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The effect of pre-service teaching on student achievement using a co-teaching model at an elementary school in a large, urban school district in central Florida

Walton McHale
University of Central Florida

THE EFFECT OF PRE-SERVICE TEACHING ON STUDENT ACHIEVEMENT USING A CO-TEACHING MODEL AT AN ELEMENTARY SCHOOL IN A LARGE, URBAN SCHOOL DISTRICT IN CENTRAL FLORIDA

by

W. JOHN MCHALE
B.S. University of Florida, 1987
M.S. Nova Southeastern University, 1999
Ed.S. Nova Southeastern University, 2003

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Major Professor: Kenneth T. Murray

ABSTRACT

This study was focused on the effect of pre-service teaching utilizing a co-teaching model on student achievement at an elementary school in a large, urban school district in central Florida. The contribution of university student teachers (i.e., interns) to elementary school achievement was investigated. Specifically explored was the difference between student achievement scores in classes with interns who participated in a co-teaching model and interns in classes that did not employ any structured approach to intern teaching. The researcher compared seven classes that employed co-teaching, where the university intern teacher and master teacher remained in the class conducting instruction, to seven classes that had a more traditional approach to the intern teaching. The co-teaching intern model did not exert a significant effect, either positive or negative, on student achievement.

Also investigated was the effect of an intern, utilizing any model, on student achievement scores, when compared to similar classes without the presence of an intern. The study utilized 14 classes with interns and 13 classes without interns; each group had populations of approximately 285 students. The presence of an intern did not exert a significant effect, either positive or negative, on student achievement. However, the data indicated that the presence of an intern could positively influence mathematics scores.

Additionally, the impact of teacher quality and socio-economic status on student achievement in reading and mathematics were explored. The data revealed the value of the individual teacher significantly affected student success in reading and mathematics. In reading, socio-economic status also significantly affected student achievement.

To my wife, Nancy, for putting up with me, thank you.

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CHAPTER 1
THE PROBLEM AND ITS CLARIFYING COMPONENTS

Introduction

One of the cornerstones of a successful education is the relationship between the teacher and student. Of the myriad of factors, it remains, arguably, the single most important element in an effective classroom. Hattie (2009), in his summative work, culled thousands of studies and analyses to rank the contributing factors to student success. The 11th most effective contribution of 138 categorized elements, as determined by Hattie's meta-analysis, was this student-teacher relationship. Bishop et al (2012) further noted, "Students unanimously identified that it was the quality of in-class relationships and interactions they had with their teachers that were the main determinants of their educational achievement" (p. 696).

A continuing challenge in establishing the environment that prizes the teacher-student relationship has been in equipping new teachers with the skill set to promote this atmosphere. First-year teachers are challenged by the curriculum, culture, high-stakes testing, and accountability. Finding the ability to create a teaching climate that embraces the student-teacher relationship can be difficult. Furthermore, the establishment of a positive teacher-student relationship indirectly benefits other critical elements that contribute to student success. Bishop, Berryman, Wearmouth, Mira, and Clapman (2012) observed that students see this as the foundation for any growth, noting "Students unanimously identified that it was the quality of in-class relationships and interactions

they had with their teachers that were the main determinants of their educational achievement" (p. 296).

The educational system has continued to experiment with numerous strategies and programs to bridge the gap between new teacher inexperience and the promotion of climates that foster positive teacher-student relationships. One of the programs is a practicum in which pre-service teachers can participate during their final year at a university. The education system has long embraced programs for training new teachers prior to their graduating from a university with a valid teaching certificate. The internship program is often embedded within a larger degree. Typically, the university partners with local schools, matching student teachers with host schools. At the host schools, mentor teachers are selected to supervise, instruct and coach the pre-service teachers.

The actual models may vary, but most include an initial component during which pre-service teachers observe class instruction by the mentor teacher. During this time, the intern may be asked to reflect upon the teaching, offer insights and suggest next steps in the instruction. After this period of observation, usually measured in a few weeks, the pre-service teacher begins to assume direct teaching responsibilities.

The teaching responsibilities may be chunked, with interns assuming a role in small blocks or single periods of instruction. As the interns grow in experience and confidence, more teaching responsibilities are shifted to them. The goal is for pre-service teachers to assume a full teaching load by the end of the pre-service program. During

this process, the mentor teachers offer guidance, assist in planning instruction, and evaluate the effectiveness of the student teachers or interns.

The focus of the programs has always centered on the student teacher and to a lesser extent the mentor teacher. This is for good reason. Simply put, new teachers enter the classroom unprepared. Far too many are not up to the task and leave the profession. In the first year alone, over 10% of all new teachers quit, choosing not to return for a second year. Those whose remain may not be committed for the long haul, as by year five, a staggering 45% have left the profession (Graziano, 2005). This trend has only intensified in recent years, as nearly 40% of all teachers are over the age of 50, and approximately 20% are less than 30 years old, making the ability to retain teachers paramount (Williams, 2011).

Internship programs are vital for universities seeking to prepare their students to enter the teaching workplace ready to lead with minimal additional training. Similarly, from the school's perspective, pre-service teachers can be recruited to replace departing faculty members at the host school, and the school can shape new teachers in its culture.

Universities, schools, and student teachers do profit from this collaboration. Universities can offer a program that costs little but effectively provides practical experience for students. The school system gets nearly unfettered access to a ready-made employment pool. Pre-service teachers receive exposure to the children and an opportunity to apply theory in their practice.

The missing component, however, has always been related to students and the effect of pre-service teaching on student achievement? With states placing greater

demands on schools to produce measurable gains in student learning, the question has arisen as to whether schools can afford to blindly accept teachers with less than no experience This research was conducted to better understand what influence, if any, pre-service teaching had on student achievement.

Statement of the Problem

At the time of the present study, there was limited research to measure the impact on student achievement when intern teachers were delivering instruction. Although there exists abundant information on pre-service programs and practicums, the data have largely been used to correlate the benefits to student teachers with the qualities of a successful mentor teacher and internships.

Intern teaching has long been a common practice, having a purpose of providing final year college students with real classroom experience. The primary focus of student internships has been to provide prospective teachers with practical skills that will build their capacity as teachers upon successful completion of their preparatory degree programs. Internships allow students to take responsibility for a given class with guidance from a mentor teacher. The interns plan, deliver and reflect upon instruction. Mentors provide feedback with the purpose of growing the capacity and skills of the intern teachers. Traditionally, mentor teachers act only in a passive role, serving as a consultant and supervisor for the intern. Students in the class are given no additional support despite having an inexperienced teacher as their primary instructor, and the effect on student achievement is not monitored or measured by the host schools.

The Purpose of the Study

The purpose of this study was to determine the effect of a co-teaching model for intern teachers at an urban elementary school. The effect of the co-teaching model on the success of students as measured by standardized tests was also examined.

In this model, an experimental group of intern teachers partnered with classroom teachers in the planning, instruction, and reflection in all classes. The regular classroom teacher was active rather than passive and delivered instruction in tandem with the intern. The model focused on maximizing student-to-adult contact time during which teachers and interns conducted whole group lessons, small group instruction and one-on-one teaching with individual students. In contrast, a control group of intern teachers were partnered with classroom teachers using a traditional model. The control group classes had no fixed model for instruction with the intern teachers. The study was structured to increase the pedagogical skills of the intern teachers and to better prepare them for employment as elementary school teachers.

Research Questions and Hypothesis

The following hypothesis provided overall direction for the research:.

$H_{1:}$ The co-teaching intern model will have a positive effect on student achievement.

Four research questions supported the hypothesis and were used to guide the analysis of data.

1. To what extent do intern teachers in classrooms, regardless of model, affect student achievement in reading?
2. To what extent does the co-teaching intern teacher model affect student achievement in reading when compared to the traditional intern teacher model?
3. To what extent do intern teachers in classrooms, regardless of model, affect student achievement in mathematics?
4. To what extent does the co-teaching intern teacher model affect student achievement in mathematics when compared to the traditional intern teacher model?

Variables

The dependent variable was the K-5 students' growth in the benchmark testing in mathematics and reading. The independent variable was the co-teaching intern model that was utilized in the experimental classrooms. Significant extraneous variables were the experience and quality of the mentor teachers, control classroom teachers, and the

intern teachers. Table 1 contains the research questions, the sources of data, and the independent and dependent variables related to each question.

Table 1

Research Questions, Data Sources, and Variables

Research Questions	Data Source	Independent Variables	Dependent Variables
1. To what extent do intern teachers in classrooms, regardless of model, affect student achievement in reading?	Standardized, benchmark testing	Presence of Intern	Student achievement
2. To what extent does the co-teaching intern teacher model affect student achievement in reading when compared to the traditional intern teacher model??	Standardized, benchmark testing before and after	Co-teaching intern model	Student achievement
3. To what extent do intern teachers in classrooms, regardless of model, affect student achievement in mathematics?	Standardized, benchmark testing	Presence of intern	Student achievement
4. To what extent does the co-teaching intern teacher model affect student achievement in mathematics when compared to the traditional intern teacher model?	Standardized, benchmark testing	Co-teaching intern model	Student achievement

Note. The benchmark data were compared using descriptive statistics and univariate analysis of variance testing

Definition of Terms

Though there are many possible definitions for terms used in this study, the following have specific application and meaning for this research:

Intern--a student teacher who is enrolled in a university and is in the final year prior to graduation with a degree in education. The intern may also be termed an intern teacher, pre-service teacher, or student teacher.

Master teacher--a teacher who is legally responsible for the students and who also serves as the classroom supervisor or facilitator to the intern.

Practicum--the field experience in an elementary school classroom. The practicum, also referred to as an internship or pre-service teaching experience, lasts one semester, and its successful completion is a requirement for graduation.

Co-teaching intern model--the model for the experimental practicum group. Intern teachers and classroom teachers remain in the class and participate in instruction as a team. They meet as a team each day to discuss and plan the instruction for the day, implement a cooperative plan, and evaluate data together.

Traditional intern model--the model for the control practicum group. In this study, the model has very few prescribed elements, other than the master teacher will control the agenda and course of the practicum, and the intern will be the primary source for everyday classroom instruction.

Significance of the Study

When investigating the significance of the intern practicum, researchers have largely on the effect on the student teacher, and children in the classroom have been viewed as one variable to be considered. Yet, the teacher-student relationship has been determined to be one the most significant factors in student success. Hattie (2009) in his summative meta-analysis on student learning, observed that the teacher student relationship was the 11th most influential element of learning of 138 identified elements (2009).

In the present study, the emphasis of the practicum on the intern was shifted to consider the impact of the practicum on the K-5 students in the classroom. The primary focus is to determine if the practicum affected the overall learning of the K-5 students who participated in the study.

The results of this study will provide data and information to the school district and College of Education decision makers in current and future planning for pre-service teacher internship programs.

Limitations and Delimitations

Limitations are variables that may restrict the effectiveness of the study. Being aware of the limitations allows for meaningful interpretation of the results in further applications. Additionally, the limitations may create questions that may be explored in future studies.

The study was delimited to a single, urban elementary school district. It was further delimited to the measurement of achievement of students in 14 classrooms of Grades 3-5 students with intern teachers.

Benchmark tests were used to assess students' achievement in mathematics and reading. These tests, universal to all students in the school district, were not unique to the classrooms involved in the study. Thus, an intern or teacher could teach an instructional element with fidelity and success, but it may not have been addressed within benchmark testing.

The researcher did not seek to determine the effectiveness of a pre-service teaching program that utilized a traditional model.

Conceptual Framework

Perhaps no single component of education is more critical to student achievement than the relationship between the teacher and the student. Hattie (2009) observed, based on his vast research, that in those classrooms that focused on these relationships, "there is more engagement, more respect of self and others . . . and there are higher achievement outcomes" (p. 119).

The importance of instructors connecting with students had been reinforced earlier in 2001 by Bishop et al. in their research study of the Maori in New Zealand. The researchers found that low-performing students were able to outpace peers when they had instructors who connected with students and their families in meaningful exchanges. The New Zealand researchers followed indigenous, low-performing students as selected

schools implemented a three-year program to reach out culturally to the Maori children and their families. The program documented a rapid rise of the Maori students when compared to other subsets of the population. The learning gaps shrunk. Teachers were viewed more positively, and students participated more directly in the learning process. As the study concluded, parents and children agreed that the most important aspect of the program was the establishment of a personal relationship between the teacher and students (Bishop et al., 2012).

Student-attachment theory served as the theoretical basis for this study. Student-attachment theory centers on the belief that a positive relationship with students and their school fosters a symbiotic bond that generates success for students on all levels, including student achievement (Penner & Wallin, 2012). Student-attachment theory is an extension of the mother-child bond as first presented by Bowlby (1969) as the ethological theory of attachment. Bowlby's theory, in very general terms, recognized the caring relationship between the newborn and mother as foundational in guiding children to later successes (Kennedy & Kennedy, 2004). Student-attachment theory establishes the teacher-student relationship in the same contextual framework as Bowlby's 1969 ethological theory of attachment. It is a bond that is created early; it is strong and leads to greater success in the future.

Methodology

Population and Sample

This study was conducted in a single, urban elementary school district with a population of 573 students in Grades 3-5 at seven demographically similar schools The sample consisted of 292 Grades 3-5 students in 14 classrooms with an intern and a mentor. Of the 292 students, 134 students in seven classes with interns used a co-teaching model and comprised the experimental group. The experimental group classes had interns with mentor teachers using the co-teaching internship model.

The control group consisted of 158 students in seven classes with interns using a traditional model. The control group classes had interns but no fixed model for instruction with the intern teacher. Classroom teachers who were partnered with interns were experienced, having had a minimum of 10 years of successful classroom instruction.

The remaining 281 Grades 3-5 students were taught in 13 standard classrooms with traditional, certified teachers and no interns. The teachers without interns tended to have less teaching experience, some having less than five years of classroom instruction.

In each test, there was the possibility of not of all the students actually taking the part. Due to student absences, recording errors or other school-based issues, individual exam scores may not have been present for both the mathematics benchmark test and the reading benchmark test. This explains any slight differences in the total tested for each benchmark test and the raw population total.

Instrumentation and Sources of Data

The effect of the co-teaching model on the success of students as measured by standardized tests was examined. Standardized test scores acquired from the fall 2014 benchmark tests provided the data for analysis. The benchmark tests are computerized standards-based tests that are designed to measure students' knowledge in mathematics and reading. The scores are calibrated to express levels of achievement: (a) on grade-level, (b) needing some improvement or (c) needing much improvement. The standard of measure was the proficiency scores as measured by percentage correct on the test

A total of 289 students participated in the study in seven control and seven experimental classes. The scores of the experimental group were compared to the scores of the control group to extrapolate any statistically significant differences between the two populations.

Data Collection

Data for the benchmark tests were collected in November 2014 (fall test). The student achievement data were collected using Performance Matters, the school's electronic portal and school district's database

Data Analysis

The data were analyzed using SPSS and Microsoft Excel software. The benchmark data were compared using descriptive statistics and Univariate Analysis of

Variance testing. The results were further interpreted to test the research hypothesis, pinpoint tendencies, and isolate any anomalies.

Organization of the Study

This chapter has introduced the problem and components that help define and explain key issues associated with the research. The introduction (background of the study), problem statement, the purpose and the significance problem, limitations and delimitations, methodology, key terms, assumptions and the collection of data were all addressed. Chapter 2 contains a review of the literature and research relevant to the study. Chapter 3 provides a descriptions of the methods and procedures used to conduct the study. The results of the analysis of data are presented in Chapter 4. Chapter 5 contains a summary and discussion of the findings including the interpretation of all the collected data concerning the co-teaching pre-service teaching model and its effect on student achievement. Additionally, implications for practice and recommendations for further investigation are offered.

CHAPTER 2
REVIEW OF LITERATURE

Introduction

In this chapter, relevant research and literature focused on pre-service preparation programs in the United States are reviewed. The major influences that have shaped how teachers are selected and trained are presented along with the philosophies that are instilled in the new teachers. Also reviewed is the literature focused on the impact on the teaching profession these preparation programs have had over time, current issues involving student achievement, and teacher retention. Finally, the review of research will assess co-teaching and its place in the modern classroom and the theory behind its implementation.

History of Teacher Preparation

Beginning with the opening of the first school doors, educators have been presented with the challenge of how to best prepare teachers. Programs, simple or extensive, were created with the purpose of selecting and improving a new instructor's skills in order to assure success in the classroom as measured by the longevity of the teacher's tenure. The simplest strategies included serving under a master teacher and then assuming the role when that individual left the class (Darling-Hammond, 2005; Herbst, 1989). In other systems, communities selected the best or smartest person from the area in the hopes they could transfer their expertise to their children. These were inexact methods and had limited results (Lazerson, 1987).

Horace Mann, an early proponent of public education, coordinated the first open public schools to all children in the 1830s. The goals of the schools were to create a sense of national identity, using the English language as the vehicle and the protestant work ethic as the backbone of the system (Herbst, 1989). Mann firmly believed that the public school system would keep anarchy in check and be the glue that held the American nation together (Lucas, 1997). The objectives were simple: to raise a literate, well-behaved and unified society which acted in concert with the wishes of its leadership.

Initially, teachers were predominantly male, but as the nation expanded westward and gathered in cities to work in factories, many of the men who would have been teachers moved with the fortunes of the new nation. Hence, women began to fill the instructional void. Often a recent graduate of a community school would simply stay to continue teaching the classes. Success was random, and often communities were forced to sacrifice expertise for stability (Lucas, 1997).

Normal Schools

As society became more structured and codified, education leaders, including Mann, saw the necessity for developing and implementing a formal system for training educators. The happenstance teacher selection process was overhauled to give communities choices. In the early 19th century, future American elementary teachers began to attend schools that focused primarily upon teacher preparation. Labeled "normal schools," these institutions gained popularity as training academies for new educators (Herbst, 1989).

The first normal school was established in Lexington, Massachusetts to assist in training and hiring teachers for the common schools in the area (Borrowman, 1965). Normal schools had a curriculum focusing on young children, and set the standards for teacher preparation. These schools were lauded and were credited with raising the craft of teaching to a noble profession by implementing curricula that focused on content and delivery. The training was brief, perhaps only a year, but existed just to create teachers. A typical normal school would establish graduation requirements that had new teachers demonstrate subject knowledge, show high morals, and be in good health (Herbst, 1989).

The education system, however, based its philosophy on John Dewey's assertion that children naturally wanted to learn. In *American Education in the Twentieth Century*, Lazerson (1987) paraphrased Dewey's philosophy, "teaching should begin with the child's interests and experiences" (p. 8). The training of teachers was secondary to the creation of an environment that supported Dewey. His belief was that teachers served as parents, and as such, needed less formal training and more practical application. His philosophy, to create students who were good citizens, focused on discipline and conformity, not creativity or intellectualism. This seemed to justify the mass production of teacher caretakers in normal schools (Lazerson, 1987).

The notion that instructors had to have the most knowledge in the community gave way to the belief that teachers must also have the strategies and skills to transfer that knowledge to the community's children. By the latter part of the 19th century, normal schools became the primary training ground for new teachers. Although the schools represented a huge step forward, most students only received clinical training in a

classroom, with no practical application. Additionally, there was an overall lack of any consistency from one program to another and one institution to another.

Insulated from and ignored by other institutions, such as high schools or colleges, and locked into a rote delivery, the students in normal schools had to be committed to education. The idea of choice was non-existent once a student entered a normal school, there were no other opportunities upon graduation other than teaching. Although this helped to establish teaching as a calling and required commitment, it also isolated normal schools from the educational mainstream. Though many schools had an active approach to building capacity in new teachers, e.g., creating career-minded teachers and imparting skills that benefited instruction, others looked only to establishing a strata of subservient women to promulgate the masculine, Caucasian status quo (Darling-Hammond & Bransford, 2005).

Some normal schools did strive to provide a practical experience for their students. Many required observations of teaching in standard, public schools, with the objective of viewing master educators in the classroom. Others promoted laboratory classrooms in the schools themselves. A traditional school could be enclosed and directed by the normal school, providing the opportunity for experimentation with methods and curricula, and pre-service teachers could view or participate in instruction. Finally, the idea of internships was extended to education. Just prior to graduation, pre-service teachers were placed in public schools. They either replaced the teacher or had a rotation of classes to build a repertoire and display their skills to potential employers (Fraser, 2007).

At the Iowa State Normal School, Principal James Gilchrist attempted to foster a practical sense of how to teach. Students taught mock classes to their fellow normal school enrollees. Principal Gilchrist mandated entrance examinations for students and believed, "(graduates) should have actual practice in teaching before they became such public servants" (Herbst, 1989, p. 137). The students were provided feedback in order to hone skills and perfect curriculum instruction. The school was measured and described as successful. By the late 19th century, Iowa State Normal School was the largest single supplier of instructors in the state (Herbst, 1989).

Normal schools did not educate all teachers, and the requirements for teachers lacked any real standardization until later in the 20th century. By 1920, there were over 320 established institutions, and normal schools began to compete directly with colleges and universities for high school graduates. They organized and adopted formal programs and coordinated with other normal schools to institute a sense of consistency. Most importantly, they began offering college courses to allow them to prepare primary and high school teachers, long the purview of colleges and universities. The normal schools recognized that as pupils found it more difficult and taxing to gain degrees from normal schools, their student populations were likely to shrink. They believed, however, that lacking such rigor, they would gradually decline in stature and size (Fraser, 2006).

Even as normal schools grew in scope, large numbers of teachers still had no formal training beyond grade school. In Pennsylvania in the early 1900s, 18% of the public school teachers had completed instruction in normal schools; another 10% attended normal school, but did not finish (Fraser, 2006), often being hired prior to

completion (Urban, 1990). Many attended high school only, but 39% of the 10,000 surveyed indicated they had no secondary training at any institution (Fraser, 2006).

Proponents of normal schools viewed the schools as having a specific, though limited role. They saw their role as limited to the quick production of rural, elementary school teachers. The normal schools filled a gap between the completion of common (elementary) school and becoming a beginning teacher. In the cities, this role was occupied by high schools, which were considered academically parallel with normal school instruction. When normal schools attempted to raise the bar by requiring entrants to obtain a high school diploma, i.e., the Chicago Normal Schools of the early 20th century, it signaled the beginning of the end for teacher preparation at normal schools. A writer for *Education* commented in 1903, that this policy placed the school "on the road to oblivion" (Herbst, 1989, p. 150).

Normal schools were not considered to be in the upper echelon academically. Most were considered as alternatives to high school. In fact, some critics described the training in a normal school to be subpar to that of high schools (Lucas, 1997). Teachers were often deemed ready to teach children after just one year. In 1922, at the Kansas State Normal School, over 75% of the year's graduates attended for just one year and earned certificates to begin teaching in elementary schools the following fall. At the same school, just 6% attended four years to obtain an undergraduate degree in education or a related field (Herbst, 1989). Many policy makers perceived normal schools as a way station for children seeking to escape rural communities or those, especially women, who could not gain entry into the more prestigious colleges (Herbst, 1989; Urban, 1990).

Teaching in the elementary classroom was a fallback plan for men. Consequently, women, who had few other opportunities for careers outside of homemaking, dominated the field (Herbst, 1989; Lucas, 1997).

The lack in the quality of education at normal schools was not a conscious decision to create less than adequate teachers. Mann had visions of creating institutions that focused solely on developing instructors for common schools (predecessors to elementary schools). The explosion of children in schools corrupted his vision after the Civil War (Lazerson, 1987). Normal schools became factory-like, producing teachers with little academic preparation, one year in most cases, and no practical experience, i.e., a practicum or internship. The demand simply outpaced the good intentions and abilities of the normal schools (Labaree, 1999).

Teachers Colleges

As the 19th century rolled into the early 20th century, education mimicked the changes in society. Education was moved from intellectual stimulation to a more pragmatic philosophy. Lazerson (1987) referenced a 1929 article by Robert and Helen Lynd in which an unnamed Midwestern school board president was quoted, "For a long time all the boys were trained to be President. Then for a while, we trained them all to be professional men. Now we are training boys to get jobs" (Lazerson, 1987, p. 89). The Industrial Revolution transformed public schools into labor factories.

As normal schools reached their peak in the early 20th century, teacher training began to expand into liberal arts colleges. The emphasis on training shifted to a focus on

maintaining an orderly class. Dispensing practical knowledge was of secondary importance, and creativity and problem-solving skills were ignored in favor of rote memorization and homogeny. The United States published the watershed study in 1918, *The Cardinal Principals of Secondary Education* (as cited in Lazerson, 1987, pp. 79-87). It detailed the ultimate goals of education to be the following:

- Health: to ensure citizens that are strong and well provisioned to work in physically demanding jobs.
- Command of fundamental processes: to include reading, writing, arithmetic and the proper utilization of the English language.
- Worthy home-membership: that all members of society realize that the traditional family is the central institution for societal success.
- Vocation: to ensure that all graduates have abilities, skills and opportunities that enable immediate and long-term employment and/or advancement to higher education.
- Civic education: to understand the processes of Democracy and pledge to defend them, echoing Dewey's ideals that all students should emerge from education as a contributing citizen of the United States of America.
- Worthy use of leisure: to furnish students with appropriate activities and clubs to guarantee children would be productive outside of the classroom.
- Ethical character: to guide children, assisting them to form personalities that were in concert with the larger society.

Certainly the principals were meant to help children be integrated into society as soon as they crossed the stage at graduation. In addition to providing scholastic guidance, education was becoming the dominant social institution. Teacher preparation was structured to follow those tenets.

Liberal Arts colleges offered degrees in education, but most had no real application to the classroom. Instead, preparation programs focused on building classroom teachers in the abstract, learning from professors who were considered experts in the fields of classroom management, pedagogical methods, and curriculum. Much of the training was based on the teachings of psychology and the presentation of the prevalent theories in teaching (Darling-Hammond & Bransford, 2005). The only contact most professors had with classrooms was within the college, and the idea of utilizing former school teachers or educators to lead collegiate education programs was abhorrent to the professoriate.

Some of the normal schools, especially the successful or ambitious ones, became colleges or merged with universities. The Iowa State Normal School added courses and requirements for graduation, thereby allowing it to become the Iowa State Teachers College in 1908. So successful was the institution, that the college supplied 10% of the graduate students at the University of Iowa in 1912/13. The students had a wide array of degrees and programs, all designed with the goal of being a teacher (Herbst, 1989).

By the mid-1920s, the fortunes of normal schools waned. In increasing numbers, the schools changed to teachers colleges. The growing population of students sparked this evolution in the public school systems, creating more students with higher levels of

education and a demand for teachers with expertise to teach them. Society was beginning to expect teachers to have more training and be specialized. After World War 1, the country shifted its collective expectation, expecting that all children should obtain at least a high school diploma. Even in rural settings, where families believed the need for 12-years of education conflicted with the necessity to have workers on the farm, the average education completed dramatically increased in the early 20th century. As noted by Snyder (1993), in the 40 years from 1900 to 1940, the percentage of enrolled school-age children jumped from 51% to 75% (p. 6).

High school participation and graduation were becoming the norm for all students. States were creating departments of education and establishing requirements for teacher preparation and certification (Coble, Edelfelt, & Kettlewell, 2004). As an answer, teacher preparation programs were expanding in complexity, difficulty, and length. The consensus was that elementary school teachers needed at least two years of college education prior to entering the classroom as a teacher. High schools were held to a higher level. The expectation was four years of college level courses. At that time, fully 73% of grade school instructors met or surpassed those levels (Evenden, Gamble, & Blue, 1933).

Normal schools were losing ground to teachers colleges and universities in their recruitment of candidates as they struggled to meet the rising standards. The idea of specialization to produce teachers for rural elementary schools proved to be too limiting. Successful normal schools such as the Iowa State reorganized as teachers colleges. In the

20 years following the peak of normal schools in 1920, the number dropped by over 60% and teachers colleges expanded by a factor of four (Coble et al., 2004).

Coble et al. (2004) described the main differences between normal school and teachers colleges as follows:

- Teachers colleges required at least a four year program, versus two or three years at a normal school.
- Teachers colleges' students were educated past the point of instruction to be expected at the elementary school.
- Teachers colleges provided a broader range of instruction comparable to a liberal arts degree at a comparable university.
- Teachers colleges invested a more thorough instruction of the profession of teaching – including the history of education.
- Teachers colleges began to include outside teaching internships, with duration of two months or more. (pp. 4-5)

Teacher preparation at the teachers colleges outside of the classroom was confined largely to laboratory schools. The laboratory schools were maintained by colleges and universities and served as both a place of instruction and research. The children who attended the schools were primarily the sons and daughters of the faculty members of the institution. Laboratory schools created a somewhat unnatural setting for teaching. The schools had more in common with private, elite schools than the public schools that served the masses. Hence, the experience gained by student teachers in laboratory schools did not serve them particularly well. Eventually, most laboratory

schools were shuttered by the states themselves in the 1960s, as an unfair accommodation to the professors at the colleges and universities (Ogden, 2006).

Teachers colleges held sway for 20 years as institutions for teacher preparation, but the programs became diluted, much as had happened at normal schools. Less expensive, smaller, and usually closer to rural communities than universities, students often were not attracted to teachers colleges with the goal of becoming educators. Rather, they provided a less expensive and more convenient alternative to universities. This pressured the teachers colleges to add non-educational degrees and have a broader course selection (Labaree, 1999). Teachers colleges served as an educational bridge between normal schools and universities. The teachers colleges had the atmosphere of the normal schools with the pedagogical breadth of a university.

Universities

After World War 2, universities began to offer degrees in elementary school education and quickly became the dominant institutional environment for such preparation. The schools offered access to various and specialized subject matter,(e.g., chemistry, economics), and at the same time delivered the pedagogical skills of teaching. As the baby boom began to outstrip the potential for instructor creation at the teachers colleges and the smaller, private liberal arts institutions, state colleges and universities also had the resources and capacity to meet societal needs by producing increasing numbers of elementary teachers, (Darling-Hammond & Bransford, 2005).

Universities filled the growing void for teachers. Much larger, and designed to expand, they began to offer degrees in education and attracted future educators in large numbers. Furthermore, the GI Bill encouraged a flood of war veterans to begin post-secondary education. States found it much simpler and quicker to add to existing universities, rather than build new ones or upgrade smaller schools (Coble et al., 2004).

Teachers colleges tried to survive, and in some ways, were far more successful than the normal schools that had preceded them. Some schools found the transition as simple as replacing the term "teachers" with "state" (Labaree, 2004, p. 6). The schools, having already broadened their curricula, simply validated their commitment to other areas of instruction beyond education. Many schools formally separated the disciplines into colleges, with specific foci such as education (Morey, Bezuk, & Chiero, 1997). With this move to state colleges, the programs became more uniform and compatible with the university system. Colleges and universities often offered the same courses and degrees, thereby facilitating movement of students between the two institutions.

The inclusion of education degrees in colleges and universities seemed to hinder the growth of teachers as a profession. Stratification became more pronounced. Females were relegated to elementary school classrooms and deterred from attending the more prestigious universities. Men occupied all the leadership positions and dominated the high school classrooms. As late as 1972, 80% of all elementary school principals were male, but 84% of the classroom teachers were women (Herbst, 1989).

The programs at universities and colleges reflected the idea that teaching was to be an academic and scholarly practice. The normal schools (and later teachers colleges)

tried to create real-world experiences through laboratory classes or internships. Universities believed preparation of teachers was best handled through classwork and lectures, and the real-world experience was limited to observation and participation in a semester-long internship with little oversight. Universities prioritized and conducted research;, thus their philosophy in regard to education reflected a theoretical approach (Urban, 1990).

Universities had long catered to the preparation of teachers, but only in regard to secondary instruction, high school and beyond. As such, the schools believed subject matter was of prime importance. Students became experts in the science of chemistry, history, and English literature first. The art of teaching was a secondary concern. In 1960, Bruner commented, as follows, on how best to present subject matter to children: "It is that the best minds in any particular discipline must be put to work on the task" (Lazerson, 1987, p. 152).

Thus, the focus of teacher preparation had gradually shifted from large portions of program being comprised of education classes to one more centered on subject matter supported by general classes. In 1961, future elementary teachers devoted almost half of their college credits to methods classes. Twenty-five years later, the same students were only taking one class in five that focused on teaching pedagogy, and that would often include a field study or school internship program (National Commission on Excellence in Education, 1985).

This lack of pedagogical skills placed new teachers in a tentative position. Shulman (1987) described effective teachers as having a knowledge base that consisted of the following components:

- content knowledge;
- general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter;
- curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers;
- pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding;
- knowledge of learners and their characteristics;
- knowledge of educational contexts, ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures; and
- knowledge of educational ends, purposes, and values, and their philosophical and historical grounds. (p. 8)

The idea of a knowledge base reverberated across the globe. Finland, an architect of educational transformation and perceived as the early 21st century's success story, expanded on this tenet. The coursework in a Finnish university was extensive in its inclusion of courses on how to teach. The experience stayed exhaustive and was

extensive enough that students were required to complete three-years of graduate level courses. This commitment by the nation was so complete that the cost of preparation of teachers was covered entirely by the government (Darling-Hammond, 2010).

In many U.S. institutions, professors over the years have reflected the university's general disdain for actual practitioners. Instructors at a university emerged from the halls of academia, and few had any experience in an actual elementary school setting. The goal was to gain tenure first, then guide teachers. Professors' accountability was based on conducting research and their ability to produce articles and receive grants. The success of graduating students was of little relevance. According to Arthur Levine (2006), "Universities continue to look down on their teacher education programs and the programs too often remain disconnected from the elementary and secondary schools they were created to serve" (p. 26).

By the 1960s universities, regardless of their failings and inadequacies, had become the destination of the majority of pre-service teachers. As of 2004, of the 1,200 institutions that existed to teach and train educators in the United States, there were no normal schools or independent teachers colleges (Coble et al., 2004). Students have often elected to pursue one of two distinct preparation paths, emerging from (a) an education college or program to become certified as a classroom teacher, or (b) an alternative certification that would not include a specialization in teaching classes, but instead focused on subject matter. Professional educators, outside of the university, have viewed this dichotomy with jaundiced eyes. The criticism has been that one could not contemplate a doctor, engineer or lawyer emerging directly from their disciplines,

without a period of time training, e.g., serving as an intern doctor or an associate lawyer, but teachers were being groomed with little to no educational training, with the blessing of our institutions of higher learning (Levine, 2006).

Thus, by the 1980s regardless of the program or the institution, pre-service teacher preparation largely consisted of classwork with little to no practical application. With the closure of the laboratory schools, students traveled through classes, garnering grades, with the hope that these completed courses and degrees would translate into instructional expertise. Once in a teaching position, students were often overwhelmed and unprepared for the realities of dealing with and supervising children. The foundering teachers left the profession or worse, remained as ineffective teachers. Clearly, new teachers deserved a better system.

Teacher Qualities and Student Achievement

Current Crisis

Hand in hand with the challenge of creating better new teachers, was improving overall teacher quality. With the release of *A Nation at Risk* describing the system as a "rising tide of mediocrity" that hamstrung American students when compared to European and Asian schools (National Commission on Excellence in Education [NCEE], 1983, p. 5), public opinion began to turn on education. Suddenly, public schools were seen as anachronisms and non-responsive in meeting the demands of a world dominated by computers and global competition. The report further identified teachers as being

poorly prepared for teaching, noting specifically that the pool of teachers was drawn disproportionally from the lowest quartile of graduating college students (Smith, 2007). The perception became one that out-of-date and unmotivated instructors were protected by teacher tenure laws, especially if identified as ineffective in the classroom.

Further, administrators had little power to remove any entrenched, sub-standard faculty. In Illinois, it was noted in one study that only two of the state's 95,000 teachers were terminated annually due to ineffectiveness in the classroom as measured in the years from 1985 to 1997 (Kersten, 2006). Unions were pitted against the growing tide of public frustration and conservative lawmakers, as policy makers attempted to modify the tenure program to allow administrators to more expeditiously remove bad teachers. The changes, as noted in this same study, seemed ineffective, as the rate of teachers dismissed teachers remained largely unchanged and insignificant (Kersten, 2006).

In the intervening years since the release of *A Nation at Risk,* the perception that teachers are not of the highest quality has only increased, and the federal government waded into education once again with *No Child Left Behind* (NCLB) in 2002. The legislation allowed the federal government to mandate systems that established accountability and performance standards for classroom teachers. One of the designs of the legislation was to recognize and reward teacher excellence while at the same time eliminating poor teaching. States have attempted to comply with NCLB, partially to satisfy the public's thirst for quality schools, but perhaps more so to acquire the federal money needed to supplement the shrinking state funding for schools (Smith, 2007). Each state has grappled with and debated the issue of teacher quality control.

However, NCLB has troubled many. Opponents cited the federal government's disproportional influence on education. Constitutionally, states were clearly empowered to control the direction and intentions of public and private schools within their boundaries. According to McDermott and Jensen (2003), the federal government has supplied approximately 7% of the funding for education, with the state and local governments splitting the remaining funding roughly in half. These researchers further observed that the 7% funding seemed to be dictating policies for the 100% of the states and schools. Some states have considered refusing federal funds, but this only seems to be rhetoric, as all have continued to accept the money regardless of the obligations placed on them (McDermott & Jensen, 2003).

Even after the 2008 elections, with a Democratic candidate sweeping into presidential office, NCLB was continued. The usual partnership between public school teachers and the Democratic president seemed non-existent. President Obama extended the scope of the legislation and added Race to the Top (RTTT) components. Further demands were placed with the hope of improving teacher quality. Teacher evaluations and merit pay, under the guise of accountability, was the new flash point. As one RTTT analyst, Andy Smarick, observed,

> Teacher evaluations were arguably the most important and far-reaching policy change to come out of [Race to the Top] and states are having serious trouble delivering . . . If this doesn't work out, it will hurt the long-term legacy of RTTT -- it'll be another sign that the feds can get states and districts to do things but they can't make them do it well. (McNeil, 2014, p. 27).

Thus, at the time of the present study, teacher quality, including that of the newly hired, remained a focal point for the federal government, states, and the public.

Researchers have given credence to the importance of teachers in the educational process. Specifically, the relationship between teachers and students has been viewed as being paramount to success in the classroom (Bishop et al., 2012; Hattie, 2009). But experts also agreed that new teachers needed a preparation program that equipped young educators with the tools and experiences to enable them to effectively teach from the moment the school bell rang on their first day in the classroom. The National Council on Teacher Quality (NCTQ) adopted this premise as a cornerstone for its recommendations to improve education. In an exhaustive eight-year study which included 10 pilot studies, the NCTQ rated the teacher preparation programs of 1,130 colleges and universities which produced over 99% of the school's traditionally trained teachers. The data were thorough and immense, and the results were troubling. Only 7% of the reviewed schools provided an experience that was measured as "uniformly strong" (Greenberg, McKee, & Walsh, 2013, p. 2) and provided a well-rounded understanding of teaching. Further, according to the analysis, more than three-quarters of the schools earned two stars or less (on a four-star scale), indicating mediocrity (or less) in the majority of programs (Greenberg et al., 2013).

The NCTQ found that teacher preparation programs, in general, were far too inclusive, with most allowing admission of any student, compared to high performing programs in other countries, which restrict entry to the highest third of applicants. Universities also tended to create and administer the programs within a vacuum. They

did not consider accepted educational trends, such as the adoption of Common Core or the establishment of merit pay systems, but relied on worn premises and out-of-date strategies and theories. Finally, the selection of mentor teachers seemed to be largely a result of teachers who volunteered, not identifying and recruiting the highest performing instructors to act as mentors (Greenberg et al., 2013).

Though programs were created to meet the perceived needs of student teachers, in reality, they served only to extend the reach of the colleges and universities. There was a lack of unified and research-based protocols. The standards of institutions varied greatly. Student teachers emerged with only a vague indication of what was expected. The strength of the university was the presentation of theory, but the public schools needed experts in practice. Labaree (1999) had earlier observed that within the university, the schools or colleges of education should bridge the gap between the teaching of pedagogy and the real classroom delivery of instruction. As one example, the pre-teacher internship, according to Labaree (1999), should be used to explore and develop the teacher-student relationship for college students prior to seizing the reins as an elementary teacher.

Gaps existed between the idealism and isolation of the universities and public elementary schools. Levine, in his comprehensive review of teacher preparation observed, "the U.S. lacks a common vision of how to prepare teachers to meet today's new realities, leading to the rise of divergent and opposing approaches to reform (2006, p. 14). Specifically he lamented the increasing diversification of pathways to becoming a teacher.

More and more states were trying to expand alternative certification programs to fill the classrooms with someone to teach. These teachers, according to Levine (2006), lacked the core education classes that establish the foundation of classroom management and curriculum delivery. The federal government has defined "highly qualified" based on subject knowledge only. Levine observed that this expansion of who can teach has led to 250,000 teachers earning certification without participating in any formal university education program, most since the mid-90s (Levine, 2006).

Some local initiatives have facilitated bridging gaps between college programs and nearby school districts. Universities and public schools have begun to partner to provide future teachers with real and meaningful experiences in the classroom. As one example, the University of Central Florida had established a cohort approach to education, grouping students as early as the freshman year, and giving them tutoring prospects as a regular part in the cohort program. Though some programs have furnished students with exemplary teaching opportunities, the results have generally been haphazard.

Kang and Berliner (2012), in their research, found that strong pre-service teacher training programs coupled with coherent induction systems led to far greater levels of teacher retention. However, in the same study, it was revealed that the retention of beginning teachers did not necessarily translate into success with regard to student outcomes. It was also shown that the teachers most likely to leave were those who showed the greatest promise. The researchers attributed the lack of high-quality teacher retention to the shortfalls of the pre-service teacher programs and the lack of quality

oversight and direction from university supervisors and cooperating teachers. In short, the research revealed that, however well intentioned, beginning teacher programs, both at the college and classroom level, were designed to stress quantity over quality. The programs failed at delivering the crucial pedagogical skills needed to keep successful new teachers in the classroom (Kang & Berliner, 2012).

Borko and Mayfield (1995) underscored the necessity for universities and classroom teachers to be active contributors to intern teachers' education. They observed that interns' experience in the classroom was complex and overwhelming. If supervisors remained in the background, employing a "sink or swim" philosophy with intern teachers, the interns were placed at a huge disadvantage. Having to focus on all elements of the teaching process simultaneously led to problems associated with deficits of the interns. These deficits, whether based on classroom management, curriculum or pedagogical issues, could lead to frustration, burnout, and lower student achievement. Other researchers (Lindqvist, Nordanger, & Carlsson, 2014; Loh & Hu, 2014) suggested that college supervisors, classroom teachers, and interns needed to share a cooperative environment to address concerns and challenges immediately.

Psychologists have long surmised that for growth to occur people must believe that change is required and that growth does not happen in a vacuum with no awareness. Growth, and as an extension, learning, must be a conscious process with the student open to transformation. Learners must believe in the process and have confidence in the outcomes as they struggle with change (Borko & Mayfield, 1995). This atmosphere of trust and faith can only be established with the input and support of experts, in this case,

college supervisors and experienced teachers. If intern teachers believe they have been abandoned, with supervisors checking infrequently and mentor teachers passively non-engaged, growth will be difficult. Success, whether measured by new teacher retention or students' classroom achievement, will be far less likely.

The 1995 Borko and Mayfield study was a qualitative study in which the researchers followed four student teachers in depth. Though a small study, it did illuminate one important obstacle to teacher development--that people, especially the new teachers in the study, believed that teaching was not learned in any meaningful way other than through direct experience. Coupled with this was the belief that "teachers are born that way." The researchers heard comments as follows: "She was born to be a teacher," or, "He just knows how to teach" (Borko & Mayfield, 1995, p. xx). This belief encouraged, to some extent, the practice of placing pre-service teachers in the classroom with little preparation or support.

Hammerness et al. (2007) wrote that a lack of support in induction programs was detrimental to the vast majority of new teachers. These authors noted that in addition to the high turnover rate, teachers left to cope independently emerged as less prepared for the classroom than their counterparts who participated in well-structured, collaborative programs. Induction programs can build capacity within new teachers at a far greater rate than those who are simply given the keys to the classroom and have little continuous support. Interns learn by observation of master teachers and having has the opportunity to practice and reflect upon those skills seen during observations (Hammerness et al., 2007).

Hammerness et al. (2007), in their study of induction and pre-service teaching programs, observed that the identification and revision of new teacher preconceptions was a cornerstone of a strong program. In multiple studies, new teachers were described as enthusiastic and energetic, and perceived that those traits were the most critical to propelling student achievement (Bishop et al., 2012; Dooner et al., 2010; Ecklund, 2009). The idea of curricular knowledge and the correct application was minimized in comparison. This led to a "fun" class, but not one in which students were stimulated or provided adequate challenges in their learning. New teachers in these situations tended to became preoccupied with the need to be accepted or liked and ignored the primary reason for their employment--to teach. Hammerness et al. believed that without a system to emphasize the "how" of teaching, i.e., pedagogy, subject matter, contextual instruction, the new teachers became overly engrossed in the pursuit of affection, teaching styles and classroom environments. As Paine noted, cited by Hammerness et al, young teachers enter the profession with, "an enthusiastic appreciation of personality factors and an underdeveloped sense of the role of content and context" (p. 369). A training program, with an experienced mentor, allows intern teachers to experience the correct balance of the art and science of teaching.

Teacher Retention

Even as early as the 1930s, teacher flight was identified as an issue in education. In Evenden et al.'s study of teachers, sponsored by the United States Department of the Interior in 1933, it was highlighted that teachers were leaving rural schools, some drawn

to urban schools and some withdrawing entirely from education. Evenden et al. discussed teacher tenure as a solution to retention of new teachers. Public education in the United States has had a long relationship with teacher tenure. The first formal adoption of teacher tenure came in the early 20th century. Legislation was enacted in the attempt to entice and retain competent teachers, assist school districts, increase the total teacher labor pool by attracting more candidates, and eradicate patronage within school systems. During this period, public schools were beset by patronage, as local politicians attempted to pack schools with relatives and supporters. Tenure was the system of granting qualified teachers, through time and evaluation, nearly unlimited job protection. Unions backed teacher tenure legislation as it travelled from state to state, adding that job protection would build professionalism, advance instruction, reject capricious dismissals, and guarantee the rights of educators. By mid-century, the vast majority of states had adopted some form of teacher tenure laws (Kersten, 2006).

The courts became involved in the teacher tenure debate with the 1972 Supreme Court case, *Board of Regents v Roth*. The court held that teachers with tenure had a vested property right to their employment, such that teachers were protected by due process and could not be dismissed without cause (Fischer, Schimmel & Kelly, 1987). Even in states that were at-will, meaning that employers could release workers without stating specific reasons, teachers were protected and could not be terminated without justification and only released after an administrative hearing.

Well into the 21st century, reformists of education continued to argue that tenure had not alleviated the flight of new teachers and had dragged the profession down as it

protected older and ineffective teachers. As school systems continued to be perceived as being stagnated by teacher tenure, states have moved to curtail tenure. Medina (2010) reported that in New York City, the district spends millions of dollars each year housing ineffective teachers (as indicated by the school system) in "rubber rooms." These teachers had the backing of contractual tenure and their union. The school system chose to isolate these teachers, while they still drew salaries, rather than have them in classrooms. Mayor Bloomberg described it as , "an absurd and expensive abuse" (Medina, 2010, para. 4). Teachers have dwelt there for years while the union and city battled to dismiss or not to dismiss. Questions abound regarding whether this was a reasonable impediment to student achievement, whether tenure was the source of the ineffectiveness or just a descriptor, and overall whether teachers who have gained tenure cease to work as hard, knowing their positions are protected.

These difficult questions have been the source of debate for decades. At present, however, public sentiment, especially when voiced by the conservative elements that have begun to dominate state legislatures, has shifted against teacher tenure. The system has been vilified as a bloated, union-backed arrangement to protect bad teachers. With varying success, states have begun to attack teacher tenure. In 20ll, Wisconsin, Governor Scott Walker took on the teacher tenure issue by signing anti-union legislation which dramatically curtailed the bargaining power of unions and their ability to negotiate tenure (Lounsbury, 2011). In Florida, the enactment of Senate Bill 736 [SB 736](2011) removed tenure for any future teachers but permitted current teachers to retain their tenure rights.

Perhaps the most unique challenge has occurred in California, where students, with the financial backing of Welch's *Students Matter*, challenging the state's tenure laws. In *Vergara v California*, students contended the system placed the rights of adults over those of the children (Schrag, 2014). The suit further stipulated that the protected teachers were impacting poor students in greater numbers than wealthy students, thereby violating their civil rights. The judge agreed with the students. At the time of the study, California was faced with redefining the status of teachers in the state.

Ecklund (2009) commented on the critical state of new teacher retention as it related to teacher longevity. "The more you care about the work, the greater your risk of burning out. . . . to make matters worse, the teachers we can least afford to lose are often the ones at the greatest risk of burning out." (p. 26). His thoughts can easily be associated with new instructors in the school system and the need to retain them. Historically, novice instructors could walk into a classroom and expect to have a period of time to acclimate to students, parents and curricula. At present, with job security and pay linked to results, i.e., valued added models (VAM) and teacher evaluation systems, new teachers are expected to produce at high levels from day one in the classroom.

Rising expectations over the years have come at a cost, and new teacher burnout has increased.. Graziano (2005) discussed burnout, noting that many new teachers were not up to the task and left the building (in search of another school) or exited the profession entirely. He wrote that in the first year alone, over 10% of all new teachers quit, not to return for a second year. Many of those who stay were not committed, and a staggering 45% had departed by the end of the fifth year. The problem of

retention/attrition has only intensified as nearly 40% of all teachers are over 50 and at least 20% are less than 30 years old. The ability to retain teachers in future decades will be paramount (Williams, 2011).

Critics and consultants who have scrutinized how and why young teachers leave the profession often focus on what administrators are doing directly to influence and support the retention new teachers (Elston & Gostick, 2007). School leadership has had to focus on strategies and programs that support incoming faculty. Elston and Gostick questioned the role of the institution itself, considering how the school culture can be enhanced to embrace the special relationships of new teachers.

The school culture at many schools, however, according to Morey et al. (1997), has not favored new teachers. Teaching, according to these authors, is the only profession where the requirements of a new employee are the same or more difficult than those imposed on the veteran. Often, new teachers are those who least understand the rules, tenets and values of the school, and they have the least information to help them become integrated into the organization. The message that new teachers have often received is not one of acceptance and support. Prized teaching assignments, new technology and high-quality resources and supplies are all too often distributed to their more senior colleagues, and the most fragile teachers are left to scrap together supplies, teach the most difficult classes and preps, all while learning their craft (Marshall, 2011).

Intrinsic motivation that fueled the desire to become teachers may hold a key to helping schools retain instructors. Olsen (2008), in his study of new teachers, found a lifelong correlation with wanting to be a teacher and then becoming one. Many of the

teachers he studied grew up "playing teacher" and identifying that as the starting point of their desire to become a teacher. The pitfall existed between the fantasy of teaching, i.e., that a prospective teacher has inborn abilities and the reality of what teaching is in the 21st century. One could be sure that at no time during "playing teacher" did a teacher review AYP goals, write an IEP plan or conduct high stakes end-of-year examinations. The realities of teaching crashed hard against a new teacher's lifelong fantasies of being a teacher. This fueled new teachers' frustrations and an increased lack of job commitment (Olsen, 2008).

Compounding the issue of new teacher retention is the enormous number of teachers that will be required to staff classrooms in the very near future. As large numbers of tenured and experienced teachers have begun to leave schools due to retirement, the number of new teachers has increased at rates that tax an already tenuous system. New teacher hiring has been projected to increase 29% between 2011 and 2022, from 284,000 to 367,000 teachers. In the same period of time, the potential labor pool, that of students in post-secondary schools seeking educational degrees, has been estimated to grow by only 14% (Hussar & Bailey, 2014). The challenge is clearly in attracting and retaining high quality new teachers. It would appear that being attentive to the preparation of novice teachers through quality pre-service programs and their induction into systems would be central to addressing the problem.

Qualities of Successful Teacher Preparation Programs

As has been noted, as universities began to dominate teacher preparation, the vocational component of teaching was minimized in favor of the academic component. New teachers were expected to be able to teach based on their expertise in a particular subject area. For many programs, the internship or field study components of programs were minimized or curtailed, and the culture of the program was changed (Levine, 2006).

There has been continued criticism of the state of teacher preparation. Levine 2006), after reviewing over 1,200 teacher preparation institutions, commented, "Change has come grudgingly and largely at the margins. . . . Taken as a whole the nation's teacher education programs would have to be described as inadequate" (p. 27). Most telling in Levine's study was when principals, perhaps the most practical, objective and expert group within a school, were asked to comment on teacher preparation. Only 40% described schools of education as producing novice teachers who were moderately or very well prepared (Levine, 2006, p. 31).

Levine examined 11 critical teacher proficiencies. Three proficiencies, classroom management, understanding student motivations and parental interactions, seemed directly related to the classroom experience. In all of these areas, new teachers did not score well, much lower than comparable proficiencies that did not necessitate as much real-world application such as using multiple pedagogical strategies and having the ability to address the needs of second-language learners. Principals responded that (a) only 21% of the schools of education produced teachers moderately or very well prepared to work with parents, 33% produced teachers moderately or very well prepared to

maintain classroom produced teachers moderately or very well prepared in their knowledge about how children learn (Levine, 2006).

In their study to determine how universities and colleges could best train new teachers, Greenberg et al. (2013) translated their findings into four criteria:

- Selection of students into a university program – how an institution selects its candidates is critical. Too long, education has been perceived as the second chance career for those who could not show success in other areas. The focus needs to be to accept only top students who have a desire for teaching as a profession.
- Content Preparation – Students need to be grounded in the subject matter they are to teach. Especially as the nation considers common core standards, the teacher will need to have an expert understanding of the material prior to classroom presentation.
- Professional Skills – Programs will need to concentrate on the pedagogy, going beyond the 'what' to teach to the 'how'. Students here will need to emphasis on classroom management, the effects of a multi-cultural student body and methods to teach that are engaging and effective
- Outcomes – Increasingly, teachers are expected to be able to interpret data to base decisions based on those interpretation. Teachers need to be able to assess and measure students' comprehension, and make curricular and instructional choices to maximize student learning.

When evaluating teacher preparation programs, the NCTQ study found that less than 9% of the 594 colleges and universities that had dedicated elementary school undergraduate and graduate programs obtained a rating of 2.5 stars or better (of four stars), which indicated a quality program. Conversely, over 18% or 111 schools, had a rating of zero stars. Although it was found that that good teachers came from schools with no stars and inadequate ones came from three star institutions, the likelihood of overall success, according to Greenberg et al. (2013), increases with the stability and rating of the higher schools. Greenberg et al. further postulated, "In the aggregate, there are not enough high-quality teacher preparation programs; and second, their impact is diluted by the preponderance of weak programs (p. 10).

An element of most teacher preparation programs, the field study was designed as a culminating experience, where future teachers could experience a real classroom with children under the watchful supervision of an experienced instructor. Universities coordinated the internships, adding elements of reflection and peer collaboration (Braun, 1989). Although the actual implementation and the quality of the internship varied widely from institution to institution, the objectives seemed to be similar, to give college students the opportunity to apply coursework and theoretical knowledge in real-world situations and experiences.

The significance of pre-service programs, outside of the practicum or internship, seemed partial at best, according to new teachers. Their description and perception of the classwork at the university led one to question the true value of the four years spent in college. As cited by Johnston (1994), Amarel and Feiman-Nemser noted, "Many student

teachers believe that the practicum provides the only *real* learning of their teaching education programs (p. 199). Researchers such as Gratch (1998) and Price (1980) supported this assertion, commenting that the value of the internship to pre-service teachers was vital and considered by them to be more important than any other single component of their teacher preparation program.

This disconnect between college classwork and real-world application diminished the value of the academic preparatory work pre-service teachers completed prior to any practicum or internship. Pre-service teachers struggled with any successful meaning to the classes. The most common description was the classes were too hypothetical and based only on theory (Gratch, 1998). Conversely, the students believed that the field-study was the most critical component of the teacher preparation program (Darling-Hammond, 1997). But the respective value of the internship could vary. The assumption that " the more experience one has in the classroom, the more one will automatically learn about teaching" seems justified, but was worth further investigation according to Johnston (1994, p. 199).

Feiman-Nemsar (2005) followed 20 prospective elementary teachers in Israel as they prepared to transition to Hebrew instruction in the national school system. The future instructors were participants in a 13-month, post-baccalaureate program, *Beit Midrash*. The study was designed to permit teachers to observe and analyze the motivations of a selected child. The examination of the child was to give the future teacher a perspective on the motivations of children. The goal was to have the observer reflect upon how the child functions with the outside world and how the teacher can best

connect to the child, existing on the child's terms. Fellows were to discuss with their peers their analysis and corroborate strategies for future interaction (Feiman-Nemser, 2005).

The process was based on Carini's *Theory of Descriptive Inquiry* as formulated at the Prospect School, Bennington, Vermont. The observers created a representation of the children based on appearances and gesticulations, personality and mood, relationships with those around them, personal wants and needs and finally how they process information (learn). The representation was shared with the other participants in the fellowship, and the observers wrote reflective passages to self-critique their techniques and strategies when interacting with the children (Carini, 1975; Feiman-Nemser, 2005). This observation also assisted the pre-service teacher in lesson preparation and instruction for the class in general.

In the early part of the 21st century, Finland began to support a system that was much like Israel's *Beit Midrash.* Finland developed a series of model schools to expose pre-service teachers to real classes. The schools provided an environment for potential teachers to spend a full year honing their skills and concentrating on innovative and research-based instructional techniques. Unlike the laboratory classes of American schools, these were not just public schools with a private school mentality, built to serve the children of the universities' faculty; they were cooperative experiences designed to increase the capacity of new teachers (Darling-Hammond, 2010).

The university students at model schools were given opportunities to meet and discuss their teaching experiences. As small groups, they problem-solved, planned,

created lessons, and reflected on their experiences individually and as a group. The environment of collaboration was intended to permeate the schools, extending beyond graduation. Teachers in Finland have been groomed and supported in the attempt to fashion teams in a culture that fosters research, creativity, and reflection. Most teachers in Finland hold at least master's degrees in education and in a subject area (Takala & Uusitalo-Malmivaara, 2012). "Teachers are well trained both in research methods and in pedagogical practice. Consequently, they are sophisticated diagnosticians, and they work together collegially to design instruction" (Darling-Hammond, 2010).

Co-Teaching Classrooms

Background of Co-Teaching

The idea of co-teaching is not new. Since the 1970s, schools have been utilizing co-teaching models, especially within special education classes (Badiali & Titus, 2012). Co-teaching, as defined by Cook and Friend (1995) is simply having two professionals in the classroom with the same students, both being responsible for those students. Channmugam and Gerlach (2013) further defined co-teaching as, "a method of instruction that brings together two teachers of equal status to create a learning community with shared planning, instruction, and student assessment" (p. 110). Once thought of mainly as a viable special education staffing model (Badiali & Titus, 2012; Takala & Uusitalo-Malmivaara, 2012), co-teaching has more recently been considered as

a strategy that could be useful in diverse schools, with all students in a variety of courses and classes.

Schools in Finland began co-teaching in the 1990s with special education students. Much like American schools, the models for special education students were to segregate services. Most educators and schools would prefer to move away from classes that were entirely self-contained to a more inclusive model. In self-contained classes, exceptional education students remained in a room with one teacher for the entire day. In an inclusive model, those same students blended into classes with students without disabilities. But, even in some of the more progressive environments, exceptional education services were often provided in an alternative setting. Students were pulled from inclusive classes to travel to a resource room for directed instruction with a special education teacher (Takala & Uusitalo-Malmivaara, 2012).

However, this model was still counter to the ideals of inclusion. Thus, Finnish educators began to explore the idea of co-teaching as a strategy to keep students in the classroom. In their study on co-teaching, Takala and Uusitalo-Malmivaara, (2012) identified factors that contributed to the success of co-teaching, no matter the delivery form. The most overlooked element of co-teaching was providing both educators with common time to plan prior to the lesson. They found that the co-planning time could be as little as 15 minutes, but dramatically increased the potential for success.

Corroborating the Finnish study's conclusion that shared planning was vital was an American study completed by Grothe exploring the relationship between students and master teachers in a co-teaching environment. The study followed the experiences of six

pairs of co-teachers in a southern California school district. The questions and results illuminated several areas of co-teaching but primarily emphasized the necessity for a comprehensive communication plan, "Based on this study, several implications will help direct the improvement of future student teaching experiences. First of all, STs (student teachers) should prioritize meeting regularly with their MTs (master teachers). Additionally, she noted, "Similar to the STs, the first implication of this study for MTs is to prioritize meeting regularly with their STs" (2013, p. 90-91).

Along with planning, co-teaching partners need specialized qualified training opportunities. In addition to the standard professional development options, such as subject matter education, classroom management strategies, and pedagogical approaches, co-teachers needed access to building the skills unique to their environment. Foremost is strengthening communication and collaboration abilities and the development of a joint teaching system with clearly articulated responsibilities and roles (Cook & Friend, 1995).

Saloviita and Takala (2010) advocated for administrators to be an active part of the co-teaching system. First, principals needed to encourage and provide the tools to create environments conducive to success. Teachers need to evaluate the physical classroom to see if changes need to be made to support two teachers (for example, adding a second teacher's desk). An atmosphere must be implemented that supports two peers, not a junior and senior teacher, e.g., having both teachers' names on report cards and parent communications (Saloviita & Takala, 2010).

School leadership needs to be objective observers to the classes (Murawski & Lochner, 2010). In their experience, these authors determined that leaders who observed

were able to provide feedback that was helpful in improving the system. Having a clear system that allowed for coaching was also critical to establishing and maintaining success within the classroom. Regular classroom observations with structured and collaborative sharing sessions helped to fine-tune the classroom, constantly moving teachers towards best practices. This relationship built academic trust between teachers and campus leaders and embraced progress in teaching.

One cannot underestimate the human element of the co-teaching model (Cook & Friend, 1991). Even with all of the supports in place, the relationship between the two teachers could doom the program. Cook and Friend (1991) addressed the importance of pairing educators who complement each other and have the disposition to share authority and responsibilities. Collaboration and co-teaching has to be a choice for teachers, not an assignment. Administrators can mandate which teachers work in close proximity with others, but if the teachers do not wish to collaborate, the effort and energy are for naught (Cook & Friend, 1991). Saloviita and Takala (2010) supported the importance of pairing of partners. They found that though co-teaching was viewed as having an overall positive effect on learning, fully one third of the surveyed teachers indicated that the largest challenge to instituting a co-teaching model in their classroom was discovering a fitting partner. Administrators must vet teachers and consider compatibility prior to implementation of a co-teaching model.

The Structure of Co-teaching

There are six models of co-teaching that provide a number of variations in the way in which co-teaching occurs in classrooms (Cook & Friend, 1995; Friend, Reising, & Cook, 1993). Badiali and Titus (2012) discussed the attributes of the various models as follows:

1. Mentor Modeling (whole group instruction): This strategy features one teacher as the instructor while the second teacher observes. The focus is on the feedback from the observer, typically a new teacher. The feedback is used to generate conversations designed to improve the delivery of both the lead and observing teacher (Cook & Friend., 1995).
2. One Teach, One Guide (whole group instruction): This strategy is also called "teach and assist." Both instructors are in the classroom, but one is leading the class instructionally while the other teacher circulates in the classroom to help individual students (Friend et al., 1993).
3. Station Teaching (small group instruction): Each teacher is responsibility for a portion of the curriculum or lesson. Students rotate to the teachers or work independently with teachers supervising the delivery of their specific content (Friend et al., 1993).
4. Parallel Teaching (small group instruction): The teachers prepare the lesson jointly but separate the classes into groups and teach the lessons independently to the two groups (Friend et al., 1993).

5. Alternative Teaching (small group instruction): This requires teachers to differentiate instruction for students. One instructor might work with higher achieving students and present enhanced lessons with more difficult assignments, while the second teacher reteaches material to struggling students to ensure comprehension (Friend et al., 1993).
6. Synchronous Teaming (whole group instruction): This is the most challenging of the models, as it requires teachers to work in tandem. Each teacher is fully engaged in the lesson's instruction. Working as partners, the teachers deliver curricula and assess students simultaneously. Instruction may seem spurious, as teachers rotate delivery but requires the most planning and trust. This model is usually only implemented by co-teaching teams that have been working together extensively and have developed a mature and equal partnership (Friend et al., 1993).

The advantages of co-teaching have been well documented. Its validation was based on being able (a) to connect to children in a more personal way, (b) to differentiate instruction, and (c) to provide teachers with collegial encouragement within the classroom. Despite these advantages, just a small percentage of schools actually have used co-teaching, and of those, the majority were combinations of a regular education teacher with a special education instructor. The model was initially designed to expand opportunities for inclusion with respect to providing less restrictive environments for exceptional education students (Gurgur & Uzuner, 2011).

Especially worth noting was the opportunity for schools to create a culture of collaboration through co-teaching. Having the defined partnerships of team teachers facilitates and encourages conversation. The conversations, combined with mutual planning time leads to true professional collaboration. Few would argue the worth of any collaborative approach to education (Cook & Friend, 1991). Co-teaching provides the structure and opportunity for collaborative systems, making what was often a best wish into a reality. Chanmugam and Gerlach (2013) commented on this dynamic, stating: "The relational open process makes it more likely that new skills will be practiced and refined, and it encourages further reflection through collaborative learning" (p. 110).

Co-teaching with future or novice teachers though more common, has had its own set of challenges, in addition to those previously outlined. The most frequently identified obstacle has been the relationship between the master teacher and the student teacher. Co-teaching has been defined as teaching between peers. In regard to its applicability to an established teacher and a novice, some practical interpretation is needed. The master teacher, though serving as the instructional lead, must work to create a partnership where the novice teacher has the freedom to make suggestions and critique issues. Conversely, the new teacher must be sufficiently independent and confident to discuss matters of instruction honestly with the established teacher, especially when having opposing ideas as to instruction or classroom strategies such as behavior management (Chanmugam & Gerlach, 2013). Vaughn, Schumm, and Arguelles (1997) aptly described the dynamics in the co-teaching relationship: "Co-teaching is a bit like a marriage. Both partners have to feel that they are giving 100% and have to want things to work out" (p. 5).

Vaughn et al. (1997) reported the results of questions posed to teachers about co-teaching. One teacher commented, "I am able to provide some support for all the students in the class." Another described the growth of both teachers on a successful co-teaching team, "I think I am a better teacher now, and I definitely have a better understanding of what goes on in the general education classroom" (Vaughn, Schumm & Arguelles, 1997, p. 4). Teachers generally believed that co-teaching was beneficial to student learning.

Co-Teaching and Student Achievement

Logic might appear to favor the idea that co-teaching could contribute to improved student learning. Co-teaching allows teachers to take advantage of individual expertise, creativity is expanded, and there are more opportunities for one-on-one contact with students in co-teaching classrooms (Armstrong, 1977). The actual research quantifying the effects of co-teaching on student achievement, however, is sparse. As a result of his review of previous co-teaching studies, Armstrong made two observations: (a) study results either supported the positive effects of team-teaching or were neutral; and (b) there was a lack of general lack of co-teaching research, which muted his first observation. Armstrong stated,

> One is struck by the very basic nature of the questions for which research has failed. . . to supply at least tentative answers. Team-teaching, it was evident, represented one of those educational practices that had not been subjected to truly intensive and systemic investigation. (p. 83)

A 2002 study compared two teaching environments for exceptional education students: co-teaching and pull-out classes. The pull-out classes were in separate rooms and taught by independent special education teachers who had little contact with the standard teachers. Students attended core education classes without any additional in-class support. Those same students sacrificed at least one elective to join the pull-out special education class. This class attempted to support the general education classes with a focus on study skills, homework help, organizational assistance and general learning skills. The co-teaching instructors were given common planning time, existed within the same class including core education classes, and shared instructional responsibilities. No particular model of delivery was mandated, and instructors could move between several alternative delivery systems (Rea, McLaughlin, & Walter-Thomas, 2002).

Participants in the study were eighth-grade students whose progress was followed for one year. At the conclusion of the year, student growth was measured in mathematics and English, using both standardized test scores and class grades. In all categories, students in the co-taught classes performed as well or better than students in the pull-out classes. However, the analysis was limited to exceptional education students within the classes. Overall, as noted by Rea et al. (2002), the increase in student achievement was significant for those students, "The study clearly demonstrated that students with disabilities included in general education classrooms achieved better outcomes on some measures than did their peers in pullout programs and comparable outcomes in others" (p. 213).

Hattie (2009) agreed with Armstrong's statement in regard to his summative collection of educational research. He found that the few studies that focused on co-teaching showed only a minimal effect on student achievement. He acknowledged, "there is a dearth of literature on the effects of team teaching" (p. 219). The research that was reviewed for this study centered largely upon special education students and classrooms that blended special and regular education classes (Lindeman & Magiera, 2014; Rea et al., 2002).

One element of co-teaching for which a plethora of research was found was the teacher-student relationship. As Armstrong indicated in 1977, the ability for teachers to create stronger and better relationships with students has been a cornerstone of the co-teaching model (1977). The co-teaching model, with two adults in the room, offers twice the opportunity to connect with students, differentiate instruction, and manage student personalities. This being the case, supporters of co-teaching have argued that student achievement would surely follow (Mastropieri et al., 2005).

Partner teaching can profoundly alter the culture of a school. Bronson and Dentith (2010) noted, "Collaborative teaching practices, in general, are thought to facilitate stronger teacher communication and collaboration, greater instructional innovation and, in some cases, positively change the professional and inter-personal dynamics of schools" (p. 507). The authors stressed the importance of avoiding hazards such as insufficient teacher reflection, absence of collaborative planning, and teachers not connecting with students on a personal level. Of importance was the expectation that with the opportunity for greater teacher-student, one-on-one or small group interaction,

that teachers need to actively anticipate and plan for such time. Bronson and Dentith observed that relational connections take on greater significance and could lead to enhanced student engagement with the implementation of a co-teaching model.

Teacher-Student Relationship

Hattie (2009) examined thousands of studies and reports in his research on teacher-student relationships. In his meta-analysis, he categorized and ranked 138 elements that affect student learning. According to his tabulations, the 11th most influential element on positive student achievement was the teacher-student relationship. He wrote, "In classes with person-centered teachers, there is more engagement, more respect of self and others, there are fewer resistant behaviors, there is greater non-directivity (student-initiated activities) and there are higher achievement outcomes (p. 119).

The Te Kotahitanga project was initiated in 2001 in New Zealand. In a case study, Bishop et al. (2012) examined and analyzed the struggle for indigenous Maori students to be successful in relation to their Caucasian counterparts in New Zealand's schools. Researchers examined the problem from all perspectives, interviewing parents, students and school personnel. While expressing the hope to influence and help Maori students, teachers shared an almost universal perspective that the students could not be engaged. The frustration of teachers was projected on the students, and subsequently teachers blamed students and limited their efforts to motivate and instruct (Bishop et al., 2012).

This academic imbalance could have continued to mar any efforts to improve the environment for Maori children within the classroom, but the real dynamic was discovered to be the teachers' seeming disinterest in the lives of their students. Students were unmotivated because school staff members were perceived as not caring. Teachers' lack of empathy translated into a stagnant school (Bishop et al., 2012).

A professional development program, i.e., a series of workshops, was developed to address the brittle relations between school staff and students and their families. Over the course of the year, events and strategies were implemented to bridge the cultural gaps between the Maori and school personnel. In the classroom, no curricular or pedagogical changes were made, other than teachers gaining insight into the personal lives of their students. The teachers began to relate to students in a manner that was based on caring. Even the physical location of teachers changed. Prior to the workshops, the teachers tended to remain at the front of the class and by their desks. At the end of the study, teachers were found walking among the children.

The improvement in the achievement scores of the Maori students was dramatic. All measurements, both external and internal, validated the success of the Te Kotahitanga project. Furthermore, the only variable that the study identified as different was the introduction of the project. Bishop et al.(2012) summarized their results as follows: "There is good cause to be made regarding the strength of the positive relationship between the implementation of the professional development program, changes in teacher practice and improved outcomes for the Maori students" (p. 704).

Attachment Theory

Cornelius-White (2007) examined the effectiveness of positive student-teacher relations in the classroom. Although the connection seems obvious, many teachers and educators downplayed the importance of the relationship when compared to other factors. But research results supported the merits of cultivating positive, non-educational, relationships with the students in the classroom. As stated by Cornelius-White (2007), "Overall, learner-centered teacher variables have above average associations with positive student outcomes" (p. 134). The most cited reason for children not wanting to attend school was not liking their teachers (Cornelius-White, 2007; Hattie, 2009).

These benefits of positive student-teacher relationships may perhaps be best explained through Bowlby's (1969) ethological theory of attachment. The theory is rooted in the need for children to make positive connections with their caregivers. At birth, infants attempt to attach to parents, especially mothers. If the attachment is successful, the child tends to be happier. Conversely, if the attachment is not made, the child has a greater tendency to struggle (Kennedy & Kennedy, 2004).

Bowlby (1969, 1973) in developing attachment theory, revised Freud's theory of signal anxiety and expanded on Freud's motivational theories (Bretherton, 1992). Attachment theory was based on the following three presumptions: (a) humans are biologically designed to make emotional relationships; (b) there is a strong influence on a child's development based on how influential adults, especially their mothers, treat them; and (c) early relationships shape later interactions and associations.

Snyder, Shapiro, and Treleaven (2011) discussed the importance of intimacy as a foundational component of the healthy emotional development of humans. Intimacy, according to these theorists, creates bonds that motivate and captivate children, causing them to gravitate towards those adults with which the bonds are created. The child will always look to satisfy those adults (Snyder et al., 2011).

Stern (1977) also discussed the relationship between mother and child as central to the emotional development of the child. Stern defined maternal actions as "the raw material from the outside world" (p. 23) on which the child constructs all other relationships, experiences, and views of the world. The interactions between the mother and the infant, according to Stern, have served as the testing ground and staging point for further human interaction, establishing social rules, creating norms, and building a relational atmosphere for further interactions.

Four categories of attachment have been identified, each with its own features and significances for future relationships. The relationships were either defined as secure or insecure. Secure attachments would become constructive and positive, and insecure attachments would lead to the evolution of relational hazards (Bowlby, 1988). The classifications were secure, avoidant, anxious/ambivalent and disorganized. The latter three are insecure attachments and were likely to stunt future relationships (Bretherton, 1992). Bowlby (1969) purported that all of the attachments were the result of the caregiver's interactions with the infant. The child was viewed as being wholly receptive to the actions of the adults.

Transferring this theory to an educational setting, the obvious choice for children's attachment are their classroom teachers. The teacher becomes a surrogate parent, and the relationship can be vital to a student's success. Nurturing relationships lead to more receptive students in the classroom, who perform, in part, to satisfy the teacher. This relationship becomes self-perpetuating. As the teacher develops increasingly positive relations with children, they become more likely to positively interact with the teacher, class and academics (Zwarych, 2004).

The significance of attachment theory has been perceived to have the greatest significance in elementary school settings. As elementary school students, children are still struggling to define themselves and grow intellectually, and the influence of the teacher takes on a greater magnitude when compared to the influence of teachers later in a child's academic career, e.g. high school or college. One cannot underestimate the significance of the emotional interactions between teacher and student. Kennedy and Kennedy (2004) addressed the importance of attachment theory and its impact on education in the following statement: "The quality of the teacher-student relationship may be the single most important factor for positive adaption to school" (p. 253).

Teachers need to be cognitively aware of the potential influence of their relationship with students on achievement. With this awareness, teachers can constantly strive to construct learning environments based on a positive pupil-teacher relationship. As shown by the Maori study, the lack of awareness led to greater problems that were most evident in a lack of student engagement and achievement (Bishop et al., 2012).

Awareness provides the foundation for enhanced performances by children (Bishop et al., 2012; Kennedy & Kennedy, 2004).

The key to fostering the relationship has been viewed as concentrating on each child as an individual, with separate agendas and needs. Dooner et al. (2010) observed, "Teachers must foster individualized connections with students as an essential part of establishing and maintaining learning relationships; we all need to feel understood and appreciated" (p. 30). Moving away from a whole group mentality is often difficult for teachers, as the focus will need to change from large to smaller groups, even individual students. The commitment to this strategy, though having an increased upfront cost in time and energy, could pay dividends over the course of a year.

Teachers need to understand, however, that a balance must exist within the classroom. On one hand is the dedication to establishing the relationships to build trust and a capacity for learning among students. In contrast, teachers must remain as pedagogical and curricular experts. Just having a warm classroom does not ensure student achievement. "The responsibility of teachers remains the same--to develop enough social and pedagogical authority in teaching to see beyond "ideal" student behaviors and performances to ensure that students can find personal meaning in their learning" (Dooner et al., 2010, p. 33).

The term "ideal' can easily be substituted for compliant. Certainly teachers can exercise classroom management techniques that ensure students follows rules, stay in order and generally behave. But the atmosphere is one-dimensional, requiring a constant maintenance and reminders of procedures. True learning in this environment, one that is

student directed, ranges from difficult to impossible. Compliance has been the norm. Without the relationship, as defined by Bowlby (1969) in his discussion of attachment theory, the successes in the classroom have never been more than marginal (Zwarych, 2004). Cavanagh (2008) reinforced this conclusion, "At the core of what schools are about is relationships. Building trust is the key to relationships. . . . You can get curriculum right, but if the relationships are not right, the school will not succeed" (p. 71).

Attachment theory presented an explanation for why some teachers were viewed as master teachers and some were not. Clearly, knowledge of the subject matter and the ability to create a class with a strict compliance to rules does not guarantee high levels of student achievement. Penner and Wallin (2012) summarized the importance of teachers who could establish and grow systems, "that maintain the dignity of youth and foster positive relationships. This is instrumental in building schools that are institutions of hope and social change" (p. 32).

This review of the literature revealed that attachment theory blended with co-teaching and teacher preparation could amplify success. Co-teaching allows a pre-service teacher not only to observe but to participate in building quality relationships with children when supported by a master teacher as a partner. If new teachers enter the classroom with the ability to create and maintain high quality relationships, the pedagogy and subject matter knowledge will be augmented and could lead to less teacher burnout and higher levels of student achievement.

Summary

The intention of this study was to examine the effectiveness of a co-teaching model in a pre-service teacher preparation program. Specifically, what will be the impact of pre-service teaching programs on student achievement? The literature presenting a historical perspective of pre-service teaching programs and the inclusion of field experiences within preparation programs was examined and included in this chapter. Also reviewed was literature about the impact of pre-service teaching preparation programs on teachers with respect to retention. The study also explored elements of teaching that affect students' achievement in classes where a pre-service teaching candidate is present.

The literature reviewed in this chapter addressed the evolution of elementary teacher preparation, beginning with a review of normal schools. Normal schools were those institutions with the primary function of creating elementary school teachers. Often these schools were an alternative to high schools and could quickly prepare teachers for the classroom in a few years. As time progressed, the normal schools were seen as limited and gave way to teachers' colleges. These colleges offered a more scholarly approach to education, but, like the normal schools, were dedicated to producing teachers fairly quickly. The teachers' colleges, after World War 2, were supplanted or absorbed by the university educational system.

In the late 20th century and early 21st century, universities have been the primary producer of elementary teachers. According to various experts, Levine (2006) chief among them, the programs have been flawed and need revision. Classes have been

described as being too general, lacking in depth, with inadequate field experiences. Reforms suggested include higher standards for acceptance into teaching programs, lengthening the degrees to a minimum of five years and overhauling the internship programs to reflect more practical settings (Levine, 2006). This study was focused on the last suggestion, the disposition of the pre-service teaching preparation program.

The inadequacies of 21st century teachers, specifically the lack of high quality teachers in the classroom and how that was, and continues to be, detrimental to student achievement, were also explored in the literature review. In creating high quality teachers, the researcher reviewed the connections in the literature between teacher preparation programs and teacher retention. The qualities of successful teacher preparation programs were also explored.

Literature on co-teaching and student achievement was also reviewed. Though co-teaching has primarily been the staple of exceptional education programs, its use has been occasionally broadened to other environments, one of which has been in the preparation of new teachers.

Finally, the review of Bowlby's (1969) attachment theory literature led to the conclusion that attachment theory was a viable theoretical basis leading to success in co-teaching classrooms. In his theory, Bowlby (1969) highlighted the importance of a mother-child relationship to a healthy emotional framework for the child (Mooney, 2010). This mother-child relationship can also provide a context for future relationships between teacher and student. In the co-teaching environment, this possibility was much more pronounced, due to the presence of two adults.

CHAPTER 3
METHODOLOGY AND PROCEDURES

Introduction

The methods and procedures utilized in conducting this study are described in this chapter. The purpose and the research questions and hypothesis, which guided the study, are restated. The sources of data and methods of collection are detailed as are the procedures used to analyze the data.

The Purpose of the Study

The purpose of this study was to determine the effect of a co-teaching model for intern teachers at an urban elementary school. In this model, an experimental group of intern teachers partnered with classroom teachers in the planning, instruction, and reflection in all classes. The regular classroom teacher was active rather than passive and delivered instruction in tandem with the intern. The model focused on maximizing student-to-adult contact time during which teachers and interns conducted whole group lessons, small group instruction and one-on-one teaching with individual students. In contrast, a control group of intern teachers were partnered with classroom teachers using a traditional model. The control group classes had no fixed model for instruction with the intern teachers. The study was structured to increase the pedagogical skills of the intern teachers and to better prepare them for employment as elementary school teachers.

The effect of the co-teaching model on the success of students as measured by standardized tests was also examined. Standardized test scores acquired from the fall

2014 and winter 2014 benchmark tests provided the data for analysis. The standard of measure was the percentage of growth from the fall to the winter test. A total of 289 students participated in the study in seven control and seven experimental classes. The gains of the experimental group were compared to the gains of the control group to extrapolate any statistically significant differences between the two populations. Data were also acquired from a survey administered to teachers in January 2015 to obtain their perceptions concerning (a) the value of working at the school and (b) the effectiveness of the co-teaching model.

Research Questions and Hypothesis

The following hypothesis provided overall direction for the research:.

$H_{1:}$ The co-teaching intern model will have a positive effect on student achievement.

Four research questions supported the hypothesis and were used to guide the analysis of data.

1. To what extent does the traditional intern model affect student achievement in reading?
2. To what extent does the co-teaching intern model affect student achievement in reading?
3. To what extent does the traditional intern model affect student achievement in mathematics?
4. To what extent does the co-teaching intern model affect student achievement in mathematics?

Approval to Conduct the Research

After receiving approval to conduct the research from his dissertation committee, the researcher submitted and received approval for his proposal from the School Board of Orange County Public Schools (Appendix A). The final approval to conduct the research was received from the University of Central Florida's Institutional Review Board (IRB). Approval was granted to begin the study in the fall of the 2014-2015 academic year.

Participants

Upon the IRB's approval, the researcher met with the director of the Orange County Public Schools Internship Program. Elementary schools were identified that met the criteria for the study. The schools had similar demographics and had interns assigned for the fall semester of the 2014-2015 academic year. The author contacted each school and identified 10 classes with co-teaching models and 10 classes with the traditional intern model and obtained access to the benchmark testing for the classes

This study was conducted in seven urban elementary schools with a population of 573 students in Grades 3-5. The sample consisted of 289 Grades 3-5 students in 14 classrooms with an intern and a mentor. Of the 289 students, 134 students in seven classes with interns used a co-teaching model and comprised the experimental group. The experimental group classes had interns with mentor teachers using the co-teaching internship model.

Originally, the sample total was 20 classes to be included in the study. However, due to school-based issues, the total was adjusted to 14 classes. One school had the

original principal reassigned, which culminated in the loss of two co-taught classes. Another school had one of the interns resign from the classroom experience. After these incidents, the study was realigned to seven classes with co-teaching models and seven classes with the traditional intern model.

The control group consisted of 155 students in seven classes with interns using a traditional model. The control group classes had interns but no fixed model for instruction with the intern teacher. Classroom teachers who were partnered with interns were experienced, having had a minimum of 10 years of successful classroom instruction.

The remaining 284 Grades 3-5 students were taught in 13 standard classrooms with traditional, certified teachers and no interns. The teachers without interns tended to have less teaching experience, some having less than five years of classroom instruction.

The participants also included students who were in groups, but participated in only one of the selected benchmark tests. The students may have missed the test due to absences or leaving the classroom after the first test. However, the choice was to include the score. These anomalies caused some totals to not equal the related group numbers.

Sources of Data

The source of the data was the fall benchmark reading and mathematics tests. The benchmark tests were computerized standards-based tests that were designed to measure students' knowledge in mathematics and reading. The scores are calibrated to express levels of achievement: (a) on grade-level, (b) needing some improvement or (c)

needing much improvement. The standard of measure was the proficiency scores as measured by a percentage correct on the test

The tests were designed to measure only the material that was to be presented in the given time period. OCPS created the test, and each school administered the test during the prescribed time frame. The benchmark tests are not meant to be cumulative, and are only focused on standards that were to be presented in the fall term.

Data Collection

To protect the student's personal information, all school, teacher and individual names and identifiers were removed or redacted.

Variables

The dependent variables were the K-5 students' scores on the Fall benchmark testing in mathematics and reading. The independent variable was the co-teaching intern model that was utilized in the experimental classrooms. Extraneous variables were the socio-economic status of the classroom students, and the experience and quality of the mentor teachers.

The resources at home are often determined by the socio-economic status of the home. Students from low socio-economic groups enter kindergarten having spoken an average of 2.5 million words; in contrast, the children from wealthier families enter having spoken 4.5 million words. Similarly, at age three, the vocabulary of children from professional families is over twice that of children from families that receive government

subsidies, at 1,116 words versus 525 words (Hart & Risley, 1995). The gap may subside, but does not seem to disappear in the aggregate. Denied or limited access to technology, lack of parental involvement, family instability and similar factors that are more prevalent with the students in families of lower socio-economic status limit the achievement of those children (Hattie, 2009).

Over 20% of children are considered at or below the poverty level, placing these students at a distinct disadvantage compared to wealthier children (Dalaker & Proctor, 2000). In his study on the impact of a family's background on academic success, Sirin (2005) summarized, "As the main finding of this review shows, school success is greatly influenced by students' family SES." (p. 445).

This study was also concerned with the value of the classroom teacher. Cornelius-White, in a 2007study, examined the effectiveness of positive student-teacher relations in the classroom. Although the connection seems obvious, many teachers and educators downplay the importance of the relationship when compared to other factors. But researchers have supported the premise of teachers' cultivating positive, non-educational, relationships with the students in the classroom. The most cited reason for children not wanting to attend school was not liking their teachers (Cornelius-White, 2007; Hattie, 2009). In Hattie's summative meta-analysis of education, he cited the teacher-student relationship as the 11th most influential factor in student success of the 138 factors he investigated in his research (Hattie, 2009).

Data Analysis

The challenge in any study is making meaningful connections between data, processes, and outcomes. Only after diligent analysis and reflection can the practitioner present theories or postulate conclusions. Ultimately, the ability to conduct original research and interpret that research so as to add to the identified field or practice is the purpose of any meaningful dissertation (Roberts, 2010). This study has met the criteria as set forth.

In particular, the study isolated the student proficiency in reading and mathematics in classes with intern teachers over the course of a semester. The author analyzed the means of the classes with interns who implemented a co-teaching model, comparing them to the means of the classes with interns who did not implement a co-teaching model. The author also compared the results of classes with an intern (with no regard to the instructional model utilized) to classes that had no intern present. The scores were obtained by administering identical tests at the end of the semester to all classes in the study.

The computer program, SPSS, version 22, was used to process the test data collected from the study. The program input was the Fall Benchmark Test scores taken by the students. To investigate and scrutinize the data, the researcher employed a univariate analysis of variance. Although the sample sizes were initially equal in size, due to differential attrition, the researcher could not practically maintain the fidelity of the equal sample sizes. The test was designed to interpret the data and detect any differences that were statistically relevant. This interpretation assisted the researcher in

drawing conclusions that were based on data that could not be based on a coincidence or a random intersection of data (Steinberg, 2011). The researcher also included variables that could influence student outcomes (i.e., classroom teacher quality and socio-economic status of the children in the class) in the analysis. As part of the study, the data were reviewed to determine which variables were statistically significant in student achievement scores. The output was based on the differences of the means in those classes that utilized interns with a co-teaching model and those with interns that did not utilize a co-teaching model. Also investigated were the differences of the means of the classes with any intern model to the means of similar classes that had no intern present. SPSS has the ability to compare the means of separate samples and indicate if the difference of the means is significant at a 95% level of confidence (Griffith, 2010).

CHAPTER 4
PRESENTATION AND ANALYSIS OF DATA

Introduction

The study sought to investigate whether utilizing a co-teaching model was preferable to the traditional model of intern teaching. Participants in the study were university students in their final year prior to completing a baccalaureate degree in elementary education who were required to participate in a field study at an elementary host school for approximately one semester. Interns were assigned to classroom teachers to plan, instruct and reflect upon each class.

In the co-teaching model, an experimental group of intern teachers partnered with classroom teachers in the planning, instruction, and reflection in all classes. The regular classroom teacher was active rather than passive and delivered instruction in tandem with the intern. The model focused on maximizing student-to-adult contact time during which teachers and interns conducted whole group lessons, small group instruction and one-on-one teaching with individual students.

In contrast, a control group of intern teachers was partnered with classroom teachers using a traditional model. The control group classes had no fixed model for instruction with the intern teachers. The study was structured to increase the pedagogical skills of the intern teachers and to better prepare them for employment as elementary school teachers.

The effect of the co-teaching model on the success of students as measured by standardized tests was also examined.

Demographics

Participants in the study were regular teachers, intern teachers, and students in 14 classes in Grades 3-5 at seven central Florida urban elementary schools. All 14 classes were assigned an intern teacher from a local university who had successfully completed all prerequisite requirements for teaching in Florida public schools. School district office administrators randomly assigned intern teachers to elementary schools. Administrators at each of the elementary schools selected the specific regular teachers to partner with the intern teachers. Seven of the classes followed the co-teaching model for instruction and comprised the experimental group, and seven of the classes followed the traditional intern model.

In the co-teaching model, the intern and the assigned classroom teacher remained in the classroom and shared instructional responsibilities throughout the duration of the internship. In the traditional intern model, classroom teachers developed individual plans for the intern teachers unique to their classrooms. These plans included a significant portion of time that the intern was the only teacher in the class.

Demographic data regarding the student population in the 14 classrooms are presented in Table 2. These data show that a total of 292 students participated in the portion of the study that was focused on the extent to which the co-teaching intern model affected student achievement in reading and mathematics (Research Questions 2 and 4). There were 134 students in classrooms using the co-teaching model and 158 students in classrooms using a more traditional model. The ethnicity of the 292 students with either a co-teaching intern or a traditional intern included 141 (48.3%) students who identified

themselves as Caucasian, 101 (34.6%) as Hispanic, 25 (8.6%) as African-American, 12 (4.1%) as Asian and 13 (4.5%) as Multi-Racial. Also displayed in Table x are the ethnic data for the 134 students who were in the seven classrooms using the co-teaching intern model and the 158 students in the seven classrooms using the traditional intern model.

In establishing the pairings for the 14 schools, the researcher attempted to group schools and students based on similar demographics with particular emphasis on student socio-economic status. For the purposes of this study, a student's free or reduced lunch status (FRL) defined socio-economic status. For the seven classes using the co-teaching intern model, 58 (43%) students qualified for free or reduced lunch assistance. For the seven classes using the traditional intern model, 60 (38%) of the students received free or reduced lunch assistance. These data are also displayed in Table 2.

Table 2

Demographic Data for Students Enrolled in Co-teaching and Traditional Model Classrooms

	Co-teaching Model		Traditional Model		Total	
Descriptor	*f*	%	*f*	%	*f*	%
Ethnicity						
Caucasian	61	45.5	80	50.6	141	48.3
Hispanic	52	38.9	49	31.0	101	34.6
African-American	8	6.0	17	10.8	25	8.6
Asian	4	3.0	8	5.1	12	4.1
Multi-racial	9	6.7	4	2.5	13	4.5
Total	134	100.0	158	100.0	292	100.1
Socio-Economic Status						
Free and Reduced Lunch Assistance	58	43.0	60	38.0	118	40.0

Note. Percentages may not total 100% due to rounding.

In addition to examining the achievement of students who were enrolled in classrooms using the co-teaching intern model as compared to the achievement of students enrolled in classrooms using the traditional intern model, the achievement in mathematics and reading of students in classrooms without intern teachers was compared with that of students in classrooms with intern teachers (Research Questions 1 and 3). The demographic data for these two groups are presented in Table 3.

A total of 573 students participated in this portion of the study. There were 292 students (51%) in classrooms with intern teachers, and 281 students (49.1%) in classes without an intern teacher. Of all the students for whom data were included in the study, 264 (46%) identified themselves as Caucasian, 209 (36.5%) as Hispanic, 50 (8.7%) as African-American, 1 (.2%) as American Indian, 25 (4.4%) as Asian, and 24 (4.2%) as Multi-Racial. Also displayed in the table are the frequencies and percentages by ethnicity of the two groups of students: those in classrooms with intern teachers and those without.

Socio-economic status, as determined by free and reduced lunch assistance, is also displayed in Table 3. Of the 262 students receiving free and reduced lunch assistance, 144 (51%) were students in classrooms without an intern teacher and 118 (40%) were students in classrooms with an intern.

Table 3

Demographic Data for Students Enrolled in Classrooms With and Without Intern Teachers

Descriptor	Without Interns		With Interns		Total	
	f	%	*f*	%	*f*	%
Ethnicity						
Caucasian	123	21.5	141	24.6	264	46.0
Hispanic	108	18.8	101	17.6	209	36.5
African-American	25	4.4	25	4.4	50	8.5
Asian	13	2.3	12	2.1	25	4.4
Multi-racial	11	1.9	13	2.3	24	4.2
American Indian	1	.2	0	0	1	.2
Total	281	49.1	292	51.0	573	99.9
Socio-Economic Status						
Free and Reduced Lunch Assistance	144	51.0	118	40.0	262	45.7

Note. Percentages may not total 100% due to rounding.

Testing the Research Questions

Research Question 1

To what extent do intern teachers in classrooms, regardless of model, affect student achievement in reading?

Analysis of data to respond to Research Question 1 was conducted by reviewing the test results from the Fall 2014 Benchmark Reading Test. Though schools administered this test, it was designed by the school district to provide a comprehensive evaluation of students' reading achievement based on the Florida State standards. The Florida Standards, an evolution of the Common Core standards, are the legislated collection of skills and knowledge that each child should obtain during a given school

year. The test was designed to evaluate standards that were in the school district's scope and sequence and prescribed for all schools as an expectation for instruction.

As shown in Table 4, an initial analysis of the results showed very little difference between the scores of the students in classes with intern teachers and those classes without intern teachers. The mean score for the classes with intern teachers was 58.72 and 59.41 for classes without intern teachers. The difference of 0.69 in the mean scores was not statistically significant as each group mean score was within the standard error of the mean for the contrasting group.

Table 4

Reading Scores for Classes With and Without Intern Teachers (N = 570)

Classes	Mean	N	Std. Deviation
Without intern teachers	59.41	280	16.113
With intern teachers	58.72	290	17.575
Total	59.06	570	16.861

Note. Three students did not participate in the benchmark test

The impact of two additional variables, socio-economic status and individual teacher, was also analyzed. This was accomplished by running a univariate analysis of variance of the influence of free and reduced lunch status and classroom teachers on student achievement. The results of the analysis are displayed in Table 5. The only statistically significant factor was the teacher

Table 5

Effects of Intern Teachers, Socio-economic Status (SES) and Teacher Quality on Student Achievement in Reading

Variables	df	F	p
Intern	1	1.475	.318
Free/reduced lunch	1	61.132	.081
Teacher	25	1.658	.024*
Intern*Free/reduced lunch	1	.650	.421

*=p<.05

Figure 1 illustrates the effect of individual teachers on student performance, showing how dramatic the value of the individual teacher is in the instruction of reading in the study. Even though tests were identical and the student populations similar in classrooms, individual class mean scores varied by over 20%. The variation was attributed to the value of the teacher in the classroom. The presence of an intern seemed to have no appreciable effect on student achievement, as six of 14 classes with interns were above the aggregate mean of 59.06, and five of 13 classes without interns were also above the aggregate mean score.

Note. Aggregate Mean Line = 59.06.

Figure 1. Reading Scores by Class With Aggregate Mean Line

Research Question 2

To what extent does the co-teaching intern teacher model affect student achievement in reading when compared to the traditional intern teacher model?

Analysis of Research Question 2 was conducted by reviewing the test results from the Fall 2014 Benchmark Reading Test for students enrolled in classrooms using (a) the co-teaching intern teacher model and (b) the traditional intern teacher model. Schools administered the identical tests, which were designed by the school district to be a comprehensive evaluation of students' reading achievement based on state standards. The test was a comprehensive evaluation of students' mathematics achievement based on

the Florida State standards. The Florida Standards, an evolution of the Common Core standards, are the legislated collection of skills and knowledge that each child should obtain during the given school year. The test was designed to evaluate standards that were in the district's scope and sequence and were prescribed for all schools as an expectation for instruction.

Using a T-test, the initial analysis of the results showed a difference of 0.11 between the mean scores of the groups that had an internship model with co-teaching and those that had the traditional model for pre-service student (intern) teachers. As shown in Table 6, the mean score for the co-teaching model was 58.78, and the mean score for classes with the traditional model was 58.67. The difference of 0.11 in the mean scores appeared to be statistically insignificant, as each group mean score was within the standard error of the mean for the contrasting group.

Table 6

Reading Scores: Co-teaching and Traditional Models

Scores	Model	*n*	Mean	Std. Deviation	Std. Error Mean
Reading	Co-teaching	134	58.78	17.461	1.508
	Traditional	156	58.67	17.728	1.419

In addition to the impact of co-teaching, the impact of individual classroom teachers and student socio-economic status were considered. These variables have been identified by researchers (Cornelius-White, 2007; Hattie, 2009; Sirin, 2005) as factors

that could generate success or failure in terms of student achievement independent of the pre-service teaching model used in classrooms. A statistical test, a univariate analysis of variance, was employed to judge the weight of (a) socio-economic status of students as measured by free and reduced lunch status and (b) the individual teacher on student achievement. Having factored in these variables, the data were further analyzed to determine what effect, if any, could be attributed to the co-teaching intern model versus the traditional intern model.

As shown in Table 7, the only statistically significant relationship that was found was for students' socio-economic status/free and reduced lunch ($p = .000$). No statistically significant difference was identified between the classes that could be attributed to individual teachers or the internship instructional model. Thus, neither individual teacher nor the utilization of a co-teaching intern model had a statistically significant impact on student reading achievement.

Table 7

Effects of the Co-teaching Intern Model, Socio-economic Status, and Teacher Quality on Student Achievement in Reading

Variables	df	F	p
Co-teach	1	.363	.557
Free/reduced lunch	1	13.675	.000*
Teacher	12	1.178	.299
Co-Teach*Free/reduced lunch	1	.730	.394

*=p<.05

Research Question 3

To what extent do intern teachers in classrooms, regardless of model, affect student achievement in mathematics?

Analysis of data to respond to Research Question 3 was conducted by reviewing the test results from the Fall 2014 Benchmark Mathematics Test. Though schools administered this test, it was designed by the school district to provide a comprehensive evaluation of students' reading achievement based on the Florida State standards. The Florida Standards, an evolution of the Common Core standards, are the legislated collection of skills and knowledge that each child should obtain during the given school year. The test was designed to evaluate standards that were in the district's scope and sequence and prescribed for all schools as an expectation for instruction.

As shown in Table 8, an initial analysis of the results showed some difference between the scores of the groups with intern teachers and those classes with no intern

teachers. The mean score for the classes with intern teachers was 66.79, and 64.97 for classes without intern teachers. The difference of 1.62 in the mean scores was investigated using a univariate analysis of variance to determine the significance of the difference between the means.

Table 8

Mathematics Scores for Classes With and Without Intern Teachers (N = 570)

Classes	Mean	N	Std. Deviation
Without intern teachers	64.97	281	18.132
With intern teachers	66.59	289	18.336
Total	65.79	570	18.238

Note. Three students did not participate in the benchmark test

In addition to the impact of co-teaching, the impact of individual classroom teachers and student socio-economic status were considered. These variables have been identified by researchers (Cornelius-White, 2007; Hattie, 2009; Sirin, 2005) as factors that could generate success or failure in terms of student achievement independent of the pre-service teaching model used in classrooms. A statistical test, a univariate analysis of variance, was employed to judge the weight of (a) socio-economic status of students as measured by free and reduced lunch status and (b) the individual teacher on student achievement. Having factored in these variables, the data were further analyzed to

determine what effect, if any, could be attributed to the co-teaching intern model versus the traditional intern model.

As shown in Table 9, the only statistically significant relationship that was found to explain students' variance in mathematics achievement scores was the individual quality of the teacher (p = .000). No statistically significant difference was identified between the classes that could be attributed to socio-economic status, as measured by free and reduced lunch, or the internship instructional model. Thus, neither socio-economic status nor the utilization of a co-teaching intern model had a statistically significant impact on student mathematics achievement.

Table 9

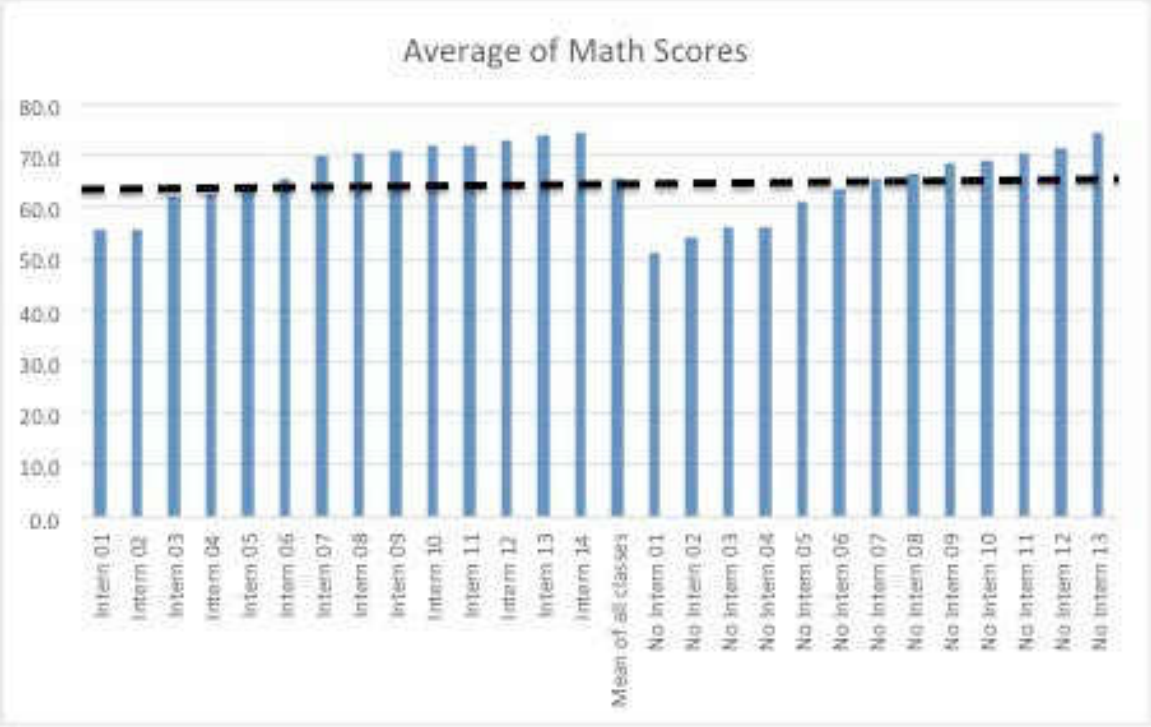
Effects of Intern Teachers, Socio-economic Status (SES) and Teacher Quality on Student Achievement in Mathematics

Variables	df	F	p
Intern	1	.272	.637
Free/reduced lunch	1	13.121	.171
Teacher	25	3.324	.000*
Intern*Free/reduced lunch	1	2.475	.116

*=p<.05

Figure 2 illustrates the effect of individual teachers on student performance, showing how dramatic the value of the individual teacher is in the instruction of

mathematics in the study. Even though tests were identical and the student populations similar in classrooms, individual class mean scores varied by over 20%. The variation was attributed to the value of the teacher in the classroom. Ottmar, Rimm-Kaufman, Larsen, and Merritt (2011) published similar findings, noting that the teachers with well-designed classroom systems, academic and behavioral, generated student success at a higher level than peers without those systems. For example, these skilled teachers communicated with students in clear manners to facilitate a student's ability to reexamine mistakes and self-generate learning through student-teacher feedback.



Note. Aggregate Mean Line = 65.79

Figure 2. Mathematics Scores by Class With Aggregate Mean Line

Though there was an apparent correlation between having an intern teacher in the classroom and having higher student achievement scores (six of the top seven performing classes had an intern), there were also classes with interns that had lower scores. Six of the 14 classes with intern teachers had scores below the mean classroom score. The indication was, therefore, that the presence of an intern may have influenced student scores, even though the effect could not be considered as statistically significant.

Research Question 4

To what extent does the co-teaching intern teacher model affect student achievement in mathematics when compared to the traditional intern teacher model?

Analysis of data to respond to Research Question 4 was conducted by reviewing the test results from the Fall 2014 Benchmark Mathematics Test. Schools administered the tests, but the tests were designed by the district and were identical. The test was a comprehensive evaluation of students' math achievement based on the Florida State standards. The Florida Standards, an evolution of the Common Core standards, is the legislated collection of skills and knowledge that each child should obtain during the given school year. The test was designed to evaluate standards that were in the district's scope and sequence and were prescribed for all schools as an expectation for instruction.

Using a T-test, the initial analysis of the results showed a positive difference of 3.47 between the mean scores of the groups that had an internship model with co-teaching and those that had the traditional model for pre-service student (intern) teachers. As shown in Table 10, classes with a co-teaching model had a mean of a 68.45, and the

classes without a co-teaching model had a mean of a 64.98. The difference of 3.47 seemed to signify a considerable difference between to the two groups, with students in classrooms using the co-teaching model outperforming their peers in a class that employed the traditional model.

Table 10

Mathematics Scores: Co-teaching Intern and Traditional Intern Models

Scores	Model	N	Mean	Std. Deviation	Std. Error Mean
Mathematics	Co-Teaching	134	68.45	18.843	1.628
	Traditional	155	64.98	17.792	1.429

However, in further analysis of the data, utilizing a univariate analysis of variance, it was determined that the difference between the two groups could not be determined to be statistically significant using the presence of the intern as the dependent variable, as the significance was .109. Thus, as shown in Table 11, no significant difference in student achievement in mathematics could be attributed to the impact of the co-teaching intern model versus the traditional intern model.

Table 11

Effects of Co-teaching Intern Model on Student Achievement in Mathematics

Mathematics	Type III Sum of Squares	df	Mean Square	F	Sig.
Co-teach	863.924	1	863.924	2.584	.109

In addition to the impact of co-teaching, the impact of individual classroom teachers and student socio-economic status was considered. These variables have been identified by researchers (Cornelius-White, 2007; Hattie, 2009; Sirin, 2005) as factors that could generate success or failure in terms of student achievement independent of the pre-service teaching model used in classrooms. A statistical test, a univariate analysis of variance, was employed to judge the weight of (a) socio-economic status of students as measured by free and reduced lunch status and (b) the individual teacher on student achievement. Having factored in these variables, the data were further analyzed to determine what effect, if any, could be attributed to the co-teaching intern model versus the traditional intern model.

As shown in Table 12, as a result of a univariate analysis of variance, it was determined that there was no statistically significant difference between the mathematics scores of students that could be attributed to the internship instructional model alone. The only statistically significant differences were due to the students' socio-economic status as measured by their participation in the free and reduced lunch program ($p = .004$) and the value of the individual teacher ($p = .000$). The inclusion of a co-teaching model was not determined to be statistically significant.

Table 12

Effects of Co-teaching Intern Model, Socio-economic Status (SES), and Teacher Quality on Student Achievement in Mathematics

Variables	df	F	p
Co-teach	1	1.855	.197
Free/reduced lunch	1	8.449	.004*
Teacher	12	3.277	.000*
Co-Teach*Free/reduced lunch	1	.184	.668

*=p<.05

Table 13 further explains the variation in achievement between lower socio-economic students who were receiving free/reduced lunch and those who were not. The 171 students who did not receive free/reduced lunch had an average score of 69.52, 7.16 higher than their lower SES counterparts who were defined as economically disadvantaged and received free/reduced lunch who had an average score of 62.34.

Table 13

The Effect of Socio-economic Status (SES) on Mathematics Achievement

Score	SES Status	N	Mean	Std. Deviation	Std. Error Mean
Mathematics	Free/reduced lunch	118	62.34	18.654	1.717
	No free/reduced lunch	171	69.52	17.576	1.344

Summary

Using a variety of statistical procedures, the reading data illustrated that the presence of an intern teacher had no effect, either positive or negative, on student achievement. The only factor that was consistently found to be statistically significant was the quality of the regular classroom teacher. Within classes that had intern teachers, the model used, either co-teaching or traditional, had no effect on student achievement scores. In this group, the only effect on reading scores was the students' socio-economic status, with students receiving free and reduced lunch scoring significantly below students not receiving free and reduced lunch support.

Regarding the mathematics scores, the presence of an intern teacher in the classroom had no impact on mathematics achievement. Even though there was a measurable difference between student scores of classes with and without intern teachers, the statistical analysis revealed that this was due to the value of the teacher in the classroom. The type of intern model utilized was not found to have a statistically significant impact on student scores. The only statistically significant factors were the students' socio-economic background and the value of the classroom teacher.

CHAPTER 5
SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Introduction

This chapter offers a summation and discussion of the findings presented in the study. To better assist the reader, the summary of findings has been organized around the four research questions, which guided the study. In each summary, the author examined the data, providing clarity, and illuminating any conclusions that can be academically drawn. Following the summaries, the author discussed and synthesized the findings with available theory and insights gained from the study. In the final section of this chapter, inferences and implications for education and recommendations for further research on the subject have been offered.

Purpose of the Study

The purpose of this study was to determine the effect of a co-teaching model for intern teachers at an urban elementary school. The effect of the co-teaching model on the success of students, as measured by standardized tests, was also examined.

In this model, an experimental group of intern teachers partnered with classroom teachers in the planning, instruction, and reflection in all classes. The regular classroom teacher was active rather than passive and delivered instruction in tandem with the intern. The model focused on maximizing student-to-adult contact time during which teachers and interns conducted whole group lessons, small group instruction, and one-on-one teaching with individual students. In contrast, a control group of intern teachers were

partnered with classroom teachers using a traditional model. The control group classes had no fixed model for instruction with the intern teachers. The study was structured to increase the pedagogical skills of the intern teachers and to better prepare them for employment as elementary school teachers.

Summary of Findings

Research Question 1: Reading Results:

To what extent do intern teachers in classrooms, regardless of model, affect student achievement in reading?

In comparing the reading benchmark data from classes with intern teachers and classes without intern teachers, there was little variance in the means. The presence of the intern had no measurable impact on student achievement as measured by scores on the fall benchmark reading test. Instead, the most important single factor in predicting a student's success was the value of the classroom teacher. As observed by Kennedy and Kennedy (2004), "The quality of the teacher-student relationship may be the single most important factor for positive adaption to school" (p. 253).

The results showed a wide spread of reading scores, of over 20%, from the lowest class mean score of 52% to the highest of 73.23%. The presence of an intern was just as likely to be in a class whose score was below the population's mean. The analysis revealed that the presence of the second educator, the intern teacher, was far less advantageous than having a high-quality classroom instructor.

Research Question 2: Reading Results

To what extent does the co-teaching intern teacher model affect student achievement in reading when compared to the traditional intern teacher model?

In comparing the data between the two groups, classes with a co-teaching model, and classes with a traditional internship model, the results mirrored those found in Research Question 1. The analysis reveals no meaningful difference in student performance between the two groups based on the type of intern model employed in the classes. The means of the two groups fell within one percentage point, with the co-teaching intern model group having a mean of 58.78% and the traditional model group having a mean of 58.67%.

The study did show student achievement in reading was affected by the socio-economic status of the child. According to Hart and Risely (1995), the strength of an incoming students' vocabulary, as measured by the words spoken prior to entering the school system, is dramatically skewed in favor of households with higher incomes. Additionally, pre-school children that are in homes that receive government subsidies have, on average, half the vocabulary of children from professional families (Hart & Risely, 1995).

Research Question 3: Mathematics Results

To what extent do intern teachers in classrooms, regardless of model, affect student achievement in mathematics?

Unlike the reading scores, the mathematics scores did show a noticeable variance. The mean score for the classes with interns was 66.79 and 64.97 for classes without an intern, indicating a difference in mathematics achievement between students in classes with and without interns. The difference of 1.62 in the mean scores was investigated using a univariate analysis of variance to determine the significance of the difference between the means. The analysis revealed that the difference between the student achievement scores due to the presence of an intern was not statistically significant.

The data did corroborate the impact of the teacher on the mathematics instruction. Ottmar et al. (2011) observed, "Only teachers who are skilled at organizing their classrooms can create the type of social classroom interactions conducive to high quality mathematics instruction" (2011, p. 4). As an example, master teachers understand the necessity for having systems in place for effective feedback between the teacher and the students. The classrooms focus on systems of learning (e.g., the incorporation of manipulatives, differentiation of instruction, and a supportive environment with few breaks in instruction). These teachers do not need to dwell on classroom management issues, stick to a universal curriculum, or attend to the abilities or challenges of one particular group over another (e.g., the high achievers being instructionally ignored so a teacher can address the needs of the struggling students in a lesson).

The presence of an intern teacher, though not statistically significant, certainly has an influence on the classroom. Whether allowing the master teacher to focus on specific students or supporting existing systems with a second adult, the intern teacher provides a resource that every master teacher would incorporate in the classroom. During the study, it was common practice for the intern and master teacher to support small group instruction. In a standard classroom, the teacher might establish four small groups and rotate through them. A teacher might see a child for 15 minutes, followed by the student working independently for 45 minutes. With an intern teacher, no child need be without direct adult supervision and instruction for more than 15 minutes, and the time with the teacher, intern or classroom could potentially be doubled.

Research Question 4: Mathematics Results

To what extent does the co-teaching intern teacher model affect student achievement in mathematics when compared to the traditional intern teacher model?

There was a difference of 3.47 between to the two groups, with students in classrooms using the co-teaching intern teacher model outperforming their peers in a class that employed the traditional model. This difference was even more pronounced than between groups with and without interns. However, in analyzing the data utilizing a univariate analysis of variance, the researcher concluded that the difference between the two groups could not be determined to be statistically significant using the presence of the intern as the dependent variable, as the significance was .109.

Once again, the variable with the most impact was the value of the individual teacher. A factor for the success of the teacher is the utilization of the co-teaching model with the intern teacher. Unlike the traditional model, the co-teaching model has two full-time instructors in the classroom. The flexibility of this system empowers classroom teachers to expand their influence, double teacher-student contact time, and allow for additional reflection and cooperation through common planning (Cook & Friend, 1991; 1995; Gurgur & Uzuner, 2011).

Discussion

The study has revealed many areas of illumination and opportunity for conversation and is discussed in the following paragraphs. Topics include (a) intern preparation, (b) teacher preparation, (c) administrative support, and (d) district assistance.

Intern preparation: In this study, it was found that intern teaching did not have a statistically significant impact, positive or negative, on student achievement in reading or in mathematics in the elementary classroom. There is, however, some evidence to support that it does influence student achievement, especially in mathematics. More importantly, the co-teaching model showed the greatest influence when compared to the traditional intern model. This indicated that there is an opportunity to create a system that better harnesses the skills of the intern teacher in the co-teaching model. At the time of the study, intern teachers spent very little time prior to the practicum with the assigned teacher or school. Perhaps more training or common planning prior to the class practicum would better prepare the intern to step in as a teacher.

Teacher training: If the study has revealed anything substantial, it is the primacy of the teacher-student relationship and the value of the teacher. Thus, any opportunity for schools to multiply effective teachers and instruction should be taken. One such opportunity is the availability of the intern teacher as a second master teacher. Having classroom teachers who are trained to effectively utilize an intern can dramatically decrease the amount of time and stress teachers and interns experience as they work to become a team. The presence of an effective intern teacher will further allow the classroom teacher to focus on areas of instruction and students who require additional emphasis.

Administrative support: Although not a direct component of this study, it seems that the school culture as established by principals and their teams can have a noticeable effect on the success of internship programs and student success. Many administrators view the supervision of intern teachers as a chore, or as a recruiting opportunity, but few see the immediate academic opportunities interns can afford students and supervising teachers. Having schools that embrace internships by supporting classroom teachers and their interns could add to a positive school atmosphere. In this light, perhaps school districts and universities should reexamine the concept and value of laboratory schools.

District assistance: In addition to the consideration of laboratory schools, the district could research effective intern models (e.g., co-teaching) and provide professional development for teachers and administrators. Additionally, the district could assist with the creation of evaluation systems to measure success at the school, class, and student levels. One element would be the introduction of tests that could serve as pre- and post-

tests for students for each intern experience. The current benchmark tests, though serving curricular standards, do not adequately measure the success of students while interns are present.

Implications for Practice

Although much can be done to improve new teacher preparation programs generally, and internship experiences specifically, classroom teachers can rest assured that the presence of an intern teacher in the classroom will not adversely affect student achievement. Teacher evaluation systems such as Florida's value-added model (VAM) will likely continue to grow in number and importance with a key component being the performance of students on standardized tests. Based on the findings of this study, schools and teachers can rest assured that they can place inexperienced, future teachers in the classroom without jeopardizing the primary classroom teachers' evaluation scores.

Teacher preparation programs that feature intern programs provide a real-world experience for future educators. The college classroom, while able to build a theoretical framework and curricular knowledge, cannot substitute for the understanding gained in a classroom. The children present unique challenges and opportunities that are as varied as the students. Having an intern partnered with an experienced teacher, in a co-teaching model, allows for every interaction to be a source of professional and pedagogical growth.

Finally, the most important member of the educational equation, the child, is not put at any academic risk with the presence of the intern in the classroom. All tangible

evidence supports that there is no negative impact on student achievement, in reading or mathematics. The presence may even allow good teachers to be better, focusing on struggling students with extra time and availability.

Recommendations for Further Research

This study was conducted to reveal connections, if any, between programs for intern teachers and student success. Although many questions were answered, others were also raised. Can internship programs be improved to make measurable and significant improvements in standardized test scores? Can the co-teaching model be enhanced to better meet the academic needs of the children in the classroom? What could school administrators do to advance the internship experience in tandem with student achievement?

One recommendation for future research would be to conduct a longitudinal study focused on the effectiveness of internship programs on student achievement. The study could utilize a core of teachers over two semesters: one semester would be with interns or a specific model, and the other semester would be without. The students would remain the same (other than any normal attrition over the course of the school year), and the teacher variable would no longer exist. The adoption of a longitudinal format would help to minimize the teacher effect and the impact of a student's socio-economic status on student achievement.

Another suggestion would be to study the effect of co-teaching on the intern. Although researchers have shown that the model builds better classrooms (Cook &

Friend, 1991; 1995; Gurgur & Uzuner, 2011), the perspective and reflections of the intern would be valuable. Evaluating intern teachers' experiences might assist schools in bridging some of the gaps that might exist with the adoption of a co-teaching intern model, (e.g., the impression that interns have about teacher preparation when they are never permitted to assume independent supervision of a class).

Summary

Education has become a battleground. The community yearns for a system that serves all children in their best interest, but struggle with a common agenda. Politicians seek magic bullets to correct the nation's ills, and in the process, education has become a favorite target. Teachers, who continue to serve with passion and excellence, struggle to meet societal expectations and state requirements, feeling increasingly overwhelmed and frustrated. Administrators struggle to balance all of the spinning plates, keeping all stakeholders satisfied. And finally, there are the children. They simply seek to learn and grow, trying to ignore or overcome the burdens that seem to fall on their shoulders.

Future teachers have become an afterthought in the wake of this mighty contestation. But schools ignore them at their own peril. The education system needs to stay committed to its future, most commonly in the form of intern teachers. Investing in future research, creation and implementation of high-quality and data-driven intern teacher models and programs will help schools attract and ultimately retain master teachers.

This study has shown that the presence of an intern will not adversely affect student achievement. Teachers in Florida need not worry that their state mandated VAM scores would be lowered by the presence of intern teachers. This research has also shown that the intern, in the right system and classes, can positively affect student achievement.

APPENDIX A
ORANGE COUNTY PUBLIC SCHOOLS APPROVAL OF RESEARCH

Orange County Public Schools

RECEIVED
JUL 24 2014
BY:

Research Request Form

Complete this form in full and send a copy, along with all required attachments, to:

Brandon McKelvey, Sr. Director
Accountability, Research and Assessment
445 W. Amelia Street
Orlando, FL 32801

GENERAL INFORMATION

Requester's Name_____W. John McHale_____

Date___7/13/2014_____

E-mail_____[redacted]_____

Phone___[redacted]

Address_[redacted]ip

Institutional Affiliation____UCF/Orange County Public Schools_____

Project Director/Advisor_____Dr. Ken Murray_____

Project Director/Advisor Phone Number____407-823-1468_____

Project Title_ EFFECT OF PRE-SERVICE TEACHING USING A CO-TEACHING MODEL ON STUDENT ACHIEVEMENT AT AN ELEMENTARY SCHOOL IN A LARGE, URBAN SCHOOL DISTRICT IN CENTRAL FLORIDA

DEGREE PROGRAM

☐	Associate's	☐	Bachelor's	☐	Master's
☐	Specialist	x	Doorate	☐	Not Applicable

Revised 9.30.13

DIRECT CONTACT WITH OCPS STUDENTS AND/OR PERSONNEL

☐ This research will require direct contact with students, teachers and/or administrators.

Please describe in detail the number and type of participants needed, the amount of time each participant will be engaged in the project and the methods that will be used to gather data. Include any school identified as a participant in the project. Include a description of the measures taken to ensure the confidentiality of all participants.

The study will select twenty classes of approximately 15 students each. The classes will be at elementary schools with similar demographics in the East Area. All classes will have interns assigned from a university. Ten of the classes will employ a co-teaching model, while the other ten will use a traditional intern model.
The study will rely on standardized test scores acquired from the fall and winter benchmark tests. The standard of measure will be the percent growth from the fall to winter test. There will be an equal number of control and experimental classes (three of each for a total of six). The total number of students involved in the study will be 120. The gains of the experimental group will be compared to the control group to extrapolate any statistically significant differences between the two populations.
There will be no direct contact between the study's research team and the students. The study will only require access to student testing data. The testing data will be used only in the aggregate and no student names or personal information will be ascertained from the data. The data collected, in addition to the testing scores, will only be used to create group demographics to compare the validity of the research from class to class. The research team will only directly communicate with teachers and interns.

STUDENT ARCHIVAL DATA

☑ This research will require student archival data provided by OCPS.

Please describe in detail the data fields needed for your research project. Use an additional page, if needed.

Variables	Variables
e.g. Discipline Referrals	*Unduplicated Discipline Referrals in the 2012 – 2013 School Year*
Benchmark Testing Data	Fall 2014 and Winter 2015 Benchmark test results (or similar dara) for 20 selected elementary school classes

Revised 9.30.13

SUMMARY OF RESEARCH PROJECT

Please provide a brief summary of your research project that includes your research questions, the relevance of your project and your research methods.

The Purpose of the Study

The purpose of this study is to determine the effect of a co-teaching model for the intern teachers at an urban elementary school. Interns will partner with the classroom teacher in the planning, instruction and reflecting of all classes. The regular classroom teacher will not be passive and will give instruction in tandem with the intern. The model will focus on maximum student to adult contact time, with the teacher and intern conducting whole group lessons, small group instruction and one-on-one teaching with individual students. The study will look to grow the pedagogical skills of the intern teacher, preparing them successfully for employment as elementary school teachers. Additionally, the study will examine the effect of the intern, co-teaching model on the success of students as measured by standardized tests. Finally, the study will measure the level of confidence gained by using the co-teaching model with the intern and classroom teacher.

Reasearch questions:

1. To what extent does the co-teaching, intern model effect student achievement?
2. How does the co-teaching intern model compare to the traditional intern model?

Data Sources:

Standardized, benchmark testing before and after implementation of the co-teaching, intern model

Methodology

Population and Sample

The population of the study will be comprised six classes from third, fourth and fifth grades, with two from each grade in one large, urban elementary school. The classes will be split into control and experimental groups, one per grade. The control group will not have a pre-service teacher, while the experimental group will have a pre-service teacher with a mentor teacher using the co-teaching internship model. Each class will have approximately 18 students. The total number of elementary K-5 students participating is 108.

Instrumentation and Sources of Data

The study will rely on standardized test scores acquired from the fall and winter benchmark tests. The benchmark tests are computerized standards-based tests that are designed to measure students' knowledge in math and reading. The scores are calibrated to show on grade-level, needing some improvement or needing much improvement. The standard of measure will be the percent growth from the fall to winter test based on the calibrated scores.

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Data Collection

Data will for the benchmark tests will be collected in October 2014 (fall test) and February 2015 (winter test). The data will be collected using Performance Matters – the school's electronic portal and district's database. The information for the questionnaire will be gathered upon completion of the pre-service teaching program, approximately January 2015. The teachers will complete a Likert-type scale designed to obtain their perceptions concerning (a) the value of working at the school and (b) the effectiveness of the co-teaching model.

Data Analysis

The data will be evaluated using SPSS and Microsoft Excel. The benchmark data will be compared using descriptive statistics as well as an analysis of variance (ANOVA) statistics. The results will be further interpreted to prove the research hypothesis, pinpoint tendencies and isolate any anomalies. The teacher feedback data will be examined to identity areas of concern or needs for improvement within the co-teaching, pre-service teaching model.

BENEFIT FOR ORANGE COUNTY PUBLIC SCHOOLS

All research approved must have a specific benefit to the students, teachers and/or administrators of Orange County Public Schools. Please describe in detail how this research project directly benefits the district.

Statement of the Problem

Currently, there is limited research to measure the impact on student achievement when the instruction is being delivered through pre-service teachers. Although there exists abundant information on pre-service programs and practicums, the data is correlated to the benefits to the student teachers and the qualities of a successful mentor teacher and internships.
Intern teaching is a common practice with the purpose of providing final year college students with real classroom experience. The primary focus of student interns is providing them with practical skills that will build their capacity as a teacher upon successful graduation. The interns take responsible for a given class with guidance from a mentor teacher. The interns plan, deliver and reflect upon instruction. The mentor provides feedback with the purpose of growing the capacity and skills of the intern teacher. Traditionally, the mentor teacher acts only in a passive role, serving as a consultant and supervisor for the intern. Students in the class are given no additional support despite having an inexperienced teacher as their primary instructor. Further, the effect on student achievement is not monitored nor measured by the host schools.

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The Purpose of the Study

The purpose of this study is to determine the effect of a co-teaching model for the intern teachers at an urban elementary school. Interns will partner with the classroom teacher in the planning, instruction and reflecting of all classes. The regular classroom teacher will not be passive and will give instruction in tandem with the intern. The model will focus on maximum student to adult contact time, with the teacher and intern conducting whole group lessons, small group instruction and one-on-one teaching with individual students. The study will look to grow the pedagogical skills of the intern teacher, preparing them successfully for employment as elementary school teachers. Additionally, the study will examine the effect of the intern, co-teaching model on the success of students as measured by standardized tests. The Study's results will be shared with Orange County Public Schools, so they may analyze and utilize the data to the benefit of the students within the school district.

ATTACH THE FOLLOWING ITEMS TO THIS FORM:

- A copy of your IRB approval (if available)
- (2) Two copies of your approved proposal, grant, or project
- All survey and/or interview instruments

ASSURANCE

Using the proposed procedures and instrument, I hereby agree to conduct research within the policies of Orange County Public Schools. Deviations from the approved procedures must be cleared through the Senior Director of Accountability, Research and Assessment. Reports and materials should be supplied when specified.

Requester's Signature _____ Date 7/13/2014

NOTE TO REQUESTER: When seeking approval at the school level, a copy of the entire Request Form, signed by the Senior Director, Accountability, Research, and Assessment, should be shown to the school principal who has the option to refuse participation depending upon any school circumstance or condition. The original Research Request Form is preferable to a faxed document.

APPROVAL STATUS

☒ **Approved:** The research request was completed in full and the research meets all OCPS requirements. The following must be completed to meet security requirements before your research can begin:

Revised 9.30.13

☐ **Conditionally Approved:** The research request contains one or more elements that must be clarified or are missing. However, the request has an opportunity to be approved if the following is completed:

Please make these changes within two weeks and resubmit the entire Request Form and supporting documents.

☐ **Rejected:** The research request contains significant omissions and/or does not meet OCPS requirements. This research request has been rejected due to the following:

Signature of the Senior Director for Accountability, Research and Assessment

Date

8.8.2014

Revised 9.30.13

APPENDIX B
UCF INSTITUTIONAL REVIEW BOARD APPROVAL

University of Central Florida

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Walton McHale**

Date: **November 03, 2014**

Dear Researcher:

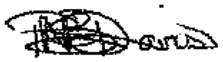
On 11/03/2014, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	THE EFFECT OF PRE-SERVICE TEACHING USING A CO-TEACHING MODEL ON STUDENT ACHIEVEMENT AT AN ELEMENTARY SCHOOL IN A LARGE, URBAN SCHOOL DISTRICT IN CENTRAL FLORIDA
Investigator:	Walton McHale
IRB Number:	SBE-14-10536
Funding Agency:	
Grant Title:	
Research ID:	n/a

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:



Signature applied by Patria Davis on 11/03/2014 12:30:42 PM EST

IRB Coordinator

APPENDIX C
FALL 2014 BENCHMARK TEST SCORES BY STUDENT

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1256	3	African American	1	101	No	Y	N	56	92
1257	3	Caucasian	1	101	Yes	Y	N	76	80
1258	3	Caucasian	1	101	Yes	Y	N	32	52
1259	3	Multi-Racial	1	101	No	Y	N	20	40
1260	3	Caucasian	1	101	No	Y	N	88	80
1261	3	Caucasian	1	101	No	Y	N	72	64
1262	3	Caucasian	1	101	No	Y	N	64	68
1263	3	Hispanic	1	101	No	Y	N	64	80
1264	3	Asian	1	101	Yes	Y	N	44	68
1265	3	Caucasian	1	101	No	Y	N	56	80
1266	3	Caucasian	1	101	No	Y	N	80	80
1267	3	African American	1	101	No	Y	N	72	68
1268	3	Caucasian	1	101	No	Y	N	80	80
1269	3	Caucasian	1	101	Yes	Y	N	48	64
1270	3	Hispanic	1	101	No	Y	N	72	56
1271	3	Hispanic	1	101	No	Y	N	88	96
1467	5	Hispanic	2	101	No	Y	N	16	32
1468	5	Caucasian	2	101	No	Y	N	56	76
1469	5	Hispanic	2	101	Yes	Y	N	36	52
1470	5	Caucasian	2	101	Yes	Y	N	n/a	52
1471	5	Caucasian	2	101	Yes	Y	N	44	48
1472	5	Hispanic	2	101	Yes	Y	N	32	68

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1473	5	Caucasian	2	101	No	Y	N	68	76
1474	5	Caucasian	2	101	No	Y	N	52	88
1475	5	Caucasian	2	101	No	Y	N	60	88
1476	5	Caucasian	2	101	No	Y	N	68	72
1477	5	African American	2	101	Yes	Y	N	80	84
1478	5	Caucasian	2	101	No	Y	N	56	52
1479	5	Caucasian	2	101	No	Y	N	48	52
1480	5	Caucasian	2	101	No	Y	N	n/a	n/a
1481	5	Hispanic	2	101	No	Y	N	68	92
1482	5	Hispanic	2	101	Yes	Y	N	48	80
1483	5	Caucasian	2	101	No	Y	N	60	68
1484	5	Asian	2	101	No	Y	N	48	64
1485	5	Caucasian	2	101	No	Y	N	72	72
1486	5	Hispanic	2	101	No	Y	N	72	84
1487	5	Caucasian	2	101	No	Y	N	76	n/a
1488	5	Caucasian	2	101	Yes	Y	N	48	84
1489	5	Hispanic	2	101	Yes	Y	N	60	72
1490	5	Caucasian	2	101	No	Y	N	68	80
1491	5	Caucasian	2	101	No	Y	N	64	92
1492	5	Caucasian	2	101	Yes	Y	N	52	84
1493	5	Caucasian	2	101	No	Y	N	84	96
1494	5	African American	2	101	Yes	Y	N	56	60
1495	5	Hispanic	2	101	No	Y	N	64	72

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1496	5	African American	2	101	Yes	Y	N	40	56
1497	5	African American	2	101	Yes	Y	N	48	48
1498	5	Hispanic	2	101	Yes	Y	N	64	80
1499	5	Hispanic	2	101	No	Y	N	28	48
1500	5	Caucasian	2	101	No	Y	N	60	84
1501	5	Hispanic	2	101	Yes	Y	N	60	60
1712	4	Hispanic	3	102	Yes	Y	N	60	56
1713	4	Caucasian	3	102	No	Y	N	52	56
1714	4	Caucasian	3	102	No	Y	N	88	56
1715	4	Hispanic	3	102	Yes	Y	N	76	40
1716	4	Caucasian	3	102	Yes	Y	N	56	56
1717	4	Hispanic	3	102	No	Y	N	52	44
1718	4	Hispanic	3	102	No	Y	N	76	64
1719	4	Caucasian	3	102	No	Y	N	76	68
1720	4	African American	3	102	No	Y	N	88	44
1721	4	Hispanic	3	102	No	Y	N	44	60
1722	4	African American	3	102	Yes	Y	N	76	60
1723	4	Hispanic	3	102	Yes	Y	N	40	52
1724	4	Hispanic	3	102	No	Y	N	72	64
1725	4	Caucasian	3	102	Yes	Y	N	60	60
1726	4	Caucasian	3	102	Yes	Y	N	52	68

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1727	4	Multi-Racial	3	102	Yes	Y	N	68	48
1728	4	Hispanic	3	102	Yes	Y	N	24	32
1729	4	Hispanic	3	102	Yes	Y	N	36	36
1730	4	African American	3	102	Yes	Y	N	52	68
1731	4	Hispanic	3	102	Yes	Y	N	68	60
1732	4	Hispanic	3	102	Yes	Y	N	40	48
1821	3	Hispanic	4	103	No	Y	N	36	48
1822	3	Caucasian	4	103	No	Y	N	24	20
1823	3	Asian	4	103	No	Y	N	68	80
1824	3	Asian	4	103	Yes	Y	N	88	84
1825	3	African American	4	103	Yes	Y	N	60	52
1826	3	Hispanic	4	103	Yes	Y	N	60	64
1827	3	Hispanic	4	103	Yes	Y	N	96	84
1828	3	Caucasian	4	103	Yes	Y	N	68	84
1829	3	Caucasian	4	103	No	Y	N	48	40
1830	3	Caucasian	4	103	No	Y	N	92	84
1831	3	Caucasian	4	103	No	Y	N	92	88
1832	3	Caucasian	4	103	No	Y	N	88	76
1833	3	Caucasian	4	103	Yes	Y	N	80	92
1834	3	Caucasian	4	103	No	Y	N	92	84
1835	3	Caucasian	4	103	No	Y	N	72	72
1836	3	African American	4	103	Yes	Y	N	52	36

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1837	3	Hispanic	4	103	Yes	Y	N	48	68
1838	3	Caucasian	4	103	No	Y	N	52	56
1839	3	Caucasian	4	103	No	Y	N	76	88
1840	3	Caucasian	4	103	No	Y	N	80	80
1841	3	Caucasian	4	103	No	Y	N	92	80
1842	3	Multi-Racial	4	103	Yes	Y	N	76	84
1843	3	African American	4	103	Yes	Y	N	36	40
1844	3	Multi-Racial	4	103	Yes	Y	N	20	24
1845	3	Asian	4	103	Yes	Y	N	36	84
1846	3	Caucasian	4	103	No	Y	N	40	40
1847	3	African American	4	103	Yes	Y	N	64	40
2271	5	Caucasian	5	104	Yes	Y	N	24	28
2328	5	Caucasian	5	104	No	Y	N	72	56
2329	5	Caucasian	5	104	Yes	Y	N	64	60
2330	5	Hispanic	5	104	No	Y	N	68	84
2331	5	Hispanic	5	104	No	Y	N	72	56
2332	5	Caucasian	5	104	No	Y	N	52	68
2333	5	Caucasian	5	104	No	Y	N	52	72
2334	5	Caucasian	5	104	No	Y	N	40	68
2335	5	Caucasian	5	104	No	Y	N	80	76
2336	5	Caucasian	5	104	No	Y	N	44	40

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
2337	5	African American	5	104	No	Y	N	60	64
2338	5	Caucasian	5	104	No	Y	N	68	68
2339	5	Caucasian	5	104	Yes	Y	N	52	76
2340	5	African American	5	104	No	Y	N	56	28
2363	5	African American	5	104	No	Y	N	4	n/a
2341	5	Hispanic	5	104	Yes	Y	N	32	24
2342	5	Caucasian	5	104	Yes	Y	N	44	24
796	5	Caucasian	6	105	No	Y	N	64	92
797	5	Caucasian	6	105	No	Y	N	24	60
798	5	Caucasian	6	105	No	Y	N	32	52
799	5	Caucasian	6	105	No	Y	N	44	72
800	5	Caucasian	6	105	No	Y	N	32	60
801	5	Hispanic	6	105	No	Y	N	56	80
802	5	Hispanic	6	105	No	Y	N	80	96
803	5	Hispanic	6	105	No	Y	N	48	72
804	5	Caucasian	6	105	No	Y	N	56	40
805	5	Asian	6	105	No	Y	N	68	96
806	5	Hispanic	6	105	No	Y	N	48	68
807	5	Hispanic	6	105	No	Y	N	60	64
808	5	Caucasian	6	105	No	Y	N	76	76
809	5	Hispanic	6	105	No	Y	N	68	80
810	5	Hispanic	6	105	No	Y	N	48	60
811	5	Caucasian	6	105	No	Y	N	60	60

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
812	5	Hispanic	6	105	No	Y	N	68	84
813	5	Hispanic	6	105	No	Y	N	44	72
814	5	Caucasian	6	105	No	Y	N	80	100
815	5	Caucasian	6	105	No	Y	N	64	68
816	5	Hispanic	6	105	Yes	Y	N	36	40
879	5	Hispanic	7	105	Yes	Y	N	48	68
880	5	Caucasian	7	105	Yes	Y	N	44	40
881	5	Hispanic	7	105	Yes	Y	N	60	64
882	5	Caucasian	7	105	No	Y	N	72	80
883	5	Hispanic	7	105	No	Y	N	80	80
884	5	Caucasian	7	105	No	Y	N	60	64
885	5	Caucasian	7	105	No	Y	N	48	76
886	5	Asian	7	105	Yes	Y	N	68	80
887	5	Hispanic	7	105	Yes	Y	N	68	68
888	5	African American	7	105	Yes	Y	N	48	48
889	5	Caucasian	7	105	No	Y	N	64	76
890	5	Hispanic	7	105	No	Y	N	72	72
891	5	Caucasian	7	105	Yes	Y	N	72	68
892	5	Hispanic	7	105	Yes	Y	N	52	64
893	5	Caucasian	7	105	No	Y	N	60	72
894	5	Caucasian	7	105	No	Y	N	48	56
895	5	Hispanic	7	105	Yes	Y	N	68	60
896	5	Caucasian	7	105	No	Y	N	60	40
897	5	Caucasian	7	105	No	Y	N	68	56
898	5	Caucasian	7	105	Yes	Y	N	52	48

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
899	5	Asian	7	105	No	Y	N	40	32
1	5	Caucasian	8	106	No	Y	Y	76	88
2	5	Caucasian	8	106	No	Y	Y	56	60
3	5	Hispanic	8	106	Yes	Y	Y	40	36
4	5	Hispanic	8	106	Yes	Y	Y	76	92
5	5	Caucasian	8	106	Yes	Y	Y	80	80
6	5	Hispanic	8	106	No	Y	Y	32	52
7	5	Caucasian	8	106	No	Y	Y	76	88
8	5	Caucasian	8	106	No	Y	Y	76	92
9	5	African American	8	106	Yes	Y	Y	64	64
10	5	Hispanic	8	106	Yes	Y	Y	72	76
11	5	Caucasian	8	106	No	Y	Y	52	20
12	5	Caucasian	8	106	No	Y	Y	60	88
13	5	Hispanic	8	106	No	Y	Y	76	80
14	4	Hispanic	9	106	No	Y	Y	56	80
15	4	Caucasian	9	106	No	Y	Y	92	76
16	4	Asian	9	106	No	Y	Y	56	52
17	4	Hispanic	9	106	Yes	Y	Y	48	44
18	4	Caucasian	9	106	No	Y	Y	76	56
19	4	Multi-Racial	9	106	Yes	Y	Y	28	28
20	4	Asian	9	106	No	Y	Y	84	80
21	4	Hispanic	9	106	Yes	Y	Y	36	20
22	4	African American	9	106	Yes	Y	Y	48	48

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
23	4	Caucasian	9	106	No	Y	Y	76	68
24	4	Caucasian	9	106	Yes	Y	Y	88	72
25	4	Hispanic	9	106	No	Y	Y	28	64
26	4	African American	9	106	Yes	Y	Y	64	68
27	4	Caucasian	9	106	No	Y	Y	60	52
28	4	African American	9	106	Yes	Y	Y	68	36
29	4	Multi-Racial	9	106	Yes	Y	Y	76	72
30	4	Caucasian	9	106	No	Y	Y	68	64
31	4	Hispanic	9	106	Yes	Y	Y	52	48
32	4	Hispanic	9	106	Yes	Y	Y	44	56
33	4	Caucasian	9	106	No	Y	Y	76	36
34	4	Caucasian	9	106	No	Y	Y	36	48
35	4	Caucasian	9	106	No	Y	Y	44	36
36	4	Hispanic	9	106	No	Y	Y	48	40
37	4	Hispanic	9	106	Yes	Y	Y	60	56
38	4	Multi-Racial	9	106	Yes	Y	Y	64	76
39	4	Caucasian	9	106	Yes	Y	Y	44	68
40	5	Hispanic	10	106	No	Y	Y	36	44
41	5	Caucasian	10	106	No	Y	Y	76	92
42	5	Caucasian	10	106	No	Y	Y	80	88
43	5	Hispanic	10	106	No	Y	Y	44	64
44	5	Caucasian	10	106	Yes	Y	Y	72	84

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
45	5	Caucasian	10	106	No	Y	Y	40	96
46	5	Hispanic	10	106	Yes	Y	Y	28	52
47	5	Hispanic	10	106	No	Y	Y	40	44
48	5	Hispanic	10	106	No	Y	Y	68	96
49	5	Caucasian	10	106	No	Y	Y	80	84
50	5	African American	10	106	Yes	Y	Y	36	64
51	5	Multi-Racial	10	106	Yes	Y	Y	60	68
52	5	Caucasian	10	106	No	Y	Y	80	84
53	5	Caucasian	10	106	No	Y	Y	60	88
54	5	Multi-Racial	10	106	No	Y	Y	64	64
55	5	Hispanic	10	106	Yes	Y	Y	28	36
56	5	Caucasian	10	106	Yes	Y	Y	64	92
57	5	Caucasian	10	106	No	Y	Y	76	72
58	5	Hispanic	10	106	No	Y	Y	36	32
59	5	Asian	10	106	No	Y	Y	84	84
60	5	Caucasian	10	106	No	Y	Y	64	84
61	5	African American	11	106	Yes	Y	Y	44	84
62	5	Hispanic	12	106	Yes	Y	Y	48	68
63	5	Hispanic	12	106	Yes	Y	Y	52	64
64	5	Caucasian	11	106	No	Y	Y	76	80
65	5	Hispanic	11	106	Yes	Y	Y	56	52
66	5	Hispanic	12	106	Yes	Y	Y	60	84

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
67	5	Hispanic	12	106	Yes	Y	Y	68	80
68	5	Caucasian	11	106	No	Y	Y	44	72
69	5	Hispanic	12	106	Yes	Y	Y	32	56
70	5	Multi-Racial	12	106	Yes	Y	Y	72	92
71	5	Multi-Racial	12	106	Yes	Y	Y	32	44
72	5	Hispanic	12	106	No	Y	Y	44	64
73	5	Caucasian	11	106	Yes	Y	Y	72	76
74	5	Caucasian	11	106	No	Y	Y	48	80
75	5	Caucasian	12	106	No	Y	Y	28	60
76	5	Caucasian	11	106	Yes	Y	Y	64	84
77	5	Caucasian	12	106	No	Y	Y	84	92
78	5	Caucasian	12	106	No	Y	Y	72	92
79	5	Caucasian	12	106	No	Y	Y	72	88
80	5	Hispanic	11	106	Yes	Y	Y	40	60
81	5	Caucasian	12	106	No	Y	Y	72	96
82	5	Caucasian	11	106	Yes	Y	Y	44	76
83	5	Caucasian	11	106	No	Y	Y	52	76
84	5	Hispanic	11	106	No	Y	Y	68	76
85	5	Hispanic	11	106	Yes	Y	Y	48	92
86	5	Hispanic	11	106	No	Y	Y	68	80
87	5	Hispanic	11	106	No	Y	Y	80	76
88	5	Hispanic	12	106	Yes	Y	Y	52	68
89	5	Hispanic	11	106	No	Y	Y	64	80
90	5	Hispanic	12	106	No	Y	Y	68	72

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
91	5	Hispanic	12	106	Yes	Y	Y	68	44
92	5	Hispanic	12	106	Yes	Y	Y	60	88
93	5	Caucasian	12	106	No	Y	Y	76	88
94	5	Hispanic	12	106	No	Y	Y	64	44
95	5	Caucasian	11	106	Yes	Y	Y	68	52
96	3	Hispanic	13	106	Yes	Y	Y	60	40
97	3	Multi-Racial	13	106	Yes	Y	Y	40	48
98	3	Hispanic	13	106	Yes	Y	Y	80	88
99	3	Hispanic	13	106	Yes	Y	Y	32	64
100	3	Caucasian	13	106	No	Y	Y	52	68
101	3	Caucasian	13	106	No	Y	Y	40	40
102	3	Hispanic	13	106	No	Y	Y	64	60
103	3	Caucasian	13	106	No	Y	Y	80	88
104	3	Hispanic	13	106	Yes	Y	Y	48	24
105	3	Hispanic	13	106	No	Y	Y	68	92
106	3	Hispanic	13	106	No	Y	Y	84	80
107	3	Caucasian	13	106	No	Y	Y	68	44
108	3	Caucasian	13	106	No	Y	Y	92	76
109	3	Asian	13	106	No	Y	Y	68	80
110	3	Caucasian	13	106	Yes	Y	Y	60	68
111	3	Caucasian	13	106	No	Y	Y	24	60
112	5	Hispanic	11	106	No	Y	Y	76	80
113	5	Caucasian	11	106	No	Y	Y	40	64
489	5	Caucasian	14	107	No	Y	Y	48	52

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
490	5	Multi-Racial	14	107	No	Y	Y	48	84
491	5	Hispanic	14	107	Yes	Y	Y	44	88
492	5	Hispanic	14	107	No	Y	Y	20	52
493	5	Caucasian	14	107	No	Y	Y	52	60
494	5	Hispanic	14	107	No	Y	Y	68	84
495	5	Caucasian	14	107	No	Y	Y	84	92
496	5	African American	14	107	No	Y	Y	76	84
497	5	Caucasian	14	107	No	Y	Y	72	88
498	5	Hispanic	14	107	Yes	Y	Y	68	64
499	5	Caucasian	14	107	Yes	Y	Y	72	96
500	5	Caucasian	14	107	Yes	Y	Y	32	72
501	5	Caucasian	14	107	No	Y	Y	72	88
502	5	Hispanic	14	107	Yes	Y	Y	32	80
503	5	Caucasian	14	107	Yes	Y	Y	72	96
504	5	African American	14	107	Yes	Y	Y	76	48
505	5	Caucasian	14	107	Yes	Y	Y	80	84
506	5	Caucasian	14	107	Yes	Y	Y	60	76
507	5	Caucasian	14	107	No	Y	Y	32	64
508	5	Hispanic	14	107	Yes	Y	Y	32	48
509	5	Caucasian	14	107	No	Y	Y	28	56
342	5	Caucasian	15	107	No	N	N	44	64
343	5	Hispanic	15	107	Yes	N	N	52	48
344	5	Caucasian	15	107	Yes	N	N	40	24

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
345	5	Hispanic	15	107	Yes	N	N	56	52
346	5	Caucasian	15	107	Yes	N	N	76	84
347	5	Caucasian	15	107	Yes	N	N	68	72
348	5	Caucasian	15	107	No	N	N	72	84
349	5	Caucasian	15	107	Yes	N	N	56	56
350	5	Caucasian	15	107	Yes	N	N	44	72
351	5	Asian	15	107	No	N	N	68	72
352	5	Caucasian	15	107	Yes	N	N	72	76
353	5	Hispanic	15	107	No	N	N	80	68
354	5	African American	15	107	No	N	N	76	76
355	5	Caucasian	15	107	Yes	N	N	56	60
356	5	Caucasian	15	107	No	N	N	48	80
357	5	Hispanic	15	107	Yes	N	N	48	76
358	5	Hispanic	15	107	Yes	N	N	56	76
359	5	Hispanic	15	107	Yes	N	N	40	60
360	5	Caucasian	15	107	No	N	N	64	84
361	5	Caucasian	15	107	Yes	N	N	20	24
779	5	Hispanic	16	105	Yes	N	N	60	72
780	5	Multi-Racial	16	105	Yes	N	N	56	20
781	5	Hispanic	16	105	No	N	N	76	64
782	5	Caucasian	16	105	No	N	N	80	96
783	5	Asian	16	105	Yes	N	N	60	84
784	5	Caucasian	16	105	No	N	N	76	84
785	5	Caucasian	16	105	Yes	N	N	40	68

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
786	5	Hispanic	16	105	No	N	N	68	72
787	5	Hispanic	16	105	Yes	N	N	76	72
788	5	Hispanic	16	105	Yes	N	N	52	60
789	5	Caucasian	16	105	No	N	N	52	52
790	5	African American	16	105	Yes	N	N	68	76
791	5	Hispanic	16	105	Yes	N	N	68	56
792	5	Hispanic	16	105	No	N	N	56	48
793	5	Hispanic	16	105	Yes	N	N	60	36
794	5	African American	16	105	No	N	N	56	52
795	5	Caucasian	16	105	Yes	N	N	64	68
817	5	Hispanic	17	105	No	N	N	48	72
818	5	Multi-Racial	17	105	Yes	N	N	56	56
819	5	Asian	17	105	No	N	N	44	76
820	5	Caucasian	17	105	No	N	N	52	84
821	5	Hispanic	17	105	No	N	N	80	84
822	5	Caucasian	17	105	No	N	N	64	80
823	5	Caucasian	17	105	No	N	N	76	92
824	5	Hispanic	17	105	No	N	N	68	52
825	5	Caucasian	17	105	No	N	N	52	76
826	5	Caucasian	17	105	No	N	N	64	76
827	5	Hispanic	17	105	No	N	N	44	64
828	5	Caucasian	17	105	No	N	N	48	40
829	5	Hispanic	17	105	Yes	N	N	60	56

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
830	5	Caucasian	17	105	No	N	N	56	80
831	5	Asian	17	105	Yes	N	N	76	92
832	5	Caucasian	17	105	Yes	N	N	60	80
833	5	African American	17	105	No	N	N	60	52
834	5	Caucasian	17	105	No	N	N	80	80
835	5	Hispanic	17	105	Yes	N	N	52	52
836	5	Asian	17	105	No	N	N	64	76
837	5	Caucasian	17	105	No	N	N	52	80
838	5	Caucasian	17	105	No	N	N	44	56
1305	3	Caucasian	18	101	No	N	N	76	48
1306	3	Caucasian	18	101	Yes	N	N	32	76
1307	3	Hispanic	18	101	No	N	N	84	88
1308	3	Caucasian	18	101	No	N	N	68	76
1309	3	Hispanic	18	101	No	N	N	80	80
1310	3	African American	18	101	No	N	N	80	92
1311	3	Caucasian	18	101	No	N	N	84	88
1312	3	Caucasian	18	101	No	N	N	56	80
1313	3	Hispanic	18	101	No	N	N	88	72
1314	3	Hispanic	18	101	Yes	N	N	76	72
1315	3	Hispanic	18	101	No	N	N	80	92
1316	3	Hispanic	18	101	Yes	N	N	40	36
1317	3	Caucasian	18	101	Yes	N	N	60	36
1318	3	Caucasian	18	101	No	N	N	92	96
1319	3	Hispanic	18	101	Yes	N	N	44	72

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1320	3	African American	18	101	Yes	N	N	56	76
1321	3	Caucasian	18	101	No	N	N	60	68
1322	3	Caucasian	18	101	No	N	N	56	88
1570	5	American Indian	19	101	Yes	N	N	60	72
1571	5	Multi-Racial	19	101	No	N	N	64	76
1572	5	Caucasian	19	101	Yes	N	N	24	40
1573	5	Caucasian	19	101	Yes	N	N	64	60
1574	5	Hispanic	19	101	Yes	N	N	60	80
1575	5	Caucasian	19	101	No	N	N	n/a	88
1576	5	Caucasian	19	101	Yes	N	N	56	72
1577	5	Caucasian	19	101	No	N	N	52	72
1578	5	Caucasian	19	101	Yes	N	N	48	48
1579	5	Hispanic	19	101	No	N	N	76	76
1580	5	Caucasian	19	101	Yes	N	N	44	44
1581	5	Hispanic	19	101	Yes	N	N	76	92
1582	5	Caucasian	19	101	No	N	N	64	76
1583	5	Hispanic	19	101	Yes	N	N	64	92
1584	5	Hispanic	19	101	Yes	N	N	68	88
1585	5	Caucasian	19	101	No	N	N	68	80
1586	5	African American	19	101	Yes	N	N	28	28
1587	5	African American	19	101	Yes	N	N	60	80

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1588	5	Hispanic	19	101	No	N	N	68	64
1589	5	Caucasian	19	101	Yes	N	N	68	48
1590	5	Caucasian	19	101	Yes	N	N	40	64
1591	5	Caucasian	19	101	Yes	N	N	36	52
1592	5	Caucasian	19	101	No	N	N	68	84
1525	5	Caucasian	20	101	Yes	N	N	52	88
1526	5	Hispanic	20	101	Yes	N	N	76	84
1527	5	Hispanic	20	101	Yes	N	N	68	80
1528	5	African American	20	101	Yes	N	N	44	64
1529	5	Hispanic	20	101	No	N	N	68	80
1530	5	Caucasian	20	101	Yes	N	N	56	36
1531	5	Caucasian	20	101	No	N	N	72	72
1532	5	Caucasian	20	101	No	N	N	48	80
1533	5	Hispanic	20	101	No	N	N	56	92
1534	5	Caucasian	20	101	No	N	N	64	92
1535	5	Caucasian	20	101	No	N	N	80	76
1536	5	Hispanic	20	101	Yes	N	N	80	60
1537	5	Asian	20	101	No	N	N	52	76
1538	5	Caucasian	20	101	No	N	N	68	76
1539	5	Caucasian	20	101	Yes	N	N	32	24
1540	5	African American	20	101	No	N	N	36	32
1541	5	Hispanic	20	101	Yes	N	N	40	40
1542	5	Caucasian	20	101	Yes	N	N	52	40
1543	5	Hispanic	20	101	Yes	N	N	20	56

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1544	5	Caucasian	20	101	No	N	N	80	76
1545	5	Caucasian	20	101	No	N	N	48	56
1546	5	Caucasian	20	101	No	N	N	72	88
1670	4	Hispanic	21	102	Yes	N	N	52	64
1671	4	Hispanic	21	102	No	N	N	48	52
1672	4	African American	21	102	Yes	N	N	68	44
1673	4	Hispanic	21	102	Yes	N	N	64	40
1674	4	Caucasian	21	102	No	N	N	60	76
1675	4	Hispanic	21	102	No	N	N	76	48
1676	4	Hispanic	21	102	Yes	N	N	68	72
1677	4	Caucasian	21	102	Yes	N	N	68	52
1678	4	Hispanic	21	102	Yes	N	N	28	48
1679	4	Caucasian	21	102	Yes	N	N	24	28
1680	4	Hispanic	21	102	Yes	N	N	36	28
1681	4	Caucasian	21	102	Yes	N	N	32	36
1682	4	Caucasian	21	102	No	N	N	84	88
1683	4	Hispanic	21	102	Yes	N	N	20	40
1684	4	Caucasian	21	102	Yes	N	N	64	60
1685	4	Caucasian	21	102	Yes	N	N	72	64
1686	4	Hispanic	21	102	Yes	N	N	60	48
1687	4	Hispanic	21	102	Yes	N	N	64	48
1688	4	African American	21	102	Yes	N	N	40	56
1689	4	Hispanic	21	102	Yes	N	N	28	32

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
1848	3	African American	22	103	Yes	N	N	72	76
1849	3	Hispanic	22	103	Yes	N	N	56	48
1850	3	African American	22	103	Yes	N	N	60	68
1851	3	Caucasian	22	103	No	N	N	76	64
1852	3	Multi-Racial	22	103	No	N	N	84	60
1853	3	Caucasian	22	103	Yes	N	N	68	88
1854	3	Hispanic	22	103	Yes	N	N	60	24
1855	3	Hispanic	22	103	Yes	N	N	28	44
1856	3	Caucasian	22	103	No	N	N	76	48
1857	3	Caucasian	22	103	No	N	N	76	52
1858	3	Caucasian	22	103	Yes	N	N	72	60
1859	3	Hispanic	22	103	Yes	N	N	24	20
1860	3	Multi-Racial	22	103	Yes	N	N	80	68
1861	3	Caucasian	22	103	No	N	N	68	44
1862	3	Hispanic	22	103	Yes	N	N	60	64
1863	3	Hispanic	22	103	No	N	N	56	72
1864	3	Caucasian	22	103	No	N	N	76	84
1865	3	Hispanic	22	103	Yes	N	N	28	28
2274	5	Hispanic	23	104	No	N	N	44	56
2275	5	Hispanic	23	104	No	N	N	52	68
2276	5	Caucasian	23	104	No	N	N	48	44
2277	5	Caucasian	23	104	No	N	N	68	76

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
2278	5	Hispanic	23	104	No	N	N	60	64
2279	5	Caucasian	23	104	No	N	N	36	56
2280	5	Caucasian	23	104	No	N	N	84	76
2281	5	Caucasian	23	104	No	N	N	60	52
2282	5	Caucasian	23	104	No	N	N	52	64
2283	5	Caucasian	23	104	No	N	N	64	48
2284	5	Multi-Racial	23	104	No	N	N	44	56
2285	5	Hispanic	23	104	No	N	N	60	76
2286	5	Caucasian	23	104	No	N	N	52	56
2287	5	African American	23	104	Yes	N	N	44	64
2288	5	Hispanic	23	104	No	N	N	56	52
2289	5	Caucasian	23	104	No	N	N	60	40
2272	5	Caucasian	23	104	No	N	N	40	32
2273	5	Hispanic	23	104	No	N	N	44	32
301	3	Caucasian	24	106	No	N	N	72	60
302	3	Asian	24	106	Yes	N	N	96	68
303	3	Hispanic	24	106	Yes	N	N	92	84
304	3	Caucasian	24	106	No	N	N	72	68
305	3	Caucasian	24	106	No	N	N	72	44
306	3	Hispanic	24	106	Yes	N	N	40	64
307	3	Hispanic	24	106	No	N	N	88	80
308	3	Hispanic	24	106	Yes	N	N	72	60
309	3	Hispanic	24	106	Yes	N	N	88	72
310	3	Hispanic	24	106	No	N	N	52	36

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
311	3	Hispanic	24	106	Yes	N	N	88	64
312	3	Caucasian	24	106	Yes	N	N	32	12
313	3	Multi-Racial	24	106	Yes	N	N	88	84
314	4	Caucasian	25	106	No	N	N	44	64
315	4	Hispanic	25	106	Yes	N	N	56	56
316	4	Caucasian	25	106	No	N	N	84	72
317	4	Hispanic	25	106	No	N	N	48	56
318	4	Caucasian	25	106	No	N	N	68	72
319	4	Hispanic	25	106	Yes	N	N	48	52
320	4	Hispanic	25	106	Yes	N	N	56	40
321	4	Caucasian	25	106	No	N	N	56	76
322	4	Hispanic	25	106	Yes	N	N	32	40
323	4	Caucasian	25	106	Yes	N	N	48	60
324	4	Hispanic	25	106	Yes	N	N	92	88
325	4	Hispanic	25	106	Yes	N	N	36	52
326	4	African American	25	106	Yes	N	N	48	48
327	4	Multi-Racial	25	106	No	N	N	60	80
328	4	African American	25	106	Yes	N	N	68	64
329	4	Hispanic	25	106	Yes	N	N	44	64
330	4	Hispanic	25	106	No	N	N	72	72
331	4	Caucasian	25	106	No	N	N	52	60
332	4	Asian	25	106	Yes	N	N	36	24

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
333	4	Asian	25	106	No	N	N	76	92
334	4	Hispanic	25	106	No	N	N	72	56
335	4	Caucasian	25	106	No	N	N	56	76
336	4	Caucasian	25	106	No	N	N	64	56
337	4	Caucasian	25	106	No	N	N	88	80
338	4	Hispanic	25	106	Yes	N	N	72	52
2006	5	Hispanic	26	103	Yes	N	N	32	64
2007	5	Hispanic	26	103	Yes	N	N	72	80
2008	5	African American	26	103	Yes	N	N	52	44
2009	5	Hispanic	26	103	Yes	N	N	48	76
2010	5	Hispanic	26	103	Yes	N	N	32	80
2011	5	Hispanic	26	103	No	N	N	64	68
2012	5	African American	26	103	Yes	N	N	68	88
2013	5	Caucasian	26	103	No	N	N	64	80
2014	5	Caucasian	26	103	No	N	N	72	96
2015	5	Hispanic	26	103	No	N	N	64	92
2016	5	Caucasian	26	103	No	N	N	64	64
2017	5	Hispanic	26	103	No	N	N	72	88
2018	5	Hispanic	26	103	Yes	N	N	48	72
2019	5	Caucasian	26	103	No	N	N	68	76
2020	5	Caucasian	26	103	No	N	N	76	88
2021	5	Asian	26	103	No	N	N	72	84
2022	5	Caucasian	26	103	Yes	N	N	84	72
2023	5	Hispanic	26	103	Yes	N	N	64	48

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
2024	5	Hispanic	26	103	Yes	N	N	56	84
2025	5	Caucasian	26	103	Yes	N	N	64	92
2026	5	Caucasian	26	103	Yes	N	N	64	56
2027	5	Multi-Racial	26	103	No	N	N	64	56
2028	5	Caucasian	26	103	Yes	N	N	60	48
2029	5	African American	26	103	Yes	N	N	44	56
2030	5	Caucasian	26	103	No	N	N	16	28
2031	5	Asian	26	103	No	N	N	72	72
2032	5	Caucasian	26	103	No	N	N	84	84
2033	5	Hispanic	26	103	No	N	N	48	44
2034	5	Hispanic	26	103	No	N	N	80	76
2035	5	Asian	26	103	No	N	N	76	88
2036	5	African American	26	103	Yes	N	N	72	84
2037	5	African American	26	103	Yes	N	N	36	44
2038	5	Hispanic	26	103	Yes	N	N	60	72
2039	5	Hispanic	26	103	Yes	N	N	76	80
2040	5	Caucasian	26	103	No	N	N	72	84
2041	5	Caucasian	26	103	Yes	N	N	56	64
2042	5	Hispanic	26	103	Yes	N	N	60	52
2043	5	Hispanic	26	103	Yes	N	N	36	48
2044	5	Caucasian	26	103	No	N	N	68	76
2045	5	Caucasian	26	103	Yes	N	N	56	20

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
2046	5	Caucasian	26	103	No	N	N	48	84
2047	5	Hispanic	26	103	Yes	N	N	80	68
2048	5	Hispanic	26	103	Yes	N	N	32	44
2049	5	Caucasian	27	103	Yes	N	N	64	60
2050	5	Caucasian	27	103	No	N	N	76	84
2051	5	Multi-Racial	27	103	Yes	N	N	72	76
2052	5	Hispanic	27	103	Yes	N	N	28	80
2053	5	Caucasian	27	103	No	N	N	56	64
2054	5	African American	27	103	No	N	N	56	72
2055	5	Caucasian	27	103	No	N	N	60	92
2056	5	Caucasian	27	103	No	N	N	60	52
2057	5	African American	27	103	No	N	N	44	68
2058	5	Caucasian	27	103	No	N	N	52	76
2059	5	Hispanic	27	103	No	N	N	72	72
2060	5	Hispanic	27	103	Yes	N	N	48	72
2061	5	Caucasian	27	103	Yes	N	N	48	88
2062	5	Hispanic	27	103	Yes	N	N	52	64
2063	5	Hispanic	27	103	Yes	N	N	60	64
2064	5	African American	27	103	Yes	N	N	36	48
2065	5	Hispanic	27	103	Yes	N	N	20	68
2066	5	Caucasian	27	103	Yes	N	N	64	76
2067	5	Hispanic	27	103	Yes	N	N	56	76

Student	Grade	Ethnicity	Teacher #	School #	FRL	Intern	Co-Teach	Reading Scores	Mathematics Scores
2068	5	Hispanic	27	103	Yes	N	N	84	88
2069	5	Asian	27	103	No	N	N	68	92
2070	5	Multi-Racial	27	103	Yes	N	N	56	40

APPENDIX D
CLASS MEAN SCORES--READING

Classes	Average of Reading Scores
Intern 1	52
No Intern 1	52.8
No Intern 2	53.8
Intern 2	55.0
Intern 3	55.6
No Intern 3	56
Intern 4	56.2
No Intern 4	56.8
No Intern 5	57.1
No Intern 6	57.5
Intern 5	57.9
Intern 6	58.4
Intern 7	58.5
No Intern 7	59.0
No Intern 8	59.1
Intern 8	59.2
Intern 9	59.6
Intern 10	59.8
Intern 11	60
No Intern 9	60.4
No Intern 10	62.2
No Intern 11	62.8
Intern 12	63.3
Intern 13	64.3
Intern 14	64.3
No Intern 12	67.3
No Intern 13	73.2
Average Score	59.3

APPENDIX E
CLASS MEAN SCORES--MATHEMATICS

Classes	Average of Math Scores
No Intern 1	51.2
No Intern 2	54.3
Intern 1	55.5
Intern 2	55.8
No Intern 3	56.2
No Intern 4	56.2
No Intern 5	61.2
Intern 3	62.1
Intern 4	62.5
No Intern 6	63.5
Intern 5	63.8
No Intern 7	65.4
Intern 6	65.6
No Intern 8	66.7
No Intern 9	68.5
No Intern 10	68.9
Intern 7	70.2
Intern 8	70.5
No Intern 11	70.7
Intern 9	71.0
No Intern 12	71.5
Intern 10	71.8
Intern 11	72.0
Intern 12	72.8
Intern 13	74.1
No Intern 13	74.2
Intern 14	74.4
Average	65.6

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