrative was then utilized in the analysis of the quantitative portion of the study so as to suggest further pathways that might be explored to help ensure new teachers are equipped to meet the demands of their profession.

Chapter Four: Findings and Discussions

In considering the findings of this study a review of both the quantitative and qualitative aspects of the research are merited. Both research questions one and two were quantitative in nature and after briefly reviewing these questions, consideration will be given to the data analysis arising from the statistical models that were utilized. Both bivariate and multivariate analyses of the data will be explored. Following discussion of the quantitative findings the third research question is reviewed separately as this question was qualitative in nature. Results of the data derived from the interviews through four overarching themes or codes will be undertaken to address the question of how teachers perceive the relationship between mentoring and student performance. The summary of the chapter then sets the stage for a synthesis of these results in the next chapter.

Quantitative Findings

When the 2011 Colorado Tell Survey data was vetted for high schools in which new teacher responses were available for question 11.2 of the TELL Survey, 32 high schools were found that also had corresponding Colorado Growth Model data adequate to be included in this study. All 32 schools had at least 50% or more of their teachers participate in the TELL survey. The overall academic growth of students was measured through calculating the mean of growth in reading, writing, and math for the respective school. Depth and breadth of new teacher mentoring within that same school was

determined through progressively weighting frequency of engagement in the various mentoring activities specified in sub-questions a-h of question 11.2 of the 2011 TELL survey, and multiplying these weightings by the percentage of respondents from the respective school reporting that frequency of engagement. Although each school included in this study had a teacher participation rate in the TELL survey of fifty percent or higher, no mathematical distinction was made between schools having higher or lower participation beyond this fifty percent participation criterion. The product of each categorical weighting and school's percentage of respondents reporting that engagement were summed to achieve a score for that sub question's constructed variable. These variables were used in both bivariate analyses that were run, in addition to the multiple regression models that were analyzed. The sum of these sub-question scores was used to achieve an overall numeric value referred to as the cumulative weighted mentoring activity score that represented question 11.2 as a whole for a given school. This weighted total number was then also used in bivariate regression models that were run.

Two of the three questions developed for this study were addressed through quantitative means. Null hypotheses for each of the two research questions were tested. The third question is addressed in qualitative findings.

research question 1

The first research question and null hypothesis: Does evidence of depth of mentoring exist concurrently with evidence of school academic growth?

Ho₁ : Evidence of depth of mentoring is not found concurrently with evidence of school academic growth.

research question 2

The second research question and null hypothesis: Does evidence of depth of mentoring exist concurrently with evidence of closing the growth gap between groups of students within schools?

Ho₂ : Evidence of depth of mentoring is not found concurrently with evidence of closing the growth gap between groups of students within schools.

Results of Data Analysis

The results of data analysis are presented by question and hypothesis

mentoring and academic growth.

Research question 1 asked whether evidence of depth of mentoring exists concurrently with evidence of school academic growth. The null hypothesis maintained that evidence of depth of mentoring would not be found concurrent with school academic growth. In bivariate analyses that were carried out between each of the eight mentoring activities and overall student growth, the null hypothesis maintained that each new teacher mentoring activity would not be found concurrently with school academic growth. The alternative hypothesis posited that new teacher mentoring would be found concurrent with school academic growth. Of these bivariate analyses only the mentoring activity F, “Addressing Student or Classroom Behavioral Issues” showed significant correlation. As indicated in Table 2, the coefficient of determination labeled “R square” holds a value of .183 indicating that addressing student or classroom behavioral issues as a mentoring activity is concurrent with about 18% of average student growth. The t-test that was run on these data indicated a value of -2.588, with a P value of .015, which is less than the alpha value of .05, indicating rejection of the null hypothesis. Corresponding to the t-test,

the analysis of variance of these data produced an F ratio (Mean square regression to mean square error) of 6.699. This ratio has 1 numerator and 30 denominator degrees of freedom. With $p=.05$ the critical F value is 4.17. Since the sample F-ratio of 6.699 is greater than the critical F, the null hypothesis is rejected. Further, the analysis of variance resulted in a P value of .015, which is less than the alpha value of .05, indicating rejection of the null hypothesis. It would then be concluded that the mentoring activity of addressing student or classroom behavioral issues was, with significance, found to concurrently exist with school academic growth.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.427 ^a	.183	.155	7.2981764	.015a

a. Predictors: (Constant), f weighted

The null hypothesis in the bivariate correlation of the cumulative weighted mentoring activities score and the overall average growth score advocated that depth of mentoring would not be found concurrently with overall school academic growth. The alternate hypothesis was that increased depth of mentoring would be found concurrent with school academic growth. The coefficient of determination held a value of .050, indicating that depth of mentoring activity is concurrent with about 5% of average student growth. With the t-test yielding a value of -1.262 and a P value of .217, well above the alpha value of .05, the null hypothesis would not be rejected. In addition the analysis of variance of this data produced an F ratio (mean square regression to mean square error) of 1.593. This ratio has 1 numerator and 30 denominator degrees of freedom. With $p=.05$ the critical F value was 4.17. Since the sample F-ratio of 1.593 was less than the critical F, the null

hypothesis was not rejected. Further, the analysis of variance resulted in a P value of .217, which is greater than the alpha value of .05, again supporting failure to reject the null hypothesis.

When a multi-linear regression between each of the weighted mentoring activities and the overall average growth score was calculated, the null hypothesis maintained that new teacher mentoring activities would not be found to be concurrent with school academic growth. The alternative hypothesis was that increased mentoring would be found concurrent with school academic growth. The coefficient of determination held a value of .274, indicating the eight mentoring activities collectively are concurrent with 27.4 % of average student academic growth. The F ratio (Mean square regression to mean square error) was 1.086, with 8 numerator and 23 denominator degrees of freedom. With $p = .05$ the critical F value fell between 2.27 and 2.64. Since the sample F-ratio of 1.086 was less than the critical F, the null hypothesis was not rejected. The analysis of variance confirmed a P value of .407 that was greater than the alpha value of .05, and so again, the null hypothesis was not rejected.

None of the coefficients fell in the significant range as indicated by the t values with $\alpha = .05$. The coefficient closest to .05 was f, “Addressing Student or Classroom Behavioral Issues” which may only be said to have a 12% weighting in this model, a value found by squaring the partial correlation. This also corresponds to a standardized β weighting of -.800, the heaviest in relation to the other coefficients.

mentoring and closing the growth gap.

The second research question and null hypothesis pertained to whether evidence of depth of mentoring existed concurrently with evidence of closing the growth gap

between groups of students. The null hypothesis, H_{02} , was that evidence of depth of mentoring would not be found concurrently with evidence of closing the growth gap between groups of students.

In separate bivariate analyses that were carried out between each of the eight mentoring activities and student growth differential, the null hypothesis maintained that each respective mentoring activity would not be found to exist concurrently with evidence of closing the student growth differential. The alternative hypothesis posited the respective mentoring activity would be found concurrent with evidence of closing the student growth differential. Of these analyses only the mentoring activity B, "Being Observed Teaching By My Mentor" showed a significant concurrency with decreasing the student growth differential. As indicated in Table 3, the coefficient of determination labeled "R square" holds a value of .223 indicating that being observed by one's mentor as a mentoring activity explains about 22.3% of the reduction in the growth gap. The t-test that was run on these data yielded a value of -2.931 with a P value of .006, well below the alpha set at .05, indicating rejection of the null hypothesis. In addition, the analysis of variance of this data produced an F ratio (mean square regression to mean square error) of 8.592. This ratio had 1 numerator and 30 denominator degrees of freedom. With $p=.05$ the critical F value was 4.17. Since the sample F-ratio of 8.592 was greater than the critical F, the null hypothesis was rejected. Further, the analysis of variance resulted in a P value of .006, which was less than the alpha value of .05, indicating rejection of the null hypothesis. In light of this it would be concluded that being observed by one's mentor correlates to a concurrent decrease in the student growth gap between White/Asian students and their counterparts of differing ethnicity.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
2	.472 ^a	.223	.197	11.9861	.006 ^a

a. Predictors: (Constant), b weighted

When a bivariate regression between the cumulative weighted mentoring activities score and growth differential between White/Asian students and differing ethnic students was carried out, the null hypothesis maintained that depth of mentoring activities would not be found to exist concurrently with evidence of closure of the gap in growth scores between ethnic majority and minority students. The alternative hypothesis was that depth of mentoring would be found to exist concurrently with closure of the growth gap between groups of students. The coefficient of determination was calculated at .004, indicating that the cumulative weighted mentoring activities score explains 0.4% of the change in growth scores between differing ethnic students and their White/ Asian counterparts. The t-test run on these data yielded a value of $-.348$ with a corresponding P value of $.730$, well above the $.05$ alpha value, leading to a failure to reject the null hypothesis. The F value found through the analysis of variance was $.121$, a ratio with 1 numerator and 30 denominator degrees of freedom. With $p=.05$ the critical F value was 4.17 . Since the sample F-ratio is less than the critical F value, the null hypothesis may not be rejected. According to the analysis of variance the P value of $.730$ is greater than the pre-determined alpha value of $.05$, further supporting failure to reject the null hypothesis.

When a multi-linear regression between each of the weighted mentoring activities and growth differential between White/ Asian students and differing ethnic students was carried out, the null hypothesis maintained that depth in mentoring activities would not be

found concurrently with closure in the gap in growth scores between differing ethnic students and their White/Asian counterparts. The alternative hypothesis was that increased depth of mentoring would be found concurrently with evidence of closure of the differential in growth scores between differing ethnic students and their White/Asian counterparts. The coefficient of determination held a value of .403, indicating that the eight mentoring activities explain roughly 40.3% of the change in growth scores between differing ethnic students and their White/Asian counterparts. The F ratio found through the analysis of variance was 1.937, a ratio having 8 numerator and 23 denominator degrees of freedom. With $p = .05$ the critical F value lies between 2.27 and 2.64. Since the sample F-ratio of 1.937 is less than the critical F value, the null hypothesis was not rejected. The analysis of variance's P value of .103 is greater than the pre-determined alpha value of .05, supporting a conclusion that the null hypothesis should not be rejected.

The only coefficient registering as significant with a t value less than the threshold of $\alpha = .05$ is that of coefficient b. Coefficient b is the mentoring activity of being observed teaching by one's mentor. This coefficient has a 16% weighting in this model, a value found by squaring the partial correlation. This also corresponds to a standardized β weighting of -.537 one of the heavier weightings in relation to the other coefficients within this multi-linear regression model.

Summary of Quantitative Findings

Research questions one and two were explored through both bivariate and multiple regression analyses. For research question one separate bivariate analyses that were carried out between each of the mentoring activities and average school academic

growth revealed that activity F, “Addressing Student or Classroom Behavioral Issues” did show a significant correlation to concurrent school academic growth. The coefficient of determination indicated 18% of average student growth was associated with concurrent mentoring activity targeting student or classroom behaviors. With $p = .05$, the F ratio was greater than the critical F value, supporting this as a significant result. However the bivariate analysis that utilized the cumulative weighted mentoring activities score with average student academic growth did not show significant results, Although the multi-linear regression analysis that was then run between the disparate mentoring activities and average student growth did not support rejecting the null hypothesis, it remains true that in this analysis as well activity F, “Addressing Student or Classroom Behavioral Issues” held the highest weighting in the resulting model.

Research question two was approached with separate bivariate analyses that were carried out between each of the mentoring activities and growth gap differential. The analysis for activity B and the growth gap differential indicated 47% of closure in the growth gap was associated with a concurrent presence of mentoring activity B, involving being observed by one’s mentor. With $p = .05$, the F ratio was greater than the critical F value, supporting this as a significant result. The broader bivariate analysis utilizing the cumulative weighted mentoring activities score with the growth gap differential did not show significant results, Although the multi-linear regression analysis that was run between the disparate mentoring activities and growth gap differential as a whole did not support rejecting the null hypothesis, within this model activity B did hold the greatest weighting with a t value less than the threshold of $\alpha = .05$

Qualitative Findings

The Data Analysis Spiral utilized in this qualitative portion of the data analysis involved a recursive path between organizing, categorizing, interpreting, and developing a narrative account of the experiences of the five new teachers interviewed for this portion of the study (Creswell, 2007). These new teachers, all from a large suburban school district in Colorado, were interviewed with responses being digitally audio-recorded and then transcribed word for word by the researcher. These teachers are referenced as T3 through T7 for the purposes of reporting qualitative findings. All five teachers interviewed were within their first three years of teaching, corresponding to the parameters defining a new teacher in the Colorado TELL Survey utilized in the quantitative portion of this study. Two of these teachers were in their first year of teaching, two were in their second year, and the remaining teacher in his third year. After both reading over and listening through these interviews multiple times, interviews were marked with labels identifying categories or themes. Interviews were then reviewed one last time to ensure the categories from the written transcripts aligned with the verbal nuances heard on the audiotape. While several common categories naturally arose based on the research questions being asked, other categories emerged from the data itself when notations across transcripts were compared. These categories were used to develop a Table of Codes with subsidiary themes to be used as a coding key that was directly linked back to the research questions being investigated in the study. Transcripts were then coded using this key (See Appendix C). This thematic analysis of the interview responses allowed categorization and the development of an overall picture that informed the resulting narrative of the researcher (Seidman, 1998; Maxwell, 1996).

research question 3.

The third research question of this study sought to understand how new teachers perceived their own mentoring experiences in relation to the student growth, and closure of the growth gap they sought to foster. It asked:

- What are new teachers' perspectives of the relationship between mentoring, student growth, and their ability to narrow the growth gap?

results of data analysis

Of the four primary codes with subsidiary themes that emerged from analysis of the interviews, the first code focused on research-based practices and strategies. The second code pertained to the individual's mentoring experience and the value derived from that relationship. The third code was concerned with help-seeking behavior of the interviewee within the framework of the mentoring process, while the fourth code delved into observations the interviewees had conducted of master teachers and corresponding dialogue regarding what was observed.

code one: research-based practices and strategies.

opportunities for professional inquiry.

The first subsidiary theme within the research-based practices and strategies code related to opportunities for professional inquiry facilitated by a mentor figure in which the teacher had either participated or would like to participate. Interviewees T3 and T5 directly referenced book studies in which they had recently engaged that had resulted in fundamental shifts in the way they thought about their teaching. While both cited ideas lifted from the books themselves as being major points on which they had reflected on their own practice, the experience of talking over the ideas in the study group and

listening closely to the thoughts of veteran participants was equally critical to the value of the book study. Both teachers indicated book studies gave them helpful information to push student growth and close the growth gap. Yet the latest book study had so impacted T5's cognitive gestalt that he was left questioning the very premise that student growth could ever be objectively measured or known. T4 indicated that he was in the midst of writing a new textbook proposal with his informal mentor for the school board to consider in which inquiry-based projects for students were emphasized. T4 shared that he had needed to pull the research supporting inquiry-based teaching to inform the argument as to why the books should be approved, as he felt the research clearly demonstrated increased inquiry would increase student growth and help close the growth gap.

While T6 and T7 did not cite any recent professional inquiry opportunities in which they had taken part, they did suggest that training, classes, or professional development were inquiry activities of which they were in the greatest need. T6 felt she lacked a comprehensive understanding of how 21st century skills melded with state standards, and how she could best support the development of these capabilities in her students while also teaching what the standards indicated. Yet she was clear that melding these would both increase student growth and help close the growth gap. Several times in the interview she mentioned that there must be a class or training she could attend to amend her knowledge deficit in this area. T7 expressed regret over the lack of training available for some of the resources already existing in her department, while also recognizing the need for more student textbooks and teacher edition textbooks that could be used to guide the curriculum. She articulated a strong desire to understand research that would help close the growth gap alongside a keen sense of frustration that she had

none of the resources that would aid her in this goal. She was clear in expressing her perception of a direct connection between the application of research-based practices and student growth.

application of strategies within the classroom to support student growth.

The second subsidiary theme from the research-based practices and strategies code pertained to the actual application of research-based strategies within the classroom intended to support student growth. One instance mentioned by T3 involved a concept she encountered in a book, and then vetted with her mentor. When she introduced the technique to her classroom it had the effect of substantially altering the level of trust between herself and her students. She attributed an increased willingness on the part of her students to engage in risk-taking to this positive shift in trust. She felt a student's willingness to risk was a direct driver for their academic growth. Another instance of a research-based strategy T4 mentioned was the idea of a word wall that was shared with him by his mentor. When he employed a word wall in a conceptually difficult unit he felt it resulted in a much-improved level of retention of content by his students. T5 shared that while he was no longer sure what the proper tools were for measuring student growth, if there were certain proven strategies to achieve such growth he was committed to implementing them in his classroom. T6 and T7 spoke about their mentor-endorsed and research-based use of routine formative assessments and monitoring the resulting data from these assessments to determine whether their students were attaining the desired level of growth. This example stands out as an exemplar in that it is a clear instance of data-driven instruction with a direct intent to support the growth of students in the classroom.

Whether the focus is on mentor-facilitated professional inquiry opportunities or the application of research-based practices in one's teaching, all teachers interviewed perceived a relationship between research-based strategies and increased student growth and closure of the growth gap. As both subsidiary themes of code one are aspects of the mentoring experience, it may be said in this respect that teachers perceive a clear link between their own mentoring that brings them into contact with research-based practices and the growth and closure of the growth gap in their students.

code two : the mentoring experience.

formal and informal mentoring.

The second code relating the individual's mentoring experience and the value derived from that relationship involved subsidiary themes of whether the mentoring for the interviewee was formal or informal, as well as instances of collaboration or co-planning between mentor and mentee. What is somewhat surprising within this first subsidiary theme of formal or informal mentorship is that only one of the five new teacher interviewees expressed ever having had a formal mentor. T4 described his formal mentor as a seasoned teacher who would conduct five formal assessments of T4's teaching along with multiple informal assessments over the course of the year. This mentor had been fully released from teaching duties in order to serve as an instructional support for teachers within the building. T4 indicated his formal mentor gave him lesson plan ideas, teaching strategies, constructive feedback, strategies for increasing visible thinking amongst his students, as well as classroom management tips. Most discussions they had pertained to the growth his students were attaining and the behavior of some of his high-risk students. T4 expressed a deep sense that the mentoring process was an

integral tool to ensure his teaching resulted in the appropriate academic growth and closure of the growth gap for his students. As rich as the formal mentorship was, T4 felt the informal mentorship he had struck up with another teacher in his department was even more important to his success in terms of the frequency and depth of those interactions. In stark contrast to this experience stands T7 who could not initially remember having any mentors, formal or informal, but rather felt she had been forced to rely purely on colleagues for guidance. Although later in the interview she conceded that perhaps she had experienced some informal mentoring, her first year in teaching was spent largely collaborating with another teacher who had only one year of experience. The other teachers interviewed all indicated that while there was a designated person in the building whom they could access if they had instructional questions, no formal mentor had been assigned to them. While only one of the five new teachers expressed the view of having a formal mentor, when asked question eight of the interview in which interviewees were to describe what they thought would be an ideal mentoring experience that would result in high student growth while also serving to shift the achievement gap, all accounts shared the use of seasoned mentors to help new teachers find their bearings, verifying the perceived connection between mentoring, student growth, and closure of the growth gap.

Although formal mentoring was perceived to have been experienced by only one of the five new teachers interviewed, informal mentoring was common to all with the exception of T7 who felt what she had engaged in was better characterized as collaboration rather than mentorship, although she later conceded that some of these collaborations might be better cast as informal mentoring after all. T3 referenced the

close collegial relationships that she had within her department that were regularly cemented at lunch as a major source of help in processing some of the day-to-day difficulties in teaching. She perceived these interactions to fall under the domain of informal mentorship. T5 indicated that other teachers who taught the same subject served both as informal mentors and collaborators, with weekly meetings to solidify the activities they would incorporate in their curriculum. T6 felt that there were a number of persons around her who operated as informal mentors depending on her need, one of these being located at a completely different school site. By contrast T4 placed the informal mentoring he'd received squarely on his one colleague whom he worked with on a daily basis and freely shared ideas and lesson plans. T4's satisfaction with this relationship centered on a perception that the interaction was mutually beneficial to both of them. As what each contributed to the other was seen as increasing their teaching capacity, T4 felt the relationship was uncharacteristically positive.

instances of collaboration and co-planning.

Along with the subsidiary theme of whether the mentoring received by the new teacher was formal or informal was the adjacent subsidiary theme comprising instances of collaboration or co-planning between the mentor and mentee. One of T5's colleague's actions for which T5 expressed the greatest appreciation was the lending of four notebooks containing that colleagues' complete curriculum for the class, along with the invitation to converse over any aspect of that curriculum at any point in the semester. This resource had the effect of informing T5 when he did meet with his peers on a weekly basis to plan the unit and corresponding activities, allowing him to be a greater contributor to the ensuing discussion. On a more intense level T4's relationship with his

informal mentor involved daily discussion and mutual planning for the class they both taught. While the informal mentor had made all his materials available to T4, the mentor was also keenly interested in getting any revisions back so as to ensure his own teaching benefitted from this collaborative sharing. The antithesis of this close personal cooperation on the informal level may be seen in T6's experience where she did not have any specific activities she could cite having engaged in other than general conversation to discuss the integration of 21st century skills into her curriculum along with seeking general guidance from one of her informal mentors on how to better work with some of her colleagues. Yet T3 shared her deep conviction of the value to be found in conversation with more veteran teachers. She felt that hearing from them about what did not work well in the classroom was every bit as valuable as their endorsement of a given approach, and felt that she especially gained from hearing about what they did to increase their relationship with their students. In this sense, dialoguing with informal mentors was a highly valued activity. T7 was in agreement with this assessment, expressing that collaborating and co-planning are critical in the effect they have on student growth. It was consideration of the impact dialogue with her colleagues had on her own teaching during the interview that brought her to the realization that these collaborative conversations could equally be viewed as informal mentorships.

Whether viewing the individual's mentoring experience and the value they derived from it through the lens of formal or informal mentorship – or through the subsidiary theme of instances of collaboration or co-planning, it is evident that each teacher perceived a deep connection between cooperation activity with someone senior to them in experience and their ability to foster student growth and close the growth gap.

code three: help-seeking behavior.

A third code that emerged from the interviews was the degree of proactivity in acquiring help by the new teacher. What streamed through all of the interviews was behavior in which the new teacher sought out colleagues for advice or discussion of teaching practices. T6 indicated that she regularly sought out the opinion of her informal mentors in order to guide how she went about supporting her students. T3 insisted that she had actively sought out interactions with more veteran teachers to benefit her own teaching, even making a point to hang out in the teacher's lounge at every opportunity just to make such contacts. Specifically she said she was looking for, "Friendships that would turn into mentorships". Similarly the book studies she sought out were as much to listen to the "flow of ideas" between veteran teachers, as to pick up new ideas from the book. T4 took this development of a friendship and informal mentor to an entirely different level in that he would meet his informal mentor out for dinner and other social occasions both to cement their friendship and increase their collaborative efforts. At the same time he indicated that the level of comfort he achieved with his informal mentor allowed him to push forward in department meetings with questions as to how best to close the growth gap between his special education and regular education students. T5's experience was that as he became more confident in his own teaching abilities, he asserted himself more by asking his colleagues about their opinion of some of his instructional ideas, including the implementation of a portfolio to better document the growth of his students. The affirmation he received from one of his informal mentors whom he respected was key to his introducing portfolios to his students. T7 also referenced seeking meetings with her co-teachers regularly to gather ideas that were

helpful in her instruction, citing a particular instance in which she became stuck with her students in a book that exceeded the appropriate comprehension level of her students. Through dialoguing with her informal mentors, she learned of some strategies she then implemented to wrap-up the unit quickly and move on into the next part of the curriculum.

While this third code may be viewed as a minor theme that emerges from the interviews, the presence of help-seeking behavior in the instance of each teacher gives strong indication as to the perception of a direct correlation between cooperating activity with more experienced individuals in the field and a resultant increase in growth and closure of the growth gap.

code four: observation of master teachers.

voluntary or mandatory observations of master teachers.

The fourth code that became evident in the interviews pertained to teachers observing master teachers in the classroom. The first subsidiary theme related to whether such activity was a voluntary or mandatory part of the new teacher's experience, while the second subsidiary theme centered on what opportunity the observing teacher had to reflect on or discuss what was observed. All five teachers indicated that observing a master teacher was a voluntary option that came highly recommended, yet each referred to time constraints that prevented them from taking part in what they recognized to be a valuable opportunity to grow as a teacher. For instance T3 felt she had far too many things to do to meet the needs of her students, and that time away from her duties was a luxury she could ill afford. However she did articulate that if observing master teachers was made a mandatory part of the teacher evaluation process – even if it was just one

observation every fall and spring, the benefit would be substantial to her development. Similarly T4 had never engaged in this activity, but felt that observing a master teacher should be a monthly mandatory practice for new teachers. T7 was in agreement that it was an important tool in honing the skills of a new teacher, and equally thought it should be made a mandatory component of the teacher evaluation process. She agreed that it was practically impossible for her to pull away on her own to engage in such an observation, but that if it was mandatory it would be more likely to occur. T7 went so far as to express the view that if a master teacher were unavailable to observe, a videotape highlighting best practices being implemented in the classroom would still be a worth watching. While T6 acknowledged that observation of a master teacher was an activity in which she should engage, she could not fathom when she would have time to do this. Yet she did support the integration of such a practice in an ideal mentoring relationship. Although T5 also indicated he had not been able to find the time to observe master teachers, he did see their role in an ideal mentoring program as one where they could be observed on a regular basis by new teachers.

reflection on teaching decisions.

The second subsidiary theme in relation to new teachers observing master teachers touched on their resultant opportunity to reflect on and ask questions of the master teacher whom they had observed. T5 articulated that an ideal mentoring experience might involve a course of evenings set aside over the year where master teachers would present what they did to build relations with their students, whether they had been directly observed by the new teachers attending or not. He described a colloquium type setting in which methods could be discussed and debated, while new

teachers would be free to share their views, vulnerabilities, and doubts without fear of negative consequence. T7 had a very concrete interpretation as to how the reflection of a master teacher observation could be facilitated in that she envisioned an evaluation form the viewing teacher would fill out during the observation, and then bring the form back to her formal mentor afterwards to discuss what was seen. Following an initial debriefing the observed master teacher would then be brought into the conversation to further explore instructional decisions that had been made and witnessed. T6 described a regular sequence of observations of master teachers that would be coupled with conversation with one's formal mentor directly following the observation. Yet she did not seem to envision having direct conversation between the new teacher and the master teacher who would have been observed. Similarly T4 did not go so far as to suggest direct dialogue with the teacher who had been observed, but envisioned the observing teacher journaling over what had been seen and then planning on how those techniques might be utilized in his or her own teaching. T3 indicated having dialogue over an observed lesson would be essential for the experience to have full impact on a new teacher's instruction. She suggested that one model for such dialogue over an observed lesson might involve a showcase lesson viewed by multiple new teachers from the district. Following the observation of the lesson, the discussion of what was seen could be facilitated by several mentor teachers in conjunction with the presenting master teacher.

Even while the practice of new teachers observing master teachers was endorsed by all of the teachers interviewed as a means to becoming a better, more effective teacher capable of garnering student growth and closing the growth gap, the first subsidiary theme gives indication of the voluntary nature of this activity. In each teacher's case time

constraints did not allow him or her to engage in observing master teachers. The second subsidiary theme further underscores this loss of opportunity by bringing forth the value the teachers would place not only in making these observations, but also then in having a forum in which the lesson may be reflected on and analyzed with the aid of a mentor or the master teacher who was observed.

summary of qualitative findings

The third research question this study sought to understand was how teachers perceived their own mentoring experiences in relation to the student growth, and closure of the growth gap they sought to foster. As this was a qualitative question, interviews were carried out with five new teachers exploring the relationship between their mentoring experiences and perception of how those experiences impacted student growth and closure of the growth gap. All interviews were digitally audiotaped, transcribed, and then analyzed for common themes referred to as codes. Of the four primary codes with subsidiary themes that emerged from analysis of the interviews, the first code focused on research-based practices and strategies. The second code pertained to the individual's mentoring experience and the value derived from that relationship. The third code was concerned with help-seeking behavior of the interviewee within the framework of the mentoring process, while the fourth code delved into observations the interviewees had conducted of master teachers and corresponding dialogue regarding what was observed.

What was revealed through the first code was that teachers perceive a clear link between those aspects of their own mentoring which bring them into contact with research-based practices and the growth and closure of the growth gap in their students. In the second code it was found that whether viewing the individual's mentoring

experience and the value they derived from it through the lens of formal or informal mentorship – or through the subsidiary theme of instances of collaboration or co-planning – each teacher perceived a deep connection between cooperative opportunities with a senior colleague and their resultant ability to foster student growth and close the growth gap. In considering the third code which had no subsidiary themes, the presence of help-seeking behavior directed towards a seasoned colleague in the instance of each teacher interviewed again gives strong indication as to the perception of a firm connection between cooperative activity with more experienced individuals in the field and a resultant increase in student growth and closure of the growth gap. The fourth code revealed that despite each teacher perceiving the observation of a master teacher as being a worthwhile activity from which they would grow, not one of the teachers interviewed had found time to engage in this activity. However when asked in the interview the question of how a mentoring experience they might design would differ from their actual experience, all of the imagined scenarios involved the use of master teachers, with most accounts having those master teachers available for observation and consequent questioning over their instructional practices. While the differences in the experience of each of the five teachers interviewed were pronounced, what was overwhelmingly clear through the analysis of these interviews was the perception by new teachers that there was a positive correlation between engagement in mentoring activities and the ability to push student academic growth and closure of the growth gap.

Summary

Research questions one and two, being quantitative in nature, were explored through both bivariate and multiple regression analyses, while research question three

was researched through qualitative means of interview analysis. Research question one asked whether there was evidence of depth of mentoring existing concurrently with school academic growth. Separate bivariate analyses that were carried out between each of the mentoring activities and average school academic growth revealed that activity F, “Addressing Student or Classroom Behavioral Issues” did show a significant correlation to a concurrent presence of average school academic growth. The coefficient of determination indicated 18% of average school academic growth was found to exist concurrently with mentoring activity targeting student or classroom behaviors. With $p = .05$, the F ratio was greater than the critical F value, supporting this as a significant result. However the bivariate analysis that was run between the cumulative weighted mentoring activities score (incorporating a combined score for all of the mentoring activities in TELL question 11.2) and average school academic growth did not show significant results. While the multi-linear regression analysis that was run between the disparate mentoring activities and average school growth did not support rejecting the null hypothesis, it remains true that in this analysis as well activity F, “Addressing Student or Classroom Behavioral Issues” held the highest weighting in the resulting model.

Research question two examined whether evidence of depth of mentoring existed concurrently with evidence of closure of the growth gap between groups of students. This question was approached in parallel fashion with research question one, with separate bivariate analyses that were carried out between each of the mentoring activities and growth gap differential. The analysis for activity B and the growth gap differential indicated 47% of closure in the growth gap was explicable through a concurrent presence of mentoring activity B, involving being observed by one’s mentor. With $p = .05$, the F

ratio was greater than the critical F value, supporting this as a significant result. The broader bivariate analysis utilizing the cumulative weighted mentoring activities score (incorporating a combined score for all of the mentoring activities in TELL question 11.2) with the growth gap differential did not show significant results. Although the multi-linear regression analysis that was run between the disparate mentoring activities and growth gap differential as a whole did not support rejecting the null hypothesis, within this model activity B did hold the greatest weighting with a t value less than the threshold of $\alpha = .05$

The third research question this study sought to understand was how teachers perceived their own mentoring experiences in relation to the student growth, and closure of the growth gap they sought to foster. As this was a qualitative question, interviews were carried out with five new teachers exploring the relationship between their mentoring experiences and perception of how those experiences impacted student growth and closure of the growth gap. Of the four primary codes with subsidiary themes that emerged from analysis of the interviews, the first code focused on research-based practices and strategies. The second code pertained to the individual's mentoring experience and the value derived from that relationship. The third code was concerned with help-seeking behavior of the interviewee within the framework of the mentoring process, while the fourth code delved into observations the interviewees had conducted of master teachers and corresponding dialogue regarding what was observed.

Analysis of the first Code made clear that teachers perceive a solid link between those aspects of their own mentoring which bring them into contact with research-based practices and the growth and closure of the growth gap in their students. In the second

code it was found that whether viewing the individual's mentoring experience and the value they derived from it through the lens of formal or informal mentorship – or through the subsidiary theme of instances of collaboration or co-planning – each teacher perceived a deep connection between cooperative opportunities with a senior colleague and their resultant ability to foster student growth and close the growth gap. In considering the third code which had no subsidiary themes, the presence of help-seeking behavior directed towards a seasoned colleague in the instance of each teacher interviewed again gives strong indication as to the perception of a firm connection between cooperative activity with more experienced individuals in the field and a resultant increase in student growth and closure of the growth gap. The fourth code revealed that despite each teacher interviewed perceiving the observation of a master teacher as being a worthwhile activity from which they would grow, not one of the teachers interviewed had found time to engage in this activity. However when asked in the interview the question of how a mentoring experience they might design to address issues of student growth and closure of the achievement gap would differ from what their actual experience had been, all of the imagined scenarios involved the use of master teachers, with most accounts having those master teachers available for observation and consequent questioning over their instructional practices.

While the differences in the experience of each of the five teachers interviewed were pronounced, what was made clear through the analysis of these interviews was the perception by each of these new teachers that there was a positive correlation between engagement in new teacher mentoring activities and the ability to push student academic growth and closure of the growth gap.

Chapter Five: Discussion of the Findings

Introduction

This last chapter will discuss the findings of the study and provide suggestions for further research. The quantitative and qualitative results of the study will be summarized and merged while considering whether the hypotheses generated by the three research questions were supported by the data. While this study was exploratory in nature, conclusions will be drawn to the extent the merging of quantitative and qualitative results permit in light of previous research. Consideration will then be given to how this study might be replicated or extended to provide more specific implications for new teacher mentoring practices.

Background

The problem this study explored was whether there is a relationship between the depth and frequency of new teacher mentoring and student academic performance. There are only a few studies that have suggested a positive link between new teacher mentoring and student learning (Villar & Strong, 2007; Rockoff, 2008; Fletcher & Strong, 2009). As Colorado has recently signed Bill 10-191 into law that effectively ties 50% of teacher evaluation to student academic growth as of 2014, this question of the connection between mentoring and student performance holds particular significance to probationary teachers. The stakes for new teachers in Colorado being able to demonstrate their

effectiveness in pushing student academic growth have never been higher. The primary support within induction programs most districts have in place to help new teachers find their bearings is that of a mentorship. Yet those activities within a mentorship that are most likely to lead to positive student performance remain veiled, even while it is clear that Colorado schools need to make a concerted effort to provide support for teachers as this shift in evaluation takes hold.

Colorado has two instruments, the Colorado TELL (Teaching, Empowering, Leading and Learning) survey, and the Colorado Growth Model, which allowed questions pertaining to the relation between depth and frequency of teacher mentoring and corresponding impact on student learning to be addressed.

The research questions asked in this study were:

1. Does evidence of depth of mentoring exist concurrently with evidence of school academic growth?
2. Does evidence of depth of mentoring exist concurrently with evidence of closing the growth gap between groups of students within schools?
3. What are new teachers' perspectives of the relationship between mentoring, student growth, and their ability to narrow the growth gap?

In order to address questions one and two, the 2011 TELL survey data were correlated with publicly available 2010-2011 Colorado State schools performance data available through the Colorado Department of Education's SchoolView.org website. The purpose of this correlation was to explore whether evidence of depth of mentoring exists concurrently with evidence of school academic growth and closure of academic growth gaps. Research question three was addressed qualitatively through interviews with five new teachers. These interviews were digitally audio-recorded, transcribed, and then

combed for common themes that were used to construct an overlying narrative. The purpose of the narrative was to enrich the quantitative data as to how teachers perceive the relationship between mentoring, growth, and their ability to narrow the growth gap.

Discussion

The quantitative and qualitative components of this study overlap most clearly at two junctures. Where the qualitative data holistically support the relationship between mentoring and student performance, the quantitative data point toward two specific mentoring activities of “addressing student or classroom behavioral issues” and “being observed by one’s mentor” as significant correlates of concurrent student growth and closure of the growth gap respectively. Discussion will first be focused on the holistic picture the interviews presented of how new teachers experience the connection between mentoring and student performance. This sets the broad stage to then give mentoring and classroom management some thought, followed by a closer look at the activity of being observed by one’s mentor.

mentoring as experienced

Within the themes that emerged from the analysis of the teacher interviews the value placed on quality collaboration was repeatedly made evident. Each candidate interviewed presented on some level the belief that cooperative learning opportunities with senior colleagues would engender increased capacity in their own ability to foster growth in their students. That another underlying theme lifted from these interviews pertained to seeking help from these same senior colleagues speaks to the degree to which collaboration with other teachers is embedded within the collective consciousness of teachers as a primary path towards help and improvement in their craft. An important

element that came forward within this theme was the idea that this help-seeking behavior was a manifestation of the new teacher's tenacity to self-improve. It seems likely that this is a helpful framework for such behavior as it allows some of the normal inhibitions that might prevent one from asking for help to dissolve in the interest of doing what is best for one's students. There was a strong presumption within the interviews as a whole that such collaboration is effective in improving instruction, as it is believed that this sharing of ideas and best practices through working with colleagues will convince a teacher to implement new ideas in their own practice in an effort to improve their instruction. Yet it is worth noting that such collaboration is ultimately valued both for the relationship that is built through such cooperative work, as well as the impact it may have on the instruction of both the experienced and inexperienced teacher. The importance of the human relationship emerging here is portentous of a similar inter-relationship between the teacher and student in the classroom that will be arrived at shortly.

The shift from conversing with a colleague over an abstract instructional concept to successful application of that strategy in a classroom is where the learning stretch for most teachers lies, and where corresponding feedback is most important. Yet the danger here lies in that this may also be an emotionally charged and complex transition as it requires a strong personality to open oneself up to feedback and possible criticism in this way. The line between professional self and personal self may become easily blurred. An emotionally safer option to being observed teaching by one's mentor might well reside in a scenario involving viewing master teachers at work, and then conversing over the instruction that was observed either with that master teacher or with a group of peers. A scenario such this as allows a safe space for teachers to consider diversifying what they

do in the classroom without placing their own self-concept and reputation at risk.

Viewing and discussing another teacher's work that is already recognized to be state-of-the-art is both safe and collaborative. This may provide at least partial explanation for the fourth code that emerged from the interviews in which interviewees expressed a desire to view the teaching of master teachers as an activity they would ideally liked to have engaged in and from which they perceived there would be great benefit. By viewing the work of master teachers and weighing their seasoned pedagogic decisions and approaches in the context of what might work for a new observing teacher provides a path to authentic and helpful instructional ideas they may immediately take back to their own classrooms and implement. This would be a much less threatening alternative to the activity of being observed and critiqued in how one conducts one's own teaching.

Accompanying the pervasive focus on collaboration present in the interviews was an overarching desire for research-based practices that were demonstrated to have been effective in increasing student performance. On an important level this thirst for research-based practices germinates from the same place as the desire for collaboration; teachers want to be the best instructors they can possibly be. To this end they recognize that research-based practices are likely to uphold the integrity of their instruction in their quest go grow their students. In addition it should be acknowledged that the Whitehouse's race-to-the-top initiative has added urgency to the acquisition of successful research-supported practices since the work of teachers will now be directly linked to the growth their students demonstrate. Certainly Colorado House Bill 10-191 has incentivized this movement by tying an even greater portion of an administrator's evaluation to student growth than that of the teacher, leading to a high likelihood that

these techniques will be brought to a teacher by administration if the implementation is not noticed in their classroom.

mentoring and classroom management

The concurrence of mentoring activity oriented towards “addressing student or classroom behavioral issues” with overall student growth found in the quantitative portion of this study is initially surprising when considered against some of the other mentoring activities that might have been expected to show greater correlation with student performance. At the same time it is widely acknowledged that good classroom management stems largely from a teacher’s proficiency at implementing a variety of engaging instructional approaches to a unit of instruction. While effective classroom management is not an inherent talent possessed by most new teachers, it is something that can be easily coached by an experienced mentor, even when that mentor’s content area differs from that of the mentee’s. According to Wang, Haertel and Walberg (1993), in a comprehensive meta-analysis of 134 separate meta-analyses, of 228 variables considered, they found classroom management to have the greatest impact on student achievement. Such achievement might well be presumed to have entailed solid student growth, drawing support for the findings of this current study. From a survival standpoint classroom management is the immediate priority for any new teacher and certainly it would be expected that much of the interaction between a new teacher and their mentor would focus on this critical topic. Within this same vein it would be likely for a new teacher to view incoming feedback first and foremost through a classroom management lens and compartmentalize many of the points of feedback they may be given as suggestions for the sake of managing the class. Similarly it would be expected that the effective mentor

might capitalize on the mentee's concern for acquiring good classroom management skill to promote best instructional practices that serve the dual role of pushing student learning while simultaneously shaping the structure of the class into more manageable form. Given the number of variables new teachers must learn to juggle at once, it may be speculated that a tendency to compartmentalize incoming information into disparate conceptual categories and triaged levels of priority would make a great deal of sense. Equally, the inclination to view incoming feedback from a mentor first and foremost through the screen of classroom management would be expected since this is a domain of primary concern for any new teacher. This broad interpretation of classroom management does suggest a commingling of a variety of different mentoring interactions and pedagogic approaches coalescing within this one prominent category of mentorship and being reported out in the TELL survey as such.

Another possible explanation for the significant correlation found in the concurrency between mentoring focused on classroom management and increased student growth is that the development of classroom management skill reflects a simultaneous deepening of relationships between students and teacher. A recent study suggests that the, "top quartile teachers had fewer classroom disruptions, better classroom management skills, and better relationships with their students than did bottom-quartile teachers"(Strong, Ward & Grant, 2011, p.349). Marzano (2003) carried out a meta-analysis of over 100 studies in which he found that a primary component underlying most elements of classroom management is the teacher-student relationship.

In a slightly earlier study Marzano & Marzano (2001), suggest:

The most effective teacher-student relationships are characterized by specific teacher behaviors: exhibiting appropriate levels of dominance; exhibiting appropriate levels of cooperation; and being aware of high-needs students (P.7).

The authors emphasize in this same paper that these behaviors are learned rather than existing as an inherent property of an effective teacher. This cycles back to the initial suggestion that pedagogic choices and techniques presented to new teachers by their mentors through the framework of maintaining good classroom management may well serve a dual role of pushing student growth and cultivating relationships with students. as all three of these are complementary aims.

being observed by one's mentor

A mentoring activity found to be concurrently and significantly present with closure in the growth gap was that of “being observed by one’s mentor”. Undoubtedly the resulting feedback from this activity is helpful in broadening one’s repertoire of teaching techniques so that students may be more effectively engaged in learning. That this mentoring activity should emerge from the data as a strong correlate of student performance alongside mentoring of classroom management aligns with research suggesting that the most effective classroom management involves the use of different strategies with different students while avoiding consistent treatment of all students (Brophy, 1996; Brophy & McCaslin, 1992). The development of a new teacher’s capacity to differentiate instruction to meet the needs of various students within the classroom might arguably be most effectively facilitated through targeted feedback from a mentor. Where this feedback would be expected to be of the greatest help is when it is

contextualized to the culture and students of the school in which both the teacher and mentor work.

While being observed by one's mentor is a valuable opportunity to gain helpful feedback, the resources necessary to implement such a mentoring activity may be on the decline in view of current shrinking state and district budgets. Certainly none of the teachers interviewed for this study reported having experienced being observed by their mentors. This suggests that time and resources were too scarce to support mentoring activity at this depth. To change this situation either more resources would need to be directed to free up the mentor to engage in such interactions, or greater emphasis would need to be placed on setting up adjacent schedules that allow the mentoring teacher a free period in which they could conduct observations of their mentee. What is evident is that the ultimate purpose of mentor feedback is to push the new teacher away from a teacher-centered focus of the classroom towards a student-centered focus on the learning experience. Feedback naturally centers on developing relations with students and tactics of differentiating instruction to meet the varied needs of students within the class.

establishing relationships for culturally responsive teaching.

What becomes increasingly apparent is the importance of the relationship between the teacher and pupil to successful classroom management and student performance. This concept finds resonance in research around culturally responsive pedagogy as well. Culturally responsive teaching may be said to combine attributes of a teacher having a caring attitude, the ability to establish assertiveness and authority, the ability to establish congruent communication, and the ability to demand effort and hold kids to high expectations (Brown 2003, 2004). These same traits find confirmation in another study of

effective novice teachers of minority populations and the manner in which they consciously establish positive learning environments in the first couple days of the year (Bondy, 2007). The idea of a warm demander whose style is in tune with the African-American students she is teaching also echoes some of these same traits that are identified by Brown (Ware, 2006). The common thread to teaching diverse students remains the ability to develop solid relationships with those students. Yet the rub remains for a middle class White teacher that access to what is culturally relevant to an ethnic student or even what might constitute congruent communication with that student remains difficult to identify. Yet it is likely that a mentor is at least partially helpful in improving this situation for a new teacher, especially where one of the mentoring activities engaged is observation of the new teacher by the mentor. In one qualitative study in which sixteen new teachers were interviewed in order to investigate how they experienced mentoring Löffström and Eisenschmidt (2009), noted “The urgency with which positive feedback from the mentor, even when limited in scope, was brought up in the novice teachers’ interviews” (P. 686). Hudson & Skamp (2001) point out that while the absence of feedback from an observation might have similar import as negative feedback, constructive feedback helps instill confidence in the mentee.

The dilemma of a cultural gap between individuals is highlighted in a study of an exceptionally diverse classroom in which children engaged in an exploration of their cultural background and then presented their findings to their peers. The resulting journey these learners engaged in opened wide the question of what is culture and how does it relate to race, even to the extent that some students were questioned as to their cultural claims on account of their phenotype failing to match general expectations of

what their race should look like (Dutro, Kazemi, Balf, & Lin 2008). Other research has sought to recognize the danger in treating a given ethnic group as automatically possessing a certain learning style, and:

...on the importance and benefit of knowing about the histories and valued practices of cultural groups rather than trying to teach prescriptively according to broad, under-examined generalities about groups (Gutierrez & Rogoff 2003, P.20).

Again, the problem of how a new teacher might hope to gain an understanding of various cultural histories and practices of students in their classroom may well be partially mediated by a mentor familiar with the student population who observes the teacher in practice and then provides feedback. Through such a mentoring activity congruent communication might be eased where the ethnic and cultural background of a given student is unfamiliar to the new teacher. As the basis of building a successful working relationship with a child would seem to emerge largely from a teacher's capacity to reach out and form interpersonal ties with that student, perhaps it is not surprising that the feedback a new teacher gains from being observed by their mentor would be helpful not only in the management aspects of the classroom, but in the improvement of the ability to personalize instruction for that student as well.

what is mentoring?

The 2011 Colorado TELL survey asks new teachers to record the frequency and depth of mentoring experiences in question 11.2 without clearly defining what "mentor" means. Given the wide variety of interpretations and models of mentoring found in the literature, this is a troublesome omission as it lends a pervasive lack of clarity to both the question and resulting responses. Similarly, the interview questions designed and utilized

for this study did not clearly define “mentoring”. In light of the themes gleaned from the interviews carried out in this study, there is a consistent motif that teachers view a mentor as one with whom they have a strong personal affinity. Whether formal or informal, the view of a mentor that emerged in the interviews was that of one who invites collaboration and unguarded, honest conversation about the inherent challenges of connecting with the students one is teaching. Yet it is important to note from a systems point of view that mentoring may tend to be viewed and treated more as an introduction to teaching processes, tasks, and introducing the mentee to school cultural norms that are structural rather than personal in nature. Such a process-oriented model of mentoring stands diametrically opposite an interpersonal paradigm of mentoring that instead honors and values the relationship between mentor and mentee. An interpersonal interpretation of a mentorship would hold as primary the emotional and intellectual growth of the individuals involved. What may be key in this interpersonal interpretation is the notion of collaboration between mentor and mentee that effectively sets both individuals on equal footing as colleagues, rather than adhering to the power differential the term “mentor” inherently suggests. Based on the interpersonal motif present within the interviews of this study, it is likely that in cases where mentoring is most highly effective, the two persons involved have managed to escape the power constraints the formal relationship implies. In this way their interactions and sharing of ideas allows the feeding of the emotional and creative engines of both individuals within an emotionally safe and intellectually stimulating relationship.

Recommendations for Future Study

The purpose of this study was to investigate the relationship between frequency and depth of mentoring activities in which high school teachers in their first three years of teaching report engaging on the 2011 Colorado TELL (Teaching, Empowering, Leading and Learning) Survey, and examining concurrent student academic growth and shifts in growth gaps as measured by the Colorado Growth Model in those teachers' schools. While this study suggests that mentoring may impact student performance, there are several changes that would allow for a much firmer answer to the research questions that were investigated. Primary among these suggestions would be:

- The use of data that allows a direct linkage between a teacher and the students with whom that teacher works. Rather than using school-level data as was the case in this study, correlating the teacher and that teacher's students would isolate the variables and provide more detail on how to improve student performance.
- Another suggestion would be to use survey data made up solely of teachers who are new to the profession and in their first year of teaching. Because these are the teachers most likely to have mentors, given state law, this change would eliminate responses from second and third year teachers who may have diffused the link between mentoring and student performance. Hopefully this is a change the Colorado TELL survey will look to make in future iterations of the survey.
- Research in the area of the interpersonal aspects of mentoring is needed. If it is the interpersonal elements of the relationship that are found to be of greatest value to new teachers, then an approach to the implementation of a mentoring program would need to be given consideration where relationships are maximized and interactions are purposefully being made available to facilitate the development of ongoing collaboration between new teachers and their veteran counterparts. Further, the symmetry between the mentoring relationship of new teachers with their mentor and corresponding relationship between that new teacher and their students would make an excellent qualitative study. Through this window it may become evident the extent to which the mentoring relationship influences student performance.

- Perhaps the most effective change that could be made to this mixed methods study would be to enlarge the teacher pool being interviewed regarding their perception of the connection between mentoring and student growth and shift in the growth gap differential. There was a great deal of variation in the experiences of each of the five teachers interviewed, leaving room for doubt as to the veracity of the themes the researcher pulled away from the analysis of these interviews.

Conclusion: Mentoring in the Future

The connection between mentoring and student performance will become an increasingly important concern for new teachers across the nation as laws are implemented requiring that teacher evaluation be tied to the academic growth of students. While the ability to plan and deliver rigorous, engaging lessons that address district and state standards remains central to the work of the teacher, a new repertoire of skills has now become essential that allow the teacher to track the growth of their students. The ability to monitor where students are through pre-assessment, frequent formative assessment, and summative assessment and triangulation of data sources will be critical to ensuring student growth. The effort to track such data and use it to drive appropriately differentiated instruction on a daily basis is significant, and while some schools may have the benefit of being able to afford data systems that make such work more manageable, it remains true that even in the best of circumstances this shift in focus towards monitoring student progress is changing the paradigm of teaching. In line with this shift towards a data-driven framework it makes sense that the field of education will move in a similar direction in regards to teacher preparation.

According to a report to the Colorado General Assembly made by the Colorado Commission on Higher Education,

Senate Bill 10-036 requires a report on the effectiveness of educator preparation programs using data collected from an educator in his or her first three years of placement. The report is to include the correlation between different educator preparation programs in the state, including alternative programs, student academic growth, educator placement, and educator mobility and retention...Ultimately, the student-teacher data link that will be used, in part, to evaluate educators as effective or not, will be linked with these data to provide outcomes based information back to the preparation programs on how well their graduates perform as educators.

(Colorado Commission on Higher Education, 2012 p. 18)

The data link that is referenced here between teachers and their students should prove to be a powerful tool in connecting what elements of mentoring are most impactful on student growth and closure of the growth gap. It is wonderful to know that a wealth of data is about to become available that should allow much more precise answers to the research questions this study sought to investigate and understand.

References

- American Association of State Colleges and Universities. (2006). Teacher induction programs: trends and opportunities. *Policy Matters*, 3(10).
- Barber, M. & Mourshed, M. (2007). How the World's Best-Performing School System's Come out on Top. <http://www.mckinsey.com> Retrieved 7/10/10 from http://www.mckinsey.com/clientservice/Social_Sector/our_practices/Education/Knowledge_Highlights/Best_performing_school.aspx.
- Bettebenner, D. W. (2008, February 8). A primer on student growth percentiles. National Center for the Improvement of Educational Assessment(NCIEA): Retrieved 7/10/10 from <http://www.cde.state.co.us/cdedocs/Research/PDF/Aprimeronstudentgrowthpercentiles.pdf>
- Black, L., Neel, J. H., & Benson, G. (2008). *NCTAF/GSU induction project. final report* National Commission on Teaching and America's Future. Washington, DC Retrieved on 1/5/2010 from <http://www.nctaf.org>.
- Bondy, E., Ross, D.D., Galligane, C., & Hambacher, E. (2007) Creating Environments of Success and Resilience Culturally Responsive Classroom Management and More. *Urban Education* (42)4, 326-348
- Borko, H. (2004). Professional Development and Teacher Learning: Mapping the Terrain. *Educational Researcher*, 3,8,3-15. Retrieved on 1/5/2010 from: <http://www.jstor.org/stable/3699979>
- Brophy, J. E. (1996). *Teaching problem students*. New York: Guilford.
- Brophy, J. E., & McCaslin, N. (1992). Teachers' reports of how they perceive and cope with problem students. *Elementary School Journal*, 93, 3–68.
- Brooks, D.M. (1987). *Teacher Induction: A New Beginning*. Reston, VA: Association of Teachers
- Brown, S. (2003). Working: Why mentoring programs may be the key to teacher retention. *Techniques (ACTE)*, 78, 18-22.
- Brown, D.F. (2003) Urban Teachers' Use of Culturally Responsive Management Strategies. *Theory Into Practice* (42)4, 277-282
- Brown, D.F. (2004) Urban Teachers' Professed Classroom Management Strategies Reflections of Culturally Responsive Teaching. *Urban Education* (39)3, 266-289
- Brown, J.G. and C. Wambach (1987). *Using Mentors To Increase New Teacher Retention: The Mentor Teacher Induction Project*. Annual Meeting of the American Association of Colleges for Teacher Education, Arlington, VA: Department of Elementary Education, San Francisco State University.
- Carter, M. & Francis, R. (2000). Mentoring and beginning teachers' workplace learning. Paper presented at the AARE Conference, Sydney, Australia.
- Carroll, T. G. (2005). Induction of teachers into 21st century learning community creating the next generation of educational practice. *The New Educator*, 1(X),199–204.
- CDE Induction Guidelines (n.d.) Retrieved June 25, 2011 from www.cde.state.co.us/cdeprof/cdeprofsvc/.../CDEInductionGuidelines.pdf

- [Charles A. Dana Center. \(2002\). *Texas Beginning Educator Support System Evaluation Report for Year Three – 2001-02*. Austin, TX.](#)
- Cheng, M. and R.S. Brown (1992). *A Two-year Evaluation of the Peer Support Pilot Project: 1990-1992*. Toronto, Ontario, Canada: Toronto Board of Education, Research Department.
- Colorado Commission on Higher Education (2012). Report to the General Assembly Program Results for Educator Preparation FY 2010-2011. Retrieved February 11, 2012, from http://higher.ed.colorado.gov/Publications/Reports/Legislative/TED/201201_TED_toGGA.pdf
- Colorado Educator Licensing Act (1991). Rules for Administration of the Educator Licensing Act of 1991. Retrieved February 11, 2012, from http://www.cde.state.co.us/cdeboard/download/bdregs_301-37.pdf
- Colorado Department of Education, (2010). Title II, Part A Resources. Retrieved July 12, 2010, from http://www.cde.state.co.us/FedPrograms/NCLB/tiaa_res.asp
- [Colorado Department of Education, \(2012\). Draft of Proposed Rules for Statewide System to Evaluate the Effectiveness of Licensed Personnel Employed by School Districts and Boards of Cooperative Services](#). Retrieved March 16, 2012 from <http://www.cde.state.co.us/EducatorEffectiveness/downloads/rulemaking/DraftSB191AppealsRulesRevised3.1.12.pdf>
- Colorado Senate Bill 10-191, (2010). Retrieved July 12, 2010 from: http://www.leg.state.co.us/clics/clics2010a/csl.nsf/fsbillcont3/EF2EBB67D47342CF872576A80027B078?open&file=191_enr.pdf
- Consortium for Policy Research in Education. (2009). Taking human capital seriously: Talented teachers in every classroom, talented principals in every school. Principles and recommendations for the strategic management of human capital in public education. Consortium for Policy Research in Education. University of Pennsylvania. Retrieved July 11, 2010, from <http://www.cpre.org>.
- Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.) Thousand Oaks, CA: Sage Publications, Inc.
- Darling-Hammond, L., Berry, B., & Thoreson, A. (2001). Does Teacher Certification Matter? Evaluating the Evidence. *Educational Evaluation and Policy Analysis*, 23 (1): 57-77.
- DeAngelis, K. J., & Presley, J. B. (2007). Leaving schools or leaving the profession: Setting Illinois' record straight on new teacher attrition (IERC 2007-1). Edwardsville, IL: Illinois Education Research Council
- Dutro, E., Kazemi, E., Balf, R., & Lin, Y. (2008) "What Are You and Where Are You From?" Race, Identity, and the Vicissitudes of Cultural Relevance. *Urban Education* (43) 3, 269-300
- Eberhard, J., P. Reinhardt-Mondragon & Stottlemeyer. (2000). *Strategies for New Teacher Retention: Creating a Climate of Authentic Professional Development for Teachers with Three or Less Years of Experience*. Corpus Christi, TX: South Texas Research and Development Center, Texas A&M University.

- Education. (n.d.). from The Whitehouse.org. Retrieved 6/18/2010 from <http://www.Whitehouse.gov/issues/education/>
- Ehrich, L. C., Hansford, B., & Tennent, L. (2004). Formal mentoring programs in education and other professions: A review of the literature. *Educational Administration Quarterly*, 40(4), 518-540.
- Elementary & Secondary Education Title IX – General Provisions (2004, September 15). U.S. Department of Education. Retrieved July 12, 2010 from <http://www2.ed.gov/policy/elsec/leg/esea02/pg107.html>
- [Elias, P., McDonald, J.F., Stevenson, C., Simon, R., & Fisher, M.L. \(1980\). The Problems of Beginning Teachers. A Digest of Helping Programs. Educational Testing Service, Princeton N.J. National Institute of Education, Washington D.C.](#)
- Evertson, C. & Smithey, M. (2000). Mentoring effects on protégés' classroom practice: An experimental field study. *The Journal of Educational Research*, 93, 294-304.
- Footo, M. Q., Brantlinger, A., Haydar, H. N., Smith, B., & Gonzalez, L. (2011). Are we supporting teacher success: Insights from an alternative route mathematics teacher certification program for urban public schools. *Education and Urban Society*, 43(3), 396-425.
- Fideler E. and D. Haselkorn (1999). *Learning the Ropes: Urban Teacher Induction Programs and Practices in the United States*. Belmont, MA: Recruiting New Teachers.
- Fletcher, S., Strong, M., & Villar, A. (2008). An investigation of the effects of variations in mentor-based induction on the performance of students in California. *Teachers College Record*, 110(10), 2271–2289.
- Fuller, E. (2003). *Beginning Teacher Retention Rates for TxBESS and Non-TxBESS Teachers*. Unpublished paper. State Board for Educator Certification, Texas.
- Fulton, K., Yoon, I., & Lee, C. (2005, August). *Induction into learning communities*. Paper prepared for the National Commission on Teaching and America's Future, Washington, DC.
- Ganser, T. (2002). How teachers compare the roles of cooperating teacher and mentor. *The Educational Forum*, 66, 380-385.
- Ganser, T. (1996). What do mentors say about mentoring? *Journal of Staff Development*, 17, 36-39.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K.S. (2001). What Makes Professional Development Effective? *Results from a National Sample of Teachers*. *American Educational Research Journal*, 38, 4, 915-945.
- Glazerman, S., McKie, A., & Carey, N. (2009). *An evaluation of the teacher advancement program (TAP) in Chicago: Year one impact report*. Mathematica Policy Research, Inc., Princeton, NJ. Retrieved 7/10/10 from <http://www.mathematica-mpr.com>.
- Glazerman, S., & Seifullah, A. (2010). *An evaluation of the teacher advancement program (TAP) in Chicago: Year two impact report*. Mathematica Policy Research, Inc., Princeton, NJ. Retrieved 10/21/10 from <http://www.mathematica-mpr.com>.

- Gold, M. (1987). *Retired Teachers as Consultants to New Teachers: A New Inservice Teacher Training Model*. Final Report. Washington, DC: American Association of State Colleges and Universities, 54.
- Gold, Y. (1996). Beginning teacher support: Attrition, mentoring, and induction. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.). *Handbook of Research on Teacher Education*. A Project of the Association of Teacher Educators. New York: Macmillan.
- Griffin, C. G., Winn, J.A., Otis-Wilborn, A., & Kilgore, K. L. (2003). *New Teacher Induction in Special Education*. Center on Personnel Studies in Special Education. Retrieved 7/10/10 from <http://www.coe.ufl.edu/copsse/docs/RS-5/1/RS-5.pdf>
- Grossman, P., Valencia, S., Evans, K., Thompson, C., Martin, S., Place, N. (2000). Transitions into teaching: Learning to teach writing in teacher education and beyond. *Journal of Literacy Research*, 32, 631-662.
- Haller, E. J., & Kleine, P. E. (2001). *Using educational research: A school administrator's guide*. New York: Addison Wesley Longman, Inc.
- Gutierrez, K.D., & Rogoff, B. (2003) Cultural Ways of Learning: Individual Traits or Repertoires of Practice. *Educational Researcher* (32) 5, 19-25
- Hawking, S. (1988). *A Brief History of Time*. New York: Bantam Books
- Helfeldt, J. P., Capraro, R. M., Capraro, M. M., Foster, E., & Carter, N. (2009). An urban schools-university partnership that prepares and retains quality teachers for "high need" schools. *Teacher Educator*, 44(1), 1-20.
- Henke, R. R., Chen, X., & Geis, S. (2000). Progress through the teacher pipeline: 1992-93 college graduates and elementary/secondary school teaching as of 1997. Washington, DC: National Center for Educational Statistics.
- Hirsch, E., Sioberg, A., & Germuth, A. (2010). *TELL Colorado: Creating supportive school environments to enhance teacher effectiveness*. Santa Cruz, CA. Retrieved from http://www.tellcolorado.org/sites/default/files/attachments/Colorado_TELL-finalreport.pdf
- Hirsch, E. (2011). *TELL Colorado: General Trends*. Santa Cruz, CA. Retrieved from: http://tellcolorado.org/sites/default/files/attachments/CO11_general_trends_presentation.pdf
- Hudson, P. (2004). Specific mentoring: a theory and model for developing primary science teaching practices. *European Journal of Teacher Education*, 27, 2, 139-146.
- Huisman, S., Singer, N. R., & Catapano, S. (2010). Resiliency to success: Supporting novice urban teachers. *Teacher Development*, 14(4), 483-499.
- Huling-Austin, L. (1990). Teacher Induction Programs and Internships. *Handbook of Research on Teacher Education*. NY: MacMillan.
- Ingersoll, R.M. et al. (1997). *Teacher Professionalization and Teacher Commitment: A Multilevel Analysis*. Statistical Analysis Report. Washington, DC: National Center for Education Statistics.
- Ingersoll, R. (2000). "The Status of Teaching as a Profession." In *Schools and Society: A Sociological Approach to Education*. Edited by Jeanne Ballantine and Joan Spade. Belmont, CA: Wadsworth Press.

- Ingersoll, R. (2001). Teacher turnover and teacher shortages: an organizational analysis. *American Educational Research Journal*, 38(3), 499–534.
- Ingersoll, R. & Kralik, J. (2003) *Review of Empirical Research on the Effects of Teacher Mentoring Programs in Elementary and Secondary Schools*. Denver, CO: The Education Commission of the States.
- Ingersoll, R. & Kralik, J. (2004) *The Impact of Mentoring on Teacher Retention: What the Research Says*. Denver, CO: The Education Commission of the States
- Ingersoll, R., & Smith, T. (2004). Do teacher induction and mentoring matter? *NASSP Bulletin*, 88(638), 28–40.
- Ingersoll, R. & Strong, M. (2011) The impact of Induction and Mentoring Programs for Beginning Teachers: A Critical Review of the Research. *Review of Education Research*. Vol. 81 (2), 201-233
- Jacobi, M. (1991) Mentoring and Undergraduate Academic Success: A Literature Review. *Review of Educational Research*. 61, 4, 505-532.
- Johnson, L. S. (2011). Targeted comprehensive induction for urban educators: An exploration of teacher motivation and retention. *New Educator*, 7(2), 131-152.
- Kerlinger, F. N. (2000). *Foundations of behavioral research*. New Delhi, India: Surjeeth Publications.
- Lee, O., & Yarger, S.J. (1996). Modes of Inquiry in Research on Teacher Education. In J. Sikula, T.J. Buttery, & E. Guyton (Eds), *Handbook of Research on Teacher Education*. NY, NY: Simon & Shuster Macmillan.
- Löfström, E., & Eisenschmidt, E. (2009). Novice teachers' perspectives on mentoring: The case of the Estonian induction year. *Teaching and Teacher Education*, 25(5), 681-689.
- Long, J. (1997). The dark side of mentoring. *Australian Educational Research*, 24, 115-123.
- Macissac, D., & Brookhart, L. (1994). A Partnership Approach to Teacher Induction. Presented at Annual Meeting of the American Association of Colleges for Teacher Education. Chicago, IL.
- Marzano, R. J. (2003). *What works in schools: Translating research into action*. Association for Supervision and Curriculum Development (ASCD), 1703 N. Beauregard Street, Alexandria, VA 22311
- Marzano, R. J. (with Marzano, J. S., & Pickering, D. J.). (2003). *Classroom management that works*. Alexandria, VA: ASCD.
- Maxwell, J.A. (1996). *Qualitative Research Design: An Interactive Approach*. Applied Social Research Methods Series: Vol. 41. Thousand Oaks, CA. Sage Publications.
- Mertler, C. A., & Vannatta, R. A. (2005). *Advanced and multivariate statistical methods* (3rd ed.) Los Angeles, CA: Pyrczak Publishing.
- Michie's Legal Resources, (2011). Article 60.5 Colorado Educator Licensing Act. 22-60.5-102 Retrieved June 25, 2011 from <http://www.michie.com/colorado/lpext.dll?f=templates&fn=main-h.htm&cp=>
- Murnane, R., Singer, J., Willett, J., Kemple, J., & Olsen, R. (Eds.). (1991). *Who will teach? Policies that matter*. Cambridge, MA: Harvard University Press.
- National Commission on Excellence in Education (1984). *A nation at risk: The full account*. Cambridge, Massachusetts: Murray Printing Co.

- National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future*. New York: Teachers College Columbia University.
- Ngwudike, B. C. (2009). *Competitive edge: A cross-national examination of mathematics achievement in 53 jurisdictions*
- Odell, S.J. and D.P. Ferraro (1992). "Teacher Mentoring and Teacher Retention." *Journal of Teacher Education*, 43(3): 200-04.
- Pan, D. (2003). Mentoring beginning teachers: Lessons from the experience in Texas. Retrieved 7/10/10 from: www.sedl.org/pubs/policy23/3.html
- Piccolo, D. L., Capraro, M. M., & Capraro, R. M. (2010). Mentoring urban interns: Amalgamation of experiences in the formation of mathematics teachers. *Teacher Educator*, 45(1), 37-53.
- Recruiting New Teachers, Inc. (1999). *Learning the ropes: Urban teacher induction programs and practices in the United States*. Belmont, MA.
- Rockoff, J. E. (2008). *Does mentoring reduce turnover and improve skills of new employees? Evidence from teachers in New York City. NBER working paper no. 13868* National Bureau of Economic Research. Cambridge, MA. Retrieved 7/10/10 from http://0-www.nber.org/bianca.penlib.du.edu/cgi-bin/get_bar.pl?bar=pub
- Scherer, M. (Ed.). 1999. *A better beginning: Supporting and mentoring new teachers*. Alexandria, VA: ASCD.
- Schlechy, P., & Vance, V. (1981). Do academically able teachers leave education? The North Carolina case. *Phi Delta Kappan*, 63, 105-112
- Schoolview.org Performance Indicators and Measures, 2011. Retrieved June 25, 2011 from: <http://www.schoolview.org/PerformanceIndicators.asp>
- Seidman, I. (1998). *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences* (2nd ed.). New York: Teachers College Press.
- Solomon, J. (2009). The Boston teacher residency: District-based teacher education. *Journal of Teacher Education*, 60(5), 478-488.
- Spuhler, L. and A. Zetler (1993). *Montana Beginning Teacher Support Program*. Helena, MT: Montana State Board of Education.
- Stansbury, K. and Zimmerman, J. (2002). Smart induction programs become lifelines for the beginning teacher. National Staff Development Council. Fall 2002. 10-17.
- Stanulis, R.N., & Floden, R.E. (2009). Intensive mentoring as a way to help beginning teachers develop balanced instruction. *Journal of Teacher Education*, 60(2), 112-122.
- Stronge, J. H., Ward, T. J., & Grant, L. W. (2011). What makes good teachers good? A cross-case analysis of the connection between teacher effectiveness and student achievement. *Journal of Teacher Education*, 62(4), 339-355.
- Sudzina, M., Giebelhaus, C., & Coolican, M. (1997). Mentor or Tormentor: The role of the cooperating teacher in student teacher success or failure. *Action in Teacher Education*, 18, 23-35.
- Super, D. E. (1980). A life span, life space approach to career development. *Journal of Vocational Behavior*, 16(3), 282e298.

- Teitel, L. (2001). How professional development schools make a difference: A review of research. Boston: NCATE.
- TELLColorado.org. TELL Research Brief, (2011, May). Supporting New Teachers. Retrieved 7/4/11 from http://tellcolorado.org/sites/default/files/attachments/CO11_brief_new_teachers.pdf
- TELLColorado.org TELL Research Brief, (2011, May). What are the Voices of Colorado's Teachers Telling Us? Retrieved 7/4/11 from http://tellcolorado.org/sites/default/files/attachments/CO11_brief_general_trends.pdf
- TELL Colorado Survey, (2010). Tell Colorado. Retrieved 7/4/11 from http://tellcolorado.org/sites/default/files/attachments/CO11_TELLColorado_Main_Survey.pdf
- The National Foundation for the Improvement of Education. (2002). Using data to improve teacher induction programs. Retrieved 7/10/11 from <http://www.credoreference.com/entry/7063463>
- [VanVoorhis, C. W., Morgan, B.L. \(2001\). Statistical Rules of Thumb: What We Don't Want to Forget About. Retrieved 11/21/11 from http://www.psichi.org/Pubs/Articles/Article_182.aspx](http://www.psichi.org/Pubs/Articles/Article_182.aspx)
- Ware, F. (2006) Warm Demander Pedagogy. Culturally Responsive Teaching That Supports a Culture of Achievement for African American Students. *Urban Education* (41) 4, 427-456
- Wang, J., Odell, S. J., & Schwillie, S. A. (2008). Effects of teacher induction on beginning teachers' teaching: A critical review of the literature. *Journal of Teacher Education*, 59(2), 132-152.
- Whitehouse.gov. Retrieved 06/18/10 from <http://www.Whitehouse.gov/issues/education/>
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1993). Toward a knowledge base for school learning. *Review of Educational Research*, 63(3), 249-294.
- Wood, A. L., & Stanulis, R. N. (2009). Quality teacher induction: "fourth-wave" (1997-2006) induction programs. *New Educator*, 5(1), 1-23.
- Yendol-Hoppey, D., Jacobs, J., & Dana, N. F. (2009). Critical concepts of mentoring in an urban context. *New Educator*, 5(1), 25-44.
- Yin, R.K. (2003). *Case study research: Design and method* (3rd ed.) Thousand Oaks CA: Sage.

Appendices

Appendix A

Letter of Consent

INFORMED CONSENT FORM

ATTACHMENT B

DISSERTATION RESEARCH:

AN EXPLORATION OF THE RELATIONSHIP BETWEEN MENTORING AND STUDENT PERFORMANCE

You are invited to participate in a study that will investigate the relationship between frequency and depth of mentoring activities high school teachers in their first three years of teaching report engaging in and their perceptions of how this mentoring corresponds to student achievement growth and shift in achievement gap. Participation in this project is strictly voluntary. This study is being conducted as a component of a dissertation in partial fulfillment of the requirements of a degree doctor in philosophy. The study is conducted by David Shadwell. Results will be used to enrich a quantitative analysis correlating teacher responses on mentoring in the Colorado TELL survey with data from the Colorado Growth Model. David Shadwell can be reached at 303-241-8662 or by email at David.Shadwell@dcsdk12.org. This project is supervised by Dr. Linda Brookhart at The Morgridge College of Education, University of Denver, Denver, CO 80208, phone: 303-871-2509, e-mail: linda.brookhart@du.edu and Dr. Kent Seidel at The Morgridge College of Education, University of Denver, Denver, CO 80208, phone: 303-871-2496, e-mail: kent.seidel@du.edu.

Participation in this study should take about 60-70 minutes of your time. Participation will involve responding to 8 open-ended questions about your mentoring experiences and your perception of the impact that mentoring has had on your students' academic growth and reduction in the achievement gap. As noted above, participation in this project is strictly voluntary. The risks associated with this project are minimal. If, however, you experience discomfort you may discontinue your participation at any time. I respect your right to choose not to answer any questions that may make you feel uncomfortable. Refusal to participate or withdrawal from participation will involve no penalty or loss of benefits to which you are otherwise entitled.

Your responses will be identified by code number only and will be kept separate from information that could identify you. This is done to protect the confidentiality of your responses. Only the researcher will have access to your individual data and any reports generated as a result of this study will use only group averages and paraphrased wording. However, should any information contained in this study be the subject of a court order or lawful subpoena, the University of Denver might not be able to avoid compliance with the order or subpoena. Although no questions in this interview address it, we are required by law to tell you that if information is revealed concerning suicide, homicide, or child abuse and neglect, it is required by law that this be reported to the proper authorities.

If you have any concerns or complaints about how you were treated during the interview, please contact Susan Sadler, Chair, Institutional Review Board for the Protection of Human Subjects, at 303-871-3454, or Sylk Sotto-Santiago, Office of Research and Sponsored Programs at 303-871-4052 or write to either at the

University of Denver, Office of Research and Sponsored Programs, 2199 S. University Blvd., Denver, CO 80208-2121.

You may keep this page for your records. Please sign the next page if you understand and agree to the above. If you do not understand any part of the above statement, please ask the researcher any questions you have.

I have read and understood the foregoing descriptions of the study called AN EXPLORATION OF THE RELATIONSHIP BETWEEN MENTORING AND STUDENT PERFORMANCE. I have asked for and received a satisfactory explanation of any language that I did not fully understand. I agree to participate in this study, and I understand that I may withdraw my consent at any time. I have received a copy of this consent form.

Signature _____ Date _____

I agree to be audiotaped.

I do not agree to be audiotaped.

Signature _____ Date _____

_____ I would like a summary of the results of this study to be mailed to me at the following postal or e-mail address:

Interview Questions

Research Question: AN EXPLORATION OF THE RELATIONSHIP BETWEEN MENTORING AND STUDENT PERFORMANCE

1. What supports do you need to increase student growth and close the achievement gap?
2. Please talk about what supports your school has in place that help you increase student growth and close the achievement gap.
3. Please describe the relationship you have with your assigned mentor.
4. Describe how your mentor relationship helps you increase student growth and close the achievement gap.

5.

Colorado Teaching, Empowering, Leading & Learning Survey Question 10.2						
On average, how often did you engage in each of the following activities with your mentor?						
	Never	Less than once per month	Once per month	Several times per month	Once per week	Almost Daily
a. Developing Lesson Plans						
b. Being observed teaching by my mentor						
c. Observing my mentor's teaching						
d. Analyzing student work						
e. Reviewing results of students' assessments						
f. Addressing student or classroom behavioral issues						
g. Reflecting on the effectiveness of my teaching together						
h. Aligning my lesson planning with the state curriculum and local curriculum						
h. Other						

6. Describe the activities you engaged in with your mentor and share what impact those activities had on the academic growth of your students?

7. What impact have those activities had on the achievement gap within your classroom?

8. If you were able to design your own mentoring experience that would result in high student growth while also serving to shift the achievement gap, what would it look like and how might it differ from your current experiences?

Appendix B

The TELL Survey question relevant to this study was question 11.2 which is shown below. This question also appears above in the interview as it was asked for the qualitative portion of the study as well.

TELL Survey

Colorado Teaching, Empowering, Leading & Learning Survey Question 11.2						
On average, how often did you engage in each of the following activities with your mentor?						
	Never	Less than once per month	Once per month	Several times per month	Once per week	Almost Daily
a. Developing Lesson Plans						
b. Being observed teaching by my mentor						
c. Observing my mentor's teaching						
d. Analyzing student work						
e. Reviewing results of students' assessments						
f. Addressing student or classroom behavioral issues						
g. Reflecting on the effectiveness of my teaching together						

h. Aligning my lesson planning with the state curriculum and local curriculum						
h. Other						

Appendix C

The following Matrix was used to identify Codes and subsidiary themes in relation to the three research questions under investigation. This table informed the narrative of the interviews conducted in the qualitative portion of the study.

Qualitative Data Matrix

Code	Subsidiary theme	Increasing Student growth	Closing the student growth gap	Perception of relationship between mentoring, closing growth gap and student growth.	
Research-based Practices/strategies	Professional Inquiry opportunities				
	T3: Book Study	X	X	X	
	T4 : Textbook proposal	X	X	X	
	T5: Book Study	X	X	X	
	T6: Training, classes, PD	X	X	X	
	T7: Training, classes, PD	X	X	X	
	Application of Research-based strategies in classroom				
	T3: Build trust activity	X	X	X	
	T4: Word Wall	X	X	X	
	T5: --	--	--	--	
	T6: Formative assessment/ data tracking	X	X	X	
	T7: Formative assessment/ data tracking	X	X	X	
	Mentoring	Formal or Informal mentor?			
		T3: Informal	X	X	X
T4: Formal & Informal		X	X	X	
T5: Informal		X	X	X	

Code	Subsidiary theme	Increasing Student growth	Closing the student growth gap	Perception of relationship between mentoring, closing growth gap and student growth.
	T6: Informal	X	X	X
	T7: Informal	X	X	X
	Instances of collaboration/ co-planning			
	T3: dialoguing over instruction	X	X	X
	T4: lesson planning, teaching strategies, feedback, visible thinking strategies, discussion focus on student growth.	X	X	X
	T5: Sharing curriculum, co-planning.	X	--	X
	T6: dialoguing over melding 21 st century skills & State standards.	X	X	X
	T7: Co-planning, sharing effective strategies	X	X	X
Proactivity				
	Seek colleagues for advice/discussion of practices			
	T3: Sought friendships that would turn into informal mentorships.	X	X	X
	T4: Developed friendship into effective informal mentorships	X	X	X
	T5: Bounced instructional ideas off colleagues for feedback.	X	X	X
	T6: advice and feedback	X	X	X
	T7: Sought regular meetings with co-teachers	X	X	X
Observing Master Teachers				
	Voluntary or Mandatory?			

Code	Subsidiary theme	Increasing Student growth	Closing the student growth gap	Perception of relationship between mentoring, closing growth gap and student growth.
Observing Master Teachers Cont.	T3: Voluntary, did not do, but valued. Suggested showcase lesson. Should be mandatory.	X	X	X
	T4: Voluntary, did not do, but valued. Should be mandatory	X	X	X
	T5: Voluntary, did not do, but valued.	X	X	X
	T6: Voluntary, did not do, but valued.	X	X	X
	T7: Voluntary, did not do, but valued. Should be mandatory.	X	X	X
	Opportunity to reflect on/discuss?			
	T3: Discussion following showcase lesson	X	X	X
	T4: Journaling over observed lesson.	X	X	X
	T5: colloquium setting to discuss with master teachers	X	X	X
	T6: Support integration into new teacher mentoring	X	X	X
	T7: Observing teacher to use standard format when observing master teacher, then discuss.	X	X	X

