A QUANTITATIVE STUDY OF TEACHER CERTIFICATION PATH AND STUDENT ACHIEVEMENT IN THE STATE OF MISSOURI

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ABSTRACT

The United States continues to fall behind other industrial nations in education. The number of teacher shortage areas continue to rise as do alternative certification programs. The studies on the effectiveness of these programs has produced mixed results. School districts need to hire the most qualified and effective educators available. This study examined the impact teacher certification path has on student achievement at the elementary level in the state of Missouri.

Data collected from the Missouri Department of Elementary and Secondary Education was used to examine the impact certification path has on student achievement. A two-way t-test and ANOVA were used to analyze the data. The data included MAP scale scores, teacher certification status, grade level, and years of experience.

Results showed that traditionally certified teachers have higher achieving students than their alternatively certified counterparts. It also showed that experience is a factor in the student achievement levels of teachers with alternative certifications. Recommendations included adding additional teacher and student demographics to the study to get a representation across the United States. It was also recommended that more research be done on the course requirements of alternative certification programs. This study added to the body of research on teacher certification path and its impact on student achievement.

CHAPTER ONE

INTRODUCTION

Background

There are over 3.1 million public school teachers in the United States (The Institute of Education Sciences, 2015). These teachers are made up of traditionally and alternatively certified teachers. Traditionally trained teachers come from undergraduate programs designed to certify and license an individual to teach. The National Association for Alternative Certification (2015) defines alternative routes to teacher certification as any teacher preparatory program other than a traditional undergraduate program which leads to teacher certification or licensure noting each state having different requirements for certification.

The United States is seeing an increase in alternative teacher certification. According to staff at the National Center for Education Information, NCEI, (2005) over 250,000 teachers have earned alternative teacher certification since the 1980s with a majority of these certifications in the last decade. Hattie (2009) found teacher education to have an effect size of 0.11, a low effect size by all accounts. Hattie also found an effect size of -0.01 when comparing the effects of a traditional four year teacher preparation program to the effects of alternative programs. Student enrollment is on the rise and according to Martin (2010) the number of teaching shortage areas has increased from fourteen in 1999 to 21 shortage areas in 2009. The research on the effect alternative teacher certification has on student achievement has mixed results. The number of quantitative studies examining the effectiveness of alternative certification at the elementary level is scarce. As the number of teachers with alternative certification

continues to rise it is important to the field of education to understand the impact these programs have on achievement and the future of our educational system. This dissertation examined the differences in student achievement scores of traditionally trained teachers versus alternatively trained teachers and whether or not their years of experience played a role in those differences.

Traditional Teacher Certification Routes in the State of Missouri

In the state of Missouri, individuals who successfully complete all requirements of a state-approved college or university program in a field of education are granted certification (DESE, 2013). This pathway is considered traditional and allows for traditional teacher certification. In the state of Missouri there are 62 subject and grade level certification areas (DESE, 2013). There are general requirements and professional requirements that must be met in order to obtain a traditional teaching certificate. These requirements differ depending on the certification area and are set by the Missouri State Board of Education. For most certification areas the general requirements include: a baccalaureate degree from an approved teacher education program, a recommendation from a college or university official, a 2.5 grade point average on a 4.0 scale in the certification area, and successful completion of a State Board approved test (DESE, 2013). For most certification areas there are at least 60 semester hours that must be completed to be eligible for traditional certification. There is a minimum requirement of 10 semester hours in the Foundations of Teaching, 15 semester hours in Teaching Methods, and a required clinical experience (DESE, 2013). An initial teaching certificate is granted after all requirements have been met. An initial teaching certificate is a four year certificate and can be upgraded to a career certification after meeting the approved

requirements. Appendix A contains a list of four-year institutions and approved programs in the state of Missouri.

The Missouri Standards for the Preparation of Educators (MoSPE) communicates the expectation for Missouri's teacher preparation programs. There are six MoSPE standards that act as a guide for colleges of education. Program Standard 1 addresses academics. Candidates are required to demonstrate a knowledge of and application of general education, pedagogy, and content knowledge. According to DESE (2013), general education provides the curricular foundation of the American academy. Teacher candidates must have a foundation of general knowledge that will help them be successful in their areas of specialization. General education will provide candidates with traditional disciplines of general arts and sciences. Teacher candidates must demonstrate content knowledge specific to their specialized area. Candidates must have an understanding of the standards and curriculum approved by the board of education. Lastly, standard one outlines the need for teacher candidates to have a foundation of pedagogical knowledge. Differentiation of instruction is imperative to meet the diverse needs of all students (DESE, 2014).

Missouri Standards for the Preparation of Educators standard two addresses design and assessment and states data from valid, reliable, and fair assessments will measure the performance of teacher candidates, along with preparation programs, by certification area. Missouri has a program designed to inform teacher candidates on their development as educators known as the Missouri Assessment Plan for Educator Preparation Program. The plan provides a reliable and valid foundation for assessing teacher candidates and the educator preparation programs. Standard two also addresses

the concept of having a Conceptual Framework developed by all stakeholders. The Conceptual Framework must be accessible and evaluated regularly. According to MoSPE standard two all educator preparation programs must have a curriculum that is aligned with the Conceptual Framework. The curriculum will consist of the following components: Missouri Core Academic Standards; general education; field and clinical experiences; the Missouri assessment plan; and candidate outcomes (DESE, 2014).

Missouri Standards for the Preparation of Educators standard three addresses field and clinical experiences for teacher candidates. As part of the teacher preparation program, field and clinical experiences will be provided to aide and support the development of candidates. These experiences, in collaboration with PK-12 schools, will provide opportunities for teacher candidates to apply their knowledge and to connect their learning while under the supervision of experienced educators. The selection of school sites for these experiences should be carefully selected and allow for the correct level of participation. Site requirements and developmental levels for field experiences can be found in Appendix C. The field and clinical experiences are divided into three levels of development: Early, Mid-Level, and Culminating. With each level comes different requirements and experiences for the cooperating teachers. There are specific requirements for the different levels of field and clinical experiences. These can be found in Appendix B. Standard three also requires teacher preparation programs to use the Missouri Educator Evaluation System to evaluate their teacher candidates. Missouri teacher preparation programs, in cooperation with school districts, must develop and regularly provide orientation sessions for all stakeholders as part of standard three. Standard three also requires programs and school districts to develop a Memorandum of

Understanding (MOU). The MOU will identify the expectation of teacher candidates, public school personnel, and university personnel. The Memorandum of Understanding shall contain the following areas: scope of the agreement; placement and assignment of the candidate; duration, time, termination, and change of assignments; supervision and evaluation information; status authority of candidates; compensation; or any other topics of importance for the partnership between the educator preparation programs and the partnering school district. The MOU must be communicated to all stakeholders and evaluated on an annual basis. Lastly, MoSPE standard three states teacher preparation programs shall have a written policy permitting alternative clinical practices for teacher candidates in lieu of conventional student teaching in accordance with Missouri Revised Statute 168.400 (2005) and Missouri Code of Regulations. 5 CSR 20-400.330 (DESE, 2014).

Missouri Standards for the Preparation of Educators standard four address the recruitment, development, and retention of a diverse pool of candidates for teacher preparation programs. Standard four provides teacher colleges with guidelines for transition points and exit requirements. Suggested grade point averages for content areas and education areas are addressed with standard four. Standard four also addresses the requirements and transitions points for entry level and advanced levels of certification. A chart containing specific requirements can be found in Appendix D.

Missouri Standards for the Preparation of Educators standard five addresses the need for teacher preparatory programs to recruit qualified faculty members from a diverse population. The faculty members of teacher preparatory programs should model best practices in teaching and learning. Standard five also requires faculty members to hold

appropriate degrees and certifications to match their areas of teaching and supervision. The recruitments of faculty members must adhere to the institutions employment policies and practices. Teacher preparatory programs must establish networks of communication to share pertinent information. Lastly, standard five calls for all teacher preparatory faculty to be offered professional learning opportunities and evaluations of the programs will be used in the development of professional development plans and for the improvement of instruction (DESE, 2014).

Missouri Standards for the Preparation of Educators standard six addresses operations and resources and approval and accreditation for teacher preparation programs. The first part of standard six address the operations and resources required to develop, govern, support, and maintain a program. There are five identified categories that are essential under MoSPE standard six. These categories are: Data Management; Faculty and Other Personnel; PK-12 Partnerships; Facilities and Technology; and Instructional Resources. A chart containing the categories, governance, process, and resources deemed essential for Standard six can be found in Appendix E. The second part of Standard six addresses the approval and accreditation of teacher preparation programs. Standard six requires all preparation programs to be approved by the Missouri Department of Education. Teacher preparation programs must submit the follow list of plans and documents for approval and accreditation:

1. Plans to meet and/or exceed the six MoSPE standards;
2. Alignment of their assessments to the Annual Performance Report for Educator Preparation Programs (APR-EPP);
3. Identify areas of certification in which they are seeking approval;

4. Outline coursework and/or experiences to prepare educators in each one of the certification areas;
5. Host an on-site review including opportunities to visit with students, faculty, and partners;
6. Establish a timeline for the approval by the board; steps to recruit students; and the anticipated date of their first program completers (DESE, 2013).

Programs are measured by process, performance and resources outlined in Appendix F.

According to MoSPE Standard six, programs meeting all the requirements will be accredited annually. There are three levels of accreditation. Programs that are accredited are those who have met all of the standards and are authorized to recommend teacher candidates for certification. Programs that are provisionally accredited have not met the APR-EPP accountability measures. These programs must formulate an improvement plan. Provisionally accredited programs can recommend teacher candidates for certification for a period of up to two years with conditions put forth by the board. Programs that are unaccredited have not met accountability measures and cannot recommend teacher candidates for state certification (DESE, 2014).

Standard six also calls for a Technical Advisory Committee consisting of experts in assessment and statistical measurement, PK-12 school districts, professional associations, and representatives from teacher preparation programs, to supervise the process and requirements of the APR-EPP. Finally, Standard six allows for teacher preparation programs in Missouri to accept the standards from other programs that are approved by the United States Department of Education (DESE, 2014).

Teacher candidates seeking traditional certification in Missouri must demonstrate competencies in nine standards and 36 quality indicators. These standards are known as the Missouri Teaching Standards and outline the performance expectations for professional teachers. Unlike, the MoSPE program standards, the Teacher Standards are goals for the teacher and teacher candidate. The Teacher Standards are also designed in scope and promote life-long learning for the teacher. Standard one addresses content knowledge and appropriate instruction. Standard one calls for teachers to have an understanding of key concepts, structures, and the understanding of how to make the material meaningful and engaging. Standard one has five quality indicators that include: content and academic language; student engagement in subject matter; disciplinary research and inquiry methodologies; interdisciplinary instruction; and diverse social and cultural perspectives (DESE, 2013).

Teacher Standard two addresses student learning, growth, and development. Standard two calls for all teachers to have and an understanding of how students learn, develop, and differ in their learning styles. Differentiation of instruction and supporting the intellectual, social, and personal development of students is a key concept for standard two. Standard two has 6 quality indicators that include: cognitive, social, emotional, and physical development; student goals; theory of learning; differentiated lesson design; prior experiences, multiple intelligences, strengths and needs; and language, culture, family and knowledge of community values (DESE, 2013).

Standard three addresses curriculum implementation. Standard three calls for all teachers to understand the importance of long-range curriculum planning and development. The development, implementation, and evaluation of curriculum that is

aligned to district and state standards and meets the needs of the students is a key concept for standard three. Standard three has three quality indicators that include: implementation of curriculum standards; lessons for diverse learners; and instructional goals and differentiated instructional strategies (DESE, 2013).

Standard four addresses critical thinking. Standard four calls for teacher to utilize multiple instructional strategies and resources to promote students' problem solving, critical thinking, and performance skills. Standard four has three quality indicators including: instructional strategies leading to student engagement in problem-solving and critical thinking; appropriate use of instructional resources to enhance student learning; cooperative, small group and independent learning (DESE, 2013).

Standard five addresses positive classroom environments. Standard five calls for teachers to have an understanding of individual and group behavior and motivation. It calls for promoting an environment that encourages engagement and self-motivation. Standard five has three quality indicators including: classroom management techniques; management of time, space, transitions, and activities; and classroom, school and community culture (DESE, 2013).

Standard six addresses effective communication. Standard six calls for teachers to be a model for all types of communication and collaboration with families and colleagues. Standard six has four quality indicators including: verbal and nonverbal communication; sensitivity to culture, gender, intellectual and physical differences; and learner expression in speaking, writing and other media; technology and media communication tools (DESE, 2013).

Standard seven addresses student assessment and data analysis. Standard seven calls for all teachers to have an understating of formative and summative assessments, along with strategies to assess the learner's progress. Standard seven has six quality indicators including: effective use of assessments; assessment data to improve learning; student-led assessment strategies; effect of instruction on individual/class learning; communication of student progress and maintaining records; and collaborative data analysis (DESE, 2013).

Standard eight addresses teacher professionalism. Standard eight calls for teachers to be reflective practitioners and analyze their actions and their effects. Standard eight has three quality indicators including: self-assessment and improvement; professional learning; and professional rights, responsibilities and ethical practices (DESE, 2013).

Standard nine addresses professional collaboration. Standard nine calls for teachers to have an effective working relationship with all stakeholders. Standard 9 has three quality indicators including: induction and collegial activities; collaborating to meet student needs; and cooperative partnerships in support of student learning (DESE, 2013).

The standards outlined above summarize the uniformity and rigor all traditional teacher colleges and teacher candidates must adhere to in order to obtain a traditional teacher certification in Missouri.

In the state of Missouri, districts receive an Annual Performance Report (APR). The APR provides accountability data based on the district's data (DESE, 2014). Part of this accountability data, which is a factor for accreditation, is student achievement scores measured by the Missouri Assessment Program (MAP). The emphasis on proficient and

advanced scores on state assessments became the measuring stick for student achievement with the enactment of the No Child Left Behind Act of 2001 (NCLB). The Missouri School Improvement Program fifth version (MSIP 5) sets forth the accountability system for Missouri's public schools. Standard one on MSIP 5 addresses Academic Achievement. Missouri School Improvement Program 5 mandates all districts to administer assessments, which are required by the MAP, to measure student's academic achievement and to show improvement in student performance. There are three criteria for academic achievement under MSIP 5. Those criteria are: Student performance on required MAP assessments will meet or exceed the standard set by the state or will demonstrate improvement in performance over time; the percentage of students who are tested will meet or exceed the standard set by the state; and growth data will be used to indicate if students meet or exceed the state's expectations for student performance growth (DESE, 2014).

Alternative Teacher Certification Routes in the State of Missouri

There are five pathways for individuals seeking alternative routes to certification in Missouri. The Missouri Alternative Teacher Certification Program allows individuals a pathway for alternative certification through an approved higher education university (DESE, 2013). Missouri currently has 12 colleges and universities with approved alternative certification programs. The Missouri Alternative Teacher Certification Program requires candidates to have a bachelor's degree with a minimum of 2.5 GPA, pass a background check, and go through an interview process. These programs typically consist of 30 hours of course work. Once employed by a district the candidate may

obtain a two year provisional certificate to teach as they are completing a state approved alternative certification program (DESE, 2015).

Another option for alternative certification is through a temporary authorization certificate. The temporary authorization pathway allows for individuals holding a bachelor's degree in a closely related content area to take college course credits to meet competency areas. This pathway is self-directed, requires mentoring, and examinations. Individuals receive a one year renewable certificate. Nine hours of course credit is required for renewal. Individuals who successfully completed all of the requirements may apply for an initial or career teaching certificate (DESE, 2015).

On May 1, 2008, Missouri Governor Matt Blunt signed a bill allowing a new alternative method of certification for Missourians through the American Board for Certification of Teacher Excellence (ABCTE). The American Board for Certification of Teacher Excellence is an organization designed to educate and certify individuals who are interested in becoming a certified teacher. Prospective educators for this program must hold a Bachelor's degree before enrolling in the program. The ABCTE offers seven certification areas including; Biology grades 9-12, Chemistry grades 9-12, Elementary Education, English Language Arts grades 5-9 and 9-12, General Science grades 5-9 and 9-12, History grades 5-9 and 9-12, Mathematics grades 5-9 and 9-12, Physics grades 9-12, Reading Endorsement, and Special Education (ABCTE, 2015).

The American Board is an attractive alternative certification option. The ABCTE program is online, self-paced, and is relatively more cost efficient than other alternative programs. To complete the program, students must pass two tests: the Professional Teaching Knowledge Exam and the Subject Area Exam. The Professional Teaching

Knowledge Exam is a multiple choice test with a writing component consisting of questions around pedagogy. The Subject Area Exam is a multiple choice test consisting of questions related to the certification area. American Board certification is used in place of a Master's degree for certification purposes. There are 12 states that accept the ABCTE. These states include: Arizona, Arkansas, Florida, Idaho, Mississippi, Missouri, New Hampshire, Oklahoma, Pennsylvania, South Carolina, Utah, and Tennessee.

Troops to Teachers (TTT) is an alternative certification pathway accepted by the state of Missouri. Troops to Teachers seeks to employ military service members in public school teaching careers. To qualify for TTT an individual must meet military service requirements and educational requirements. The educational requirements for individuals seeking certification in elementary or secondary education include a baccalaureate degree or advanced degree from an accredited institution (DESE, 2013).

The final way for an individual to teach in Missouri without going through a traditional preparation program is through the doctoral route. Individuals possessing a doctoral degree in a content area are eligible for an initial teacher certificate after the successful completion of the 063 Professional Knowledge assessment (DESE, 2015).

Problem Statement

The National Center for Education Information (2005) estimated the United States would need 2.2 million beginning teachers within the next decade. These beginning teachers will come from one of two routes, traditional certification route or an alternative certification route. This study examined student achievement scores of traditional and alternatively trained teachers. The number of teachers with alternative certification continues to rise therefore, it is important to research the impact alternative certification

may have on student achievement in the state of Missouri. A fair amount of research has been done at the middle school and high school levels on the effectiveness of alternative certification. One such study conducted by Hall (2008) found that principals perceived traditionally trained teachers to be more effective than teachers with alternative certificates. The principals interviewed during this study showed no preference of traditional versus alternative certificated teachers during the hiring process. Another such study found principals in Southwest Texas preferred to hire traditionally certified teachers. These principals also rated traditionally certified teachers significantly higher in multiple areas of teaching (Bowen, 2004). Darling-Hammond, Heilig, Holtzman, and Gatlin (2005) posed the question "Does teacher preparation matter?". They examined over 132,000 students and 4,400 teachers across Houston, Texas. Student achievement scores were gathered in reading and math from six different achievement test for a period of six years. Darling-Hammond et al. compared student scores of teachers considered to be alternatively certified to standard or traditional certified teachers. Their study found no occurrence were alternatively certified teachers outperformed traditionally certified teachers. The study concluded alternatively certified teachers hindered students achievement by .5 to three months compared to fully certified traditionally trained teachers.

The research within primary and elementary grades is minimal. As shortage areas continue to grow and funding for education continues to decrease, the number of alternative certification programs are increasing. This study examined the impact certification path has in math and English Language Arts (ELA) achievement scores among 3rd-6th grade students in Missouri. The assessment used to gather the data was the

Missouri Assessment Program (MAP). Teacher certification type, alternative and traditional, along with years of experience were the variables. The data was analyzed in hopes to have a better understanding of the role certification plays on student achievement. This is important to the field of education because school districts need to recruit and hire the most effective teachers available.

Rationale for the Study and/or Purpose for the Study

According to the report, *The Learning Curve*, developed by the Economist Intelligence Unit (2012), the United States out of forty countries in overall educational performance. According to the National ACT profile (2013) Missouri ranks 22nd in the nation in ACT composite score for 2013 graduates. The United States is at a critical point in regard to education. Public schools should be hiring the most highly qualified teachers. All teacher education programs, alternative or traditional, should be producing qualified teacher candidates. It is important to look at the data and examine the effectiveness of teachers who graduate from these programs. This study will provide data that could be used to improve teacher certification programs and give school districts information to assist in the hiring process. This study examined the impact teacher certification path has on student achievement results and if years of experience play a role.

Research Questions

In order to address the purpose of the study, the following research questions were posed:

Research Questions

1. Does teacher certification path (traditional and alternative) impact student achievement (ELA and Math MAP scaled scores in grades 3-6)?
2. Do years of teaching experience play a role in the achievement of students taught by alternatively certified teachers?

Hypothesis

In order to answer the aforementioned research questions the following null hypothesis were investigated:

HO1- Teacher certification path does not impact student achievement for 3rd-6th grade students on the MAP Math and ELA scaled scores.

H02- Years of teaching experience does not impact the achievement of students.

Limitations and Delimitations

This study is limited to:

1. The number of certificated teachers in Missouri teaching grades 3-6.

This study is delimited to:

1. The geographical are to the state of Missouri.
2. The grade range of third to sixth grade teachers.

Assumptions

1. Missouri teachers are comparable to teachers nationwide.
2. Missouri students are comparable to students nationwide.

Design Controls

This was a quantitative study looking at the impact certification types have on achievement results and if years of experience a teacher has played a role. Two groups

will be studied, those who followed traditional certification paths and those with alternative certification. The study will analyze achievement results to the type of teacher certification obtained. The variables in this study will be traditional teacher certification, alternative teacher certification, and years of experience. This quantitative study is non-experimental in nature and will use existing data consisting of student assessment scores from the Missouri Assessment Program (MAP). The scaled scores for grades 3-6 in English language arts and mathematics will be used and obtained through the Missouri Department of Elementary and Secondary Education (DESE). Information on teacher certification will be obtained through the Office of Data Systems Management from DESE.

Theoretical Framework

The framework for this study revolves around Lee Shulman's concept of pedagogical content knowledge. Shulman first introduced the concept in 1986 when he stated teachers need to have a grasp on two types of knowledge to be successful teachers, content knowledge and pedagogical knowledge. Content knowledge is the teachers understanding of the material being taught often referred to as the "what" of teaching. Pedagogical knowledge is referred to as the "how" of teaching and includes the process, practices, and methods of teaching. The framework for this study focuses on pedagogical knowledge. According to the National Science Foundation (2007) many students come to alternative teacher certification programs with degrees in their content field however they do not have the pedagogical content knowledge allowing them to convert their knowledge of the subject matter to effective teaching. Traditional teacher preparation

programs are guided by stringent state requirements, as outlined in chapter two, addressing content and pedagogical knowledge.

John Hattie (2009) conducted a Meta-analysis synthesizing over 800 variables influencing student achievement, assigning all variables an effect size. An effect size of 0.40 was considered a noticeable effect on student achievement. Hattie found teacher education to have an effect size of 0.11, a low effect size by all accounts. Hattie found an effect size of -0.01 when comparing the effects of a traditional four year teacher preparation program to the effects of alternative programs. Sparks (2004) stated for such an important topic little is known about the effects of teacher education. "There is no standard approach to where and how teachers should be prepared" (Levine, 2006). Walsh (2006) argued there was little evidence to support the methodology behind our teacher preparation programs. Hattie concluded teacher education programs have some effect, but more research is needed on this topic.

Definition of Key Terms

Alternative Teacher Certification: In the state of Missouri, individuals can obtain a license to teach by completing a state-approved alternative teaching certification program. Individuals must meet certain qualification (DESE, 2013). For the purpose of this study Alternative Teacher Certification is any certification held by an educator who did not attend a traditional teacher preparatory college or those who would not be considered 'Highly Qualified' by the Department of Elementary and Secondary Education's standards.

Traditional Teacher Certification: In the state of Missouri, individuals who successfully complete all requirements of a state-approved college or university program in a field of education (DESE, 2013).

Missouri State Assessment Program (MAP): The Missouri Assessment Program is a state test administered to all students in grades 3-8. Communication Arts and Mathematics is administered to all grades and Science is administered in grades 5 and 8 (DESE, 2013)

Summary

The number of alternative teacher certification programs continues to rise as do the teaching candidates with alternative certificates. The research on the effects of alternative teacher certification regarding student achievement produced mixed results. This quantitative study will consist of data analysis of MAP scaled scores for grades 3-6 in English language arts and mathematics. The data will be disaggregated by grade level, subject, teacher's years of experience, and type of teacher certification (traditional or alternative). This dissertation examined the impact certification path had on student achievement scores in the state of Missouri. This dissertation also examined the impact years of teaching experience has on student achievement scores taking into account certification path. The review of literature in Chapter 2 will consist of eight sections: Introduction; Historical Background of Alternative Teacher Certification; Student Achievement; Student Achievement and Years of Experience; Studies Supporting Alternative Teacher Certification; Studies Not supporting Alternative Teacher Certification; Teacher Effectiveness and Teacher Preparation Programs; and Summary.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

The review of literature in Chapter 2 consists of eight sections: Introduction; Historical Background of Alternative Teacher Certification; Student Achievement; Student Achievement and Years of Experience; Studies Supporting Alternative Teacher Certification; Studies Not supporting Alternative Teacher Certification; Teacher Effectiveness and Teacher Preparation Programs; and Summary. The eight sections will present research, related to teacher certification and student achievement, from the past twenty years. The research will be gathered from: clinical studies; peer reviewed journals; articles; dissertations; and book reviews. In addition, general information from the state and federal departments of education will be provided.

The historical background is relevant to the study to provide the reader insight into the history of alternative certification programs and the reason for their inception. The 'Student Achievement' section will provide the reader with information on what achievement means in education and what experts believe about student achievement. The 'Student Achievement and Years of Experience', 'Studies Supporting Alternative Teacher Certification', and 'Studies Not supporting Alternative Teacher Certification' sections will provide the reader with a review of previous studies conducted in their respective sections. Chapter one contained information on 'Traditional Teacher Certification in Missouri' and 'Alternative Teacher Certification in Missouri' that provided the reader with information on the process and procedures to obtain tradition certification and the rigor within the certification programs. This information, along with

the historical perspective and a review of scholarly literature in chapter two, provided the reader with a complete picture of the knowledge surrounding the study.

Historical Background of Alternative Teacher Certification

The concept of alternative teacher certification began in the state of New Jersey in 1983, to attract qualified liberal arts graduates to become elementary and secondary teachers without attending a traditional campus based teacher certification program (Feistritzer and Haar, 2008). State teacher licensing agencies creation of routes to teacher certification that are alternative to undergraduate campus based teacher preparation programs, otherwise known as traditional routes to teacher certification, are known as alternative routes to certification (Feistritzer & Haar, 2008).

Alternative routes to teaching received a big endorsement from President George H.W. Bush in 1992 when he requested $20 million in federal funding to help state agencies with alternative teacher certification program implementation (Feistritzer & Haar, 2008). The funds requested were not authorized, but the endorsement provided legitimacy to programs where they had little before. Proponents of alternative certification programs believe the programs open doors for talented individuals, who do not hold teaching degrees. In most cases individuals enrolled in alternative certification programs have an undergraduate degree and content related skills or experiences.

According to Feistritzer (2008) all 50 states and the District of Columbia offered alternative teacher certification programs as early as 2006. The number of individuals enrolled in alternative teacher certification programs is on the rise. Feistritzer's research estimated 285 individuals were enrolled in alternative teacher certification programs in 1985 (Feistritzer & Haar, 2008). According to the National Center for Education

Information, NCEI, (2005) over 250,000 teachers have earned certification through alternative methods since the 1980s and a majority of these certifications have been in the last decade. The number of alternative teacher certification programs has risen from 12 in the 1980s to an estimated 485 in 2006 (Feistritzer & Haar, 2008).

There are many reasons for the rise of alternative teacher certification programs in the United States, with teacher shortage being the primary reason. The National Center for Education Information (2005) estimated the United States would need 2.2 million additional teachers within the next decade. The causes for teacher shortages are many including: increased student enrollment; increased diversity; teacher retirement; and the increase in the number of individuals with certification who choose not to teach (Feistritzer & Haar, 2008). In order to meet the increasing demand for qualified teachers, state licensing agencies have created many different alternative teacher certification programs.

Student Achievement

The term student achievement has various definitions. What is considered achievement by some might not be by others. Elementary education sets the foundation for student achievement. Therefore, it is vital for elementary teachers to be competent. According the National Commission on Teaching and America's Future (1996), a skillful knowledgeable teacher is the primary factor that can increase student achievement. There have been various studies on student achievement. One such study conducted by Ferguson (1991) found researchers have shown less effective teachers can have a significant impact on students' academic achievement, even if the students are subsequently taught by a more competent teacher. Sack conducted a study on student

achievement supporting Ferguson. Sack (1999) found the most important factor influencing student achievement is the teacher. Sack also states the effects of an ineffective teacher can be seen for years. Furthermore, two subsequent years of ineffective teachers can damage the academic career of the student. Additionally, Harry Wong, a leader in the field of education, would agree with the findings of Ferguson and Sacks. Wong (n.d.), believed the only way to obtain student achievement was with the teacher. Wong believed it is what the teacher can do and what they know that is deciding factor in determining student achievement (Wong, n.d.). Wong also believed academic achievement is based solely on the effectiveness or ineffectiveness of the teacher. Wong would argue district variables, school variables, and program variables are not a factor in student achievement.

Billions of dollars are spent each year to educate children (U.S. Department of Education, 2015). In Harry Wong's article, *There is Only One Way to Improve Student Achievement* (n.d.), Wong tells us that successful schools stress practices while unsuccessful school stress programs. Schools that are successful in the area of academic achievement invest in sound practices to create effective teachers. According to Sanders (1996), low achieving students benefit first as the effectiveness of the teacher increases. According to Wong (n.d.), programs should be forgotten unless they are being taught by effective teachers. Wong believed offering students good teachers who are well trained to teach academic skills and knowledge is the key to successful schools.

Kukla-Acevedo (2008) conducted a study looking at teacher preparation programs and student achievement. Kukla-Acevedo hypothesized graduates of traditional programs would have higher performing students, in mathematics, than their alternative

counterparts. Kulka-Acevedo believed this would be due to the traditional programs requiring more math courses thus equaling a greater exposure and greater student achievement. The study assessed seven teacher preparation programs and found the grade point average of the teachers from traditional programs had a positive relationship with student achievement in mathematics (Kulka-Acevedo, 2008). Goldhaber & Brewer (1997) had similar findings in that teacher with a bachelors or master's degree in mathematics led to a significant increase in their student's mathematics achievement.

Student Achievement and Years of Experience

The National Center for Analysis of Longitudinal Data in Education Research (CALDER) suggested teachers' years of experience impact student achievement most during the first few years of teaching. Studies by Boyd (2007) and Kelcker (2002) have produced similar results on teacher experience and student achievement. The research suggested new teachers were less effective than more experienced teachers. The National Center for Analysis of Longitudinal Data in Education Research has conducted multiple studies confirming the research (Clotfelter, Ladd, and Vigdor 2007a, 2007b; Harris and Sass 2007; Kane, Rockoff, and Staiger 2006; Ladd 2008; Sass 2007). The experience teachers gain during their first few years of teaching has a stronger impact on teacher effectiveness than most other variables including licensure test scores, advanced degrees, class size, and National Board certification (Clotfelter et al. 2007a; Ladd 2008; Sass 2007).

Corresponding to the CALDER studies, Boyd (2007) conducted a study examining teacher experience using math achievement scores. The study found the largest gain in student achievement was during the teachers' second year of teaching. A

similar study by Klecker (2002) examined the relationship between students' math achievement on the National Assessment of Educational Progress (NAEP) and teachers' years of experience by studying mean scale scores for eighth grade students in three states: Kentucky, Tennessee, and Texas. Klecker's findings are similar to Boyd's in that years of experience plays a role in higher mathematic scores; however the effect size was marginal with a range from .08 to .37. Boyd also suggests teacher's experience plays a more significant role in student achievement in grades four and five as compared to grades 6^{th}-8^{th}. Teachers with 20 years of experience were more effective than teachers without experience and after the first 5 years of experience there is not a noticeable effect in student achievement. Additionally, Ladd (2008) suggested after 25 years of experience teachers tend to be less effective.

At the same time, Rockoff (2004) studied elementary students in grades K-5. His research found higher math achievement scores for teachers with more experience; however, the positive effects leveled off at year three to 4. Winters (2011) and Buddin (2010) support Rockoff's findings. Buddin (2010) found after the fifth year of experience gains in reading and math diminish from about .02 to .07 standard deviation. Clotfelter et. al (2007) study supported Rockoff, but also found gains throughout years 10 to 20 of about .11 standard deviations when compared to new teachers. Betts, Zau, and Rice (2003) found teacher experience to have a minimal positive effect in math achievement up to 10 years of experience at the middle school level. Betts et. al (2003) did not find any relationship between experience and reading achievement. Rivkin, Hanushek, and Kain (2005) study agreed.

Marcus Winters (2011) of the Manhattan Institute conducted a study measuring teacher effectiveness and the credentials used to determine effectiveness by analyzing data from Florida State Testing in the area of elementary mathematics and reading. Winters suggested teacher experience has the most significant impact on student achievement during the first three years of teaching and then plateaus after year three to five with minimal gains in student achievement after the fifth year of experience. Further examination found three major credential for perceived teacher effectiveness including certification; however Winters believed teacher certification had no relation to student achievement.

Jonah Rockoff, a Professor of Business at the Columbia Graduate School of Business and Research Associate for the National Bureau of Economic Research, conducted multiple studies on the relationship between teacher experience and student achievement. Rockoff, Kane, and Staiger (2008) believe teacher experience is one of the only characteristics to consistently relate to teacher effectiveness. Rockoff et. al (2008) assume teachers gain skills in classroom management, pedagogy, and knowledge as they accumulate years of experience. These skill gains make them more effective.

There were multiple variables when looking into the value of experience and its potential impacts on student achievement within experience itself. Consecutive years of teaching experience is one. Rivken et. al (2005) examined student achievement scores of high quality Texas teachers for five consecutive years. They found the teachers with consecutive years of successful teaching experience improved student's achievement levels. Their study was limited to teachers with five consecutive years of teacher quality

in the 85th percentile and did not examine lower ranked teachers. Sanders and Rivers (1996) had similar findings analyzing Tennessee data.

Another variable is the teacher's experience within their current grade taught. Clotfelter et. al (2007) suggested experience within a grade level to be more significant than total years of teaching experience. Leak (2012) suggested experience within a specific grade can lead to specialized skills and training that could lead to an increase in student achievement.

As we can see from the above review, subject and grade level taught were significant variables when looking at the effect of teacher experience and student achievement. A study conducted by CALDER used data from North Carolina elementary schools in reading and math found teachers with two to three years of experience had higher achieving students than teachers with zero years of experience by .03 SD in reading and .06 in math. Additionally, Harris and Sass (2007) found years of experience is more significant at the elementary and middle school levels than at the high school level in the area of mathematics.

Studies Supporting Alternative Teacher Certification

Those who support alternative teacher certification programs argue these programs are a solution to the increasing teacher shortage areas (McKibbin, 2001; Ruckel, 2000; Shen, 1998). Some will argue it is a valuable tool to recruit minority teachers who are better suited to teach the minority youth of a nation. According to Peterson and Nadler (2009) as of 2004, 26.5 percent of our nation are Hispanic or African American, but only 14.1 percent of our nation's teachers are of that ethnicity. Reg Weaver, former National Education Association president, believed recruiting more

minority teacher to the teaching profession is essential to raising the achievement scores of minority students. Peterson and Nadler (2009) found with an increase in minority teachers test scores of minority students rise. The basis for their findings is on the concept of a genuine alternative certification versus an alternative certification program that mirrors that of a traditional teacher preparatory program. Peterson and Nadler believe only 21 states have a genuine alternative certification program and that these programs attract minority candidates as evident by their research. The 21 states with genuine alternative certification programs have considerably more minority teacher representation than the 30 without genuine alternative programs and according to Peterson and Nadler this has an impact on student achievement. The National Assessment of Educational Progress (2007) found the 21 states with genuine alternative certification programs outperformed the other states in math and reading. Accordingly, so did the African American minorities. Further supporting Shen's (1998) findings that alternative programs attract ethnically diverse candidates who are more likely to take jobs in high minority schools thus increasing achievement. These studies support the findings from Dee (2004) that minority students learn more from minority teachers of the same ethnicity.

Proponents also believe these programs improve teacher quality across the board (Sanders, 2003). Furthermore, New York City Teaching Fellows, an alternative based program, operates under the assumption that an individual's ability to be a quality teacher is something a person already has and their job is to find those who have it. According to Finn and Madigan (2001) traditional programs may cause quality teachers to never enter a classroom, but alternative certification programs will help open the door for those

deterred by traditional routes. This section will review the studies supporting alternative teacher certification and the data supporting these programs.

An organization known as Teach for America (TFA) recruits high achieving recent college graduates to teach in impoverished schools. These recent graduates obtain non-traditional teaching certifications through extra course work and sign on to teach for a period of two years. According to a study on math achievement by the U.S. Department of Education (2013), TFA teachers experienced higher achievement scores than teachers with traditional certifications. Another study conducted by the Institute of Education Sciences (n.d.) found evidence supporting Teach For America teachers. This study examined the effectiveness of teachers of three different certification pathways; Teach For America, Teaching Fellows, and traditional. The study found no significant difference in academic achievement between the three at the elementary school level. There was also no significant difference in high school mathematics achievement between the students taught by traditionally certified teachers and those taught by Teaching Fellows certified teachers. The study conducted by the Institute of Educational Sciences found that students taught by Teach for America teachers outperformed their counterparts by an equivalent of 2.2 months in the area of mathematics (Chiang, Clark, Constantine, and McConnell, 2013).

Mahatha (2005) surveyed 61 New Orleans Public Schools principals on their perception of alternatively certified teacher's effectiveness. The survey results indicated that principals perceived teachers with alternative certificates more effective than traditionally trained teachers in the area of human relation skills. A similar study conducted by Hutton, Lutz, and Williamson found alternatively certified teachers were

rated to perform as well as or superior to first year teachers with traditional certification (Hutton et al. 1990). This study also found alternatively certified teachers were rated above the standard in all of the Texas Teacher Appraisal Systems competency areas. These competency areas included: active, successful student participation in the learning process; learner- centered instruction; evaluation and feedback on student progress; management of student discipline, instructional strategies, time, and materials; professional communication; professional development; compliance with policies, operating procedures, and requirements; and improvement of all students' academic performance. A similar study conducted by Haberman (1999) looked at principal's perception of teacher's effectiveness. The study examined the perception of those completing the Milwaukee Metropolitan Teacher Education Program (MMTEP), an alternative certification program, and those with traditional certifications. The study found their perceived effectiveness as equal.

Miller, McKenna, and McKenna (1998) studied student achievement scores from 18 secondary classrooms, nine classrooms taught by teachers with alternative certification and the other nine by traditionally trained teachers. The study used the Iowa Test of Basic Skills to determine reading and math achievement. The study found there was no significant difference between the student's achievement levels. Furthermore, in 2009 the Institute of Educational Sciences studied 2,600 middle and secondary grade students at 63 schools spread across six states. The study compared the performance of students taught by teachers with traditional certification to those taught be teachers with alternative certifications. The study found that there is no significant difference in student

performance based on college entrance assessments (Constantine, Deke, Grider, Hallgren, Player, and Silva, 2009).

Laraway (2003) interviewed first year alternatively certified and traditionally certified teachers on effectiveness and performance evaluations. The efficacy and performance sub factors examined in this study included: instructional strategies, classroom management, and student engagement. This study found no significant difference in these sub factors between traditionally certified and alternatively certified first year teachers.

Studies Not Supporting Alternative Teacher Certification

The opponents of alternative teacher certification programs believe these programs undermine the professionalism of teachers and harm students learning (Sanders, 2003). Proponents of alternative programs claim participants in alternative programs were academically more competent. However, according to research by Zeichner and Schulte (2001) does not support the proponents claim. According to Sanders (2003) opponents of alternative programs believe the professional courses required by traditional programs allow teachers to gain the skills, knowledge, and experience in the profession that alternative programs do not provide. One such experience is the student teaching experience. Posner (1999) states many benefits gained from the student teaching experience including the following: experience in one-on-one, promotes emotional involvement, allows the teacher to monitor and increase student achievement, and to experience a complete real life teaching environment. Bell (1997) supports the beliefs of Posner and adds that student teaching is an essential first stage of teaching allowing the teacher to gain critical experiences including that of day-to-day

procedures and routines. Solomon, Worthy, Lee, and Carter (1990) found the daily procedures and routines to be one of the most difficult areas for new teachers. This section will review the studies not supporting alternative teacher certification.

There seems to be some consistency in the perception of alternative teacher certification programs producing teachers who demonstrate poor classroom management skills. Traditional teacher preparation programs teach classroom management skills and quality controls, such as multiple practicums, student teaching, and observations, are put in place to assure graduates have an understanding of classroom management. Hall (2008) stated alternative teacher programs cannot act as a resolution for education. Individuals cannot be handed a classroom, with little to no pedagogical experience, and be expected to teach a group of students. Whiting and Klotz (1999) noted concerns that alternative certification programs fill classrooms with warm bodies who are not adequately prepared.

Sene (2004) found there are few studies examining student achievement based on teacher certification type. However, several research studies and peer reviewed journals found a strong correlation between student achievement and the teachers' certification status and professional preparation (Miller, McKennam &McKenna, 1998; Goldbhaber & Brewer, 1998, 2000; Wilson, Floden, &Ferrini-Mundy, 2001, 2002). Monk (1994) found a teachers' educational coursework had a positive effect on student achievement. A study by Laczko-Kerr and Berliner (2003) confirmed Monk's findings. Laczko-Kerr and Berliner examined the two groups of teachers. One group of traditional trained teachers with at least 45 semester hours of coursework in education and one group of under-certified teachers, including those coming from alternative certification programs. This

study analyzed study achievement results across two academic years using the Stanford Nine as its testing instrument and found students whose teachers had at least 45 semester hours of educational coursework outperformed the under-certified group. This study further supported the similar findings of Hawk, Coble, and Swanson (1985).

A study conducted by Houston, Marshall, and McDavid (1993) examined the differences between traditional and alternatively certified teachers in 14 teacher efficacy areas. The study addressed teachers' perception of problem areas in their teaching. After the first two months of teaching, teachers with alternative certification perceived more difficulty in six of the fourteen areas. Those areas included: grading students, personal time, paper work, school administration, motivation, and managing teacher time (Houston, Marshall, and McDavid, 1993). This study is further supported by Ovando and Trube (2000) who interviewed 134 principals' perception of teacher efficacy. The results indicated most administrators believed teachers with alternative certification to have lower teaching capacity levels than traditionally trained teachers.

Guyton, Fox, and Sisk (1991) examined perceived teacher efficacy and performance of alternatively and traditionally prepared teachers. The study showed no significant difference between the two. Jelmberg (1996) conducted a study in New Hampshire where school principals rated traditionally and alternatively certified teachers. His study found 27 significant differences, 26 favoring traditionally certified teachers. Some of the notable differences found in the Jelmberg study included planning skills, instructional skills, and overall higher performance.

Shen (1997) stated teachers with alternative certification do not have the pedagogical knowledge to be an effective teacher. A study by Gursky (2001) surveyed

teachers with alternative certification in New York City. The survey results coincide with Shen's statement as they believed they were not adequately prepared to meet the students'' needs. However, a study by Hawk and Schmidt (1989) contradicts Shen and Gursky's finding.

As education in the United States continues to fall under scrutiny so will alternative certification programs. Reichardt (2008) study found some school districts would only hire alternatively certified teachers in emergency situations. This study also found a district in California that created their own alternative certification program to adequately train their teachers. A study conducted by Driscoll (2006) found that programs such as the site-based program in California did not have an objective quality assurance program in place or one that was as effective as traditional teacher education programs therefore making them less effective. Birkeland (2005) conducted a study to determine the balancing of quality controls, incentives for attracting candidates to alternative programs, and what programs do if enrollment is down. The study found when alternative certification programs do not have relationships with schools, the quality control suffers effecting the quality of the program's graduates.

A qualitative study conducted by Hall (2008) found that principals perceived traditionally trained teacher to be more effective than teachers with alternative certificates. However, the principals interviewed during this study showed no preference of traditional versus alternative certificated teachers during the hiring process. Principals in Southwest Texas preferred to hire traditionally certified teachers (Bowen, 2004). These principals also rated traditionally certified teachers significantly higher in multiple areas of teaching.

Mahatha (2005) surveyed 61 New Orleans Public Schools principals on their perception of alternatively certified teacher's effectiveness. The survey results indicated that principals perceived teachers with traditional certificates were more effective in a variety of teaching characteristics including: professionalism, instructional planning, content knowledge, and classroom management. Harry Wong (n.a.) believed classroom management is essential for student achievement. Wong believed an important factor in student achievement is the structure and organization of the learning environment. A study conducted by Haertel, Walberg, and Wong (1998), ranked 28 factors that effected student learning and achievement. The study was based off of 50 years of research and review of student learning and was a conclusion of 11,000 findings. The study concluded that classroom management was the number one factor in student learning. Another study by Shea (2006) indicated mentor teachers perceived traditionally trained teachers to be significantly better in the areas of content knowledge, professional growth, and general knowledge.

Harvey (2005) studied the differences between alternatively and traditionally certified teachers in the state of South Carolina. Pedagogical knowledge was studied by analyzing the South Carolina Praxis results. Traditionally certified teachers average was 174 and alternatively certified teachers average was 169. According to the study the mean score had a significant difference at the .05 level. The study further determined there was no performance difference between traditionally certified and alternatively certified teachers based on performance evaluations. Sharkey and Goldhaber (2001) analyzed student's science and math scores in a private school setting. They found no

significant difference between achievement scores by those taught by certified and non-certified teachers.

Goldhaber and Brewer (2000) conducted a quantitative study pulling data from the National Education Longitudinal Study (NELS). Their research showed the type of teacher certification played a role in student achievement in the area of math. Goldhaber and Brewer found teachers who hold a license to teach math have higher achieving students compared to teachers holding a private school license or no certification.

In 2002, Laczko-Kerr and Berliner studied the performance of students taught by certified and "undercertified" teachers. Laczko-Kerr and Berliner classified "undercertified" teachers as any teacher with a temporary, provisional, or emergency certification, and even included teachers endorsed through Teach for America. Their study found students taught by certified teachers achieved higher results than those taught by "undercertified" teachers. Students taught by certified teachers performed about 2 months ahead, based on grade level equivalency, in language arts, reading, and math.

Teacher Effectiveness and Teacher Preparation Programs

Over one hundred years of research has gone into studying the professional and personal characteristics that make an effective teacher (Kukla-Acevedo, 2008). Scholars are still not able to clearly define these characteristics (Kukla-Acevedo, 2008). However, teacher experience and content area preparation does have a positive impact on student achievement (Goldhaber & Brewer, 2007; Jespen, 2005; Rockoff, 2004; Clotfelter, Ladd & Vigdor, 2006; Krueger, 1999). In addition, Monk (1994) found teacher preparation to be a predictor of student performance. However, subject matter and grade level are variables that effect the prediction of student performance (Monk, 1994).

Correspondingly, Kukla-Acevedo (2008) believes a teachers' skill and knowledge level to be considerable factors when investigating teacher effectiveness.

Floden and Menikett (2005) believe college provides students with the opportunities to gain knowledge and help students gain experience with critical thinking. However, there is little evidence to support post-secondary institutions have a positive effect on cognitive skills (Pascarella and Terenzini, 1991). Kukla-Acevedo (2008) believes there is a vast difference in teacher preparatory programs and they are not created equal. The findings of Noell's (2006) study on the efficacy of teacher preparatory programs would concur. Teacher preparatory programs provide pre-service teachers with the knowledge, techniques, and pedagogy, and also allow them the opportunity to practice the delivery of their knowledge and critical thinking skills (Kukla-Acevedo, 2008).

The number of studies examining the impact of teacher colleges on K-12 student achievement is limited. The studies predominantly found insignificant relationships between student achievement and the quality of teacher training based on the teachers' preparatory program (Murnane and Phillips, 1981; Ehrenberg and Brewer, 1994; Clotfelter et al., 2006). On the contrary, Summers and Wolfe (1977) found teacher preparatory programs as a predictor of student achievement. Kukla-Acevedo (2008) found a variety of problems when examining this relationship including: time period difference; geographical location; and program methodology. Kukla-Acevedo believes it is quite possible for low ranking teacher preparatory programs to produce highly effective teachers and for high ranking programs to produce ineffective teachers.

The No Child Left Behind Act (NCLB), reauthorized in 2001, had many goals. One of which requiring all teacher, administrators, and paraprofessionals to be highly qualified (DESE, 2015). This emphasis is based on research findings that academic knowledge is essential for student engagement and achievement (Arizona Department of Education, 2015; Goldhaber & Brewer, 2007; Jespen, 2005; Rockoff, 2004; Clotfelter, Ladd & Vigdor, 2006; Krueger, 1999). As part of the requirements to be considered highly qualified, a teacher must pass a licensure test proving their knowledge of specific subject matter (NCATE, 2014). Goldhaber (2006) argues the licensure tests are not a sufficient way to measure a pre-service teacher's ability to be an effective practitioner. Council members of NCATE (2014) support Goldhaber's argument and add that basic pedagogical knowledge and an understanding of child development, as it applies to teaching, is vitally important (NCATE, 2014). In December of 2015, The Every Student Succeeds Act (ESSA) was signed reauthorizing the Elementary and Secondary Education Act (ESEA). The Every Student Succeeds Act removed the term Highly Qualified Teacher and the states have the authority to determine certification requirements (DESE, 2016).

In 2014 the National Council for Accreditation of Teacher Education (NCATE) published a summary of key findings on the topic of teacher effectiveness and preparation. The NCATE (2014) study produced five key findings.

1. The preparation of teachers increases a candidates knowledge and skills used in the classroom.
2. Teacher candidates that are well prepared are more likely to remain in the teaching profession.

3. Better prepared teachers produce higher achieving students.
4. Nations who are leaders in the industrial world are heavily invested in teacher preparation.
5. NCATE has a positive influence in teacher preparation.

The first finding of the study is supported by Darling-Hammond and Bransford's (2005) report *Preparing Teachers for a Changing World*. The report found there is basic knowledge base a teacher must have to be effective and there must be a sufficient amount of training in applying said knowledge. Furthermore, a strong knowledge base and pedagogical training increases student achievement (Darling-Hammond and Bransford, 2005). Additionally, Darling-Hammond and Bransford (2005) found content knowledge alone is not enough to prepare teachers and an understanding of different learning styles and disabilities is essential. In 2005, the American Educational Research Association Panel (AERA) investigated teacher preparatory programs to find the specific practices that may lead to an effective teacher candidate. Cochran-Smith and Zeichner (2005) led the study and found three key practices. First, when teacher preparatory programs have a collaborative relationship with K-12 school districts, student achievement scores rise. Second, time with K-12 students during a teacher candidate's early field experience and throughout their student teaching experience, is vital for producing an effective teacher candidate. Lastly, the successful completion of content specific licensure exams is a sign of effective teaching and an indicator of student achievement (Cochran-Smith and Zeichner, 2005).

The second finding of the 2014 NCATE study found that teacher candidates that are well prepared are more likely to remain in the teaching profession. This finding is

supported by Ingersoll's (2003) study on teacher attrition. Ingersoll (2003) found well prepared teachers are almost fifty percent more likely to stay in the teaching profession than those teacher who were ill prepared based on six key elements which include: training in selection and use of educational materials; training in child psychology and learning theories; observation of other teachers; feedback on their teaching; and practice teaching. These findings were further supported by Shen (2003) where it was found that teachers with no pedagogical training were three times more likely to quit the profession. Additionally, teachers who had appropriate certification and student teaching experience were more inclined to continue in the profession than those without certification and student teaching experience (Shen, 2003). Both Shen and Ingersoll's studies further support Boe, Bobbit, Cook, Whitener, and Weber's (1997) findings that fully certified teachers are more likely to stay in the profession.

The third finding of the NCATE 2014 study found better prepared teachers produce higher achieving students. A ten-year study by Goldhaber investigated the records of 24,000 teachers and over 700,000 students in grades 4-6. Goldhaber examined the effects of teacher education on student achievement and found teachers who attended an approved teacher preparatory college outperformed teachers from alternative programs based on student achievement results (Goldhaber, 2006). Similarly, Goe (2002) found emergency permits and underqualified teachers as key variables leading to low student achievement. Additionally, a 2006 study by Boyd, Grossman, Lankford, Loeb, and Wyckoff found teacher who were fully prepared by attending a traditional preparatory program, outperformed teachers underprepared through alternative methods. These findings support an early study by Monk (1994) which found student achievement

increases with content knowledge and preparation. Furthermore, Boyd et al. (2006) found the gap between student achievements narrowed as alternatively certified teachers gained experience. Boyd et al. (2006) found the reason for the narrowing in achievement was due to New York City requiring alternatively certified teachers to acquire a master's degree which enhances their professional knowledge and practices.

The fourth finding of the NCATE 2014 study found that nations who are leaders in the industrial world are heavily invested in teacher preparation. Stoel and Thant (2002) examined teacher preparation practices of nine of the leading industrialized nations and found all of the countries require undergraduate training in pedagogical and content knowledge as well as a form of student teaching experience. The report found a majority of the leading nations have far more rigorous standards than the United States (Stoel and Thant, 2002). France requires three years of discipline study along with an additional two years of content and pedagogical study. In Japan, a preservice teacher is required to participate in a year-long induction after all required course work along with extensive ongoing professional development. Furthermore, Germany requires two years of student teaching and the completion of a second licensure exam (Stoel and Thant, 2002). This report further supports Darling-Hammond's (2000) theory that teacher training and support is more of an emphasis in other countries than it is in the United States and for that reason, outperform students from the United states academically.

The fifth finding of the NCATE 2014 study found NCATE has a positive influence in teacher preparation. The National Council for Accreditation of Teacher Education establishes professional standards for teacher preparatory colleges with the goal of producing quality educators. In coordination with the Educational Testing

Service (ETS), Gitomer and Latham (1999) found teacher candidates who graduated from a NCATE accredited program have a higher passing rate content licensure exams than candidates who attended an unaccredited program. Darling-Hammond (2000) would go on to find states with a higher number of NCATE accredited programs have a higher percentage of competent teachers.

Summary

The emphasis on proficient and advanced scores, on state assessments, became the measuring stick for student achievement with the enactment of the No Child Left Behind Act of 2001 (NCLB). The Missouri School Improvement Program fifth version (MSIP 5) sets forth the accountability system for Missouri's public schools. Elementary education sets the foundation for student achievement therefore it is vital for elementary teachers to be competent. Wong (n.d.), also believed academic achievement is based solely on the effectiveness or ineffectiveness of the teacher. Wong would argue district variables, school variables, and program variables are not a factor in student achievement. Numerous studies have analyzed the relationship between teacher experience and student achievement and there were some consistencies in their findings. The positive effects of experience and student achievement were more significant in the early years of teaching (Betts et. al 2003; Boyd 2007; Clotfelter et al. 2007a; Ladd 2008; Rockoff 2004; and Sass 2007).

The route to traditional teacher certification is a rigorous process with a multitude of checks and balances outlined by the state department of education. Teacher preparatory colleges and teacher candidates alike, must meet the standards to obtain accreditation and certification. The number of teachers entering the field of education

with alternative certification is growing as are the number of alternative certification programs. Missouri has three primary ways to obtain an alternative certification: American Board for Certification of Teacher Excellence; Troops to Teachers; and through one of the twelve university offering alternative teacher certification to those already possessing a bachelor's degree.

Opponents of alternative certification programs will argue that student achievement declines when students are taught by teachers with alternative certification compared to those taught by traditionally trained teachers. Accordingly, challengers of alternative programs contest they attract inferior candidates that are more likely to succumb to attrition and leave the teaching profession during their first few years (Shen, 1997; Darling-Hammond, 2001).

Supporters of alternative certification programs believe these programs fill the teacher shortage, increase the pool of qualified teacher candidates, and increase the percentage of minority teachers (Lutz & Hutton, 1989; Miller, McKenna, & McKenna, 1998; Haberman, 1998, 1999, 2000). Additionally, supporters argue teacher with alternative certification perform and the same level as traditionally certified teachers (Goldhaber & Brewer, 2000).

Chapter 2 provided historical background, general information, and a review of studies and scholarly literature on the topic of teacher certification path and student achievement. The concept of alternative teacher certification began in the state of New Jersey in 1983, to attract qualified liberal arts graduates to become elementary and secondary teachers without attending a traditional campus based teacher certification program (Feistritzer and Haar, 2008). The National Center for Education Information

(2005) estimated the United States would need 2.2 million additional teachers within the next decade. The causes for teacher shortages are many including: increased student enrollment; increased diversity; teacher retirement; and the increase in the number of individuals with certification who choose not to teach (Feistritzer & Haar, 2008). In order to meet the increasing demand for qualified teachers, state licensing agencies have created many different alternative teacher certification programs. Those who support alternative teacher certification programs argue these programs are a solution to the increasing teacher shortage areas (McKibbin, 2001; Ruckel, 2000; Shen, 1998). However, the opponents of alternative teacher certification programs believe these programs undermine the professionalism of teachers and harm students learning (Sanders, 2003).

Since the inception of alternative certification, the studies on the effectiveness of such programs has produced mixed results. In 2009 the Institute of Educational Sciences studied 2,600 middle and secondary grade students at 63 schools spread across six states. The study compared the performance of students taught by teachers with traditional certification to those taught be teachers with alternative certifications. The study found that there is no significant difference in student performance based on college entrance assessments (Constantine, Deke, Grider, Hallgren, Player, and Silva, 2009). According to a study on math achievement by the U.S. Department of Education (2013), TFA teachers experienced higher achievement scores than teachers with traditional certifications. There are a number of studies contradicting these findings (Laczko-Kerr & Berliner, 2002; Goldhaber and Brewer, 2000; and Harvey, 2005).

The number of studies examining the relationships between alternatively certified teachers and student achievement at the elementary level were scarce. A majority of the studies conducted were based on perception data from surveys and not quantifiable student achievement data from state assessments. Seftor and Mayer (2003) believe studies examining the effectiveness of alternative certification have been inconclusive due to appropriate clarity of comparison group, the teacher's self-selection of the alternative program, and for multiple methodology reasons. Walsh (2001) believed the research in this area to be deficient. Wilson, Floden, and Ferrini-Mundi (2001) believe the number of alternative certification programs have too much variance making them difficult to validate or generalize.

Chapter 3 describes the methodology behind the study. It will consist of six sections including: research question; hypothesis; research design; instrumentation; data analysis; and human participants and ethics precautions.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

The purpose of this causal comparative study is to examine the impact teacher certification path has on student achievement and if years of experience plays a role in the state of Missouri. The researcher will seek to determine if academic achievement is impacted by teacher certification path. The researcher will also seek to determine the impact years of experience plays on student achievement. This quantitative study consisted of data analysis of MAP scaled scores for grades 3-6 in English language arts and mathematics. The data was disaggregated by grade level, subject, type of teacher certification (traditional or alternative), and teacher's years of experience.

Research Questions

1) Does teacher certification path (traditional and alternative) impact student achievement (ELA and Math MAP scaled scores in grades 3-6)?
2) Do years of teaching experience play a role in the achievement of students taught by alternatively certified teachers?

Hypothesis

In order to answer the aforementioned research questions the following null hypothesis were investigated:

HO1- Teacher certification path does not impact student achievement for 3^{rd}-6^{th} grade students on the MAP Math and ELA scaled scores.

H02- Years of teaching experience does not impact the achievement of students.

Research Design

The purpose of this casual comparative study is to examine the impact teacher certification path has on student achievement and if years of experience play a role in the state of Missouri. The researcher will seek to determine if academic achievement is impacted by teacher certification path. The researcher will also seek to determine the impact years of experience plays on student achievement.

Existing data was used by accessing Missouri Comprehensive Data System from the Missouri Department of Elementary and Secondary Education. The researcher worked in cooperation with a DESE official specializing in data requests. The data set included: all Missouri public school teachers who taught grades 3rd-6th who are considered to have alternative certification and all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014; and a random sample of Missouri public school teachers who taught grades 3rd-6th who have traditional certification and all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014. This study was limited to grades 3rd-6th because it is examining the impact alternative certification has on elementary student achievement. Although student achievement data is available for years 2015 and 2016, it will not be used for the study. For the purpose of reliability, the 2015 and 2016 data will not be used because the test used to determine student achievement is based on a different set of standards and had a different testing format. Quantitative analysis of MAP scaled scores for grades 3rd-6th was conducted by using a t-test to compare the mean scaled scores of teachers with alternative teacher certification against the mean of the random sample of traditional teachers in English Language Arts and Mathematics. Grades three and four were grouped together as were

grades five and six due to the small sample size of alternatively certified teachers. This increased the validity of the study by providing a larger sample and limiting the differences due to chance and random variables not accounted for. A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level(3^{rd}-6^{th}) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.

Population

The population for this study included all Missouri public school teachers who taught grades 3^{rd}-6^{th} and who are considered to have alternative certification for the years 2012, 2013, and 2014. This study also included a stratified random sampling of traditionally trained certified teachers matching the number of alternative teachers for corresponding grade levels and years. The stratified random sampling was provided by DESE through the MCDS Data Request portal. The Missouri Core Data system was used to gather all teacher certification information.

Instrumentation

Existing data was used from a secondary source, the Missouri Department of Elementary and Secondary Education. The Missouri Comprehensive Data System (MCDS) was used to retrieve MAP scaled scored data for the years 2012-2014 in English

Language Arts and Mathematics for grades 3-6. The Missouri Core Data system was used to gather all teacher certification information.

The Missouri Assessment Program (MAP) is designed by CTB McGraw-Hill and is one of the educational mandates brought down by the Outstanding Schools Act of 1993 (DESE, 2013). The reliability and validity of the MAP is addressed through rigorous assessment development procedures and in accordance with the standards set forth by the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME). The Missouri Department of Elementary and Secondary Education worked together with the test creators, CTB McGraw-Hill, content experts, and Missouri educators to design questions for the MAP. All questions were reviewed to insure validity (DESE, 2013). Questions and score patterns were analyzed to ensure validity. A study by the Center for Learning, Evaluation, and Assessment found the MAP is having an impact on instructional and grading practices (CTB McGraw-Hill, 1999).

To address the reliability of the MAP, one must look at the reliability of scaled scores and reliability of scores from open-ended items. The Department of Elementary and Secondary Education and CTB McGraw-Hill have put a strict protocol in place to ensure reliability (DESE, 2013). The reliability of scaled scores is represented and reported as a reliability coefficient ranging from 0 to 1. All coefficients and high scaled scores are reliable above the .90 coefficient (DESE, 2013). Test reliability was examined by using Cronbach's (1951) coefficient alpha and standard error of measurement (SEM) (DESE, 2015). Missouri student census data was used and reliability coefficients computed. For ELA, reliability coefficients ranged from 0.86 to 0.91 (DESE, 2015). For

mathematics, reliability coefficients ranged from 0.87 to 0.91 (DESE, 2015). Reliability of open-ended items are addressed through the percent of perfect agreement and percent of adjacent agreement. Open-ended items are scored by human readers. Perfect agreement occurs when multiple human readers assign the same score to the same student response. Perfect agreement on open-ended items range from 75% to 96% (DESE, 2013). When multiple human readers score the same student response within one point of each other, they were said to have adjacent agreement. Most open-ended items have an adjacent agreement above 95% (DESE, 2013).

Data Analysis

Quantitative analysis of MAP scaled scores for grades three through six was conducted comparing the mean scaled scores of teachers with alternative teacher certification against the mean of the random sample of traditionally certified teachers in English Language Arts and Mathematics using a *t*-test. According to Field (2005), *t*-tests attempt to determine whether the mean of one variable differs significantly from the mean of another. The null hypothesis for the comparison of mean scaled scores of teachers with alternative certification against the random sample mean was that no statistically significant impact between alternative teacher certification and student achievement existed. The researcher's alternative hypothesis was there will be no impact between alternative teacher certification and student achievement.

A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3^{rd}-6^{th}) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state

average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test. The null hypothesis was that experience does not have a statistically significant impact when comparing alternative certification and student achievement. To determine significance a value of .05 was used. The *post hoc* test used to evaluate the significant finds was Tukey's Honest Significance Test.

Human Participants and Ethics Precautions

This quantitative study was non-experimental in nature and used existing data. Because the research was done through Southwest Baptist University, and in accordance with their guidelines regarding the protection of human participants, approval to conduct this study was obtained from the Research Review Board. After receiving approval from the SBU Research Review Board the data about human subjects was collected from the Missouri Department of Education. Information that might lead the researcher to the identity of teachers was removed from the data before the data was given to the researcher. Due to the collection method, types of questions, and methodology of this study, there was no bias or possible conflicts of interest.

Summary

The purpose of this causal comparative study is to examine the impact teacher certification path has on student achievement and if years of experience play a role in the state of Missouri. The data was disaggregated by grade level, subject, type of certification (traditional or alternative), and teacher's years of experience. The researcher worked in cooperation with a DESE official specializing in data requests. The

data set included: all Missouri public school teachers who taught grades 3rd-6th who are considered to have alternative certification and all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014; and a stratified random sample of Missouri public school teachers who taught grades 3rd-6th who have traditional certification and all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014. Quantitative analysis of MAP scaled scores for grades 3rd-6th was conducted by using a t-test to compare the mean scaled scores of teachers with alternative teacher certification against the mean of the random sample of traditional teachers in English Language Arts and Mathematics. Grades three and four were grouped together as were grades five and six due to the small sample size of alternatively certified teachers. This increased the validity of the study by providing a larger sample and limiting the differences due to chance and random variables not accounted for. A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3rd-6th) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.

CHAPTER FOUR

ANALYSIS

The purpose of this causal comparative study was to examine the impact teacher certification path has on student achievement and if years of experience plays a role. This study looked at MAP Scaled Score data of traditionally and alternatively certified teachers for the 2012, 2013, and 2014 school years. This study also examined the role years of experience plays in alternatively certified teachers.

Quantitative analysis of MAP scaled scores for grades 3^{rd}-6^{th} was conducted by using a t-test to compare the mean scaled scores of students taught by teachers with alternative teacher certification against the mean scaled scores of the random sample of traditional teachers in English Language Arts and Mathematics. Grades three and four were grouped together as were grades five and six due to the small sample size of alternatively certified teachers. A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3^{rd}-6^{th}) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.

Analysis of Data

The researcher investigated the MAP scaled score data of traditionally and alternatively certified teachers for the 2012, 2013, and 2014 school years to see whether there was a statistically significant difference between the academic achievements of

students in classrooms taught by traditionally and alternatively certified teachers. The researcher also investigated whether or not years of experience played a role in student achievement by analyzing each alternatively certified teacher's mean scaled scores and were comparing the scores to the state average, to find a difference level, in English Language Arts and Mathematics. Statistical analysis was done in order to answer two research questions.

Research Question 1: Does teacher certification path (traditional and alternative) impact student achievement (ELA and Math MAP scaled scores in grades 3-6)? *Null Hypothesis:* H_1 Teacher certification path does not impact student achievement for 3^{rd}-6^{th} grade students on the MAP Math and ELA scaled scores.

A two-sample t-test was used to determine if there is a statistically significant difference between the ELA MAP scale scores of students taught by traditionally certified (TC) teachers and the scores of students taught by alternatively certified teachers (AC). Scores from the years 2012, 2013, and 2014 were used. The scores from grades three and four were combined into one group. The results showed a significance level of .000. This is less than the alpha level of .05, indicating there was a significant difference in the ELA MAP scales scores of students taught by traditionally certified teachers and students taught by alternatively certified teachers. The mean for AC teachers was 623.336 and the mean for TC teachers was 645.684. The mean values indicated that TC teachers have higher achieving students in ELA for grades three and four.

A two-sample t-test was used to determine if there is a statistically significant difference between the ELA MAP scale scores of students taught by TC teachers and the scores of students taught by AC teachers. Scores from the years 2012, 2013, and 2014

were used. The scores from grades five and six were combined into one group. The results showed a significance level of .000. This is less than the alpha level of .05, indicating there was a significant difference in the ELA MAP scales scores of students taught by TC teachers and students taught by AC teachers. The mean for AC teachers was 651.583 and the mean for TC teachers was 674.961. The mean values indicated that TC teachers have higher achieving students in ELA for grades five and six.

A two-sample t-test was used to determine if there is a statistically significant difference between the math MAP scale scores of students taught by TC teachers and the scores of students taught by AC teachers. Scores from the years 2012, 2013, and 2014 were used. The scores from grades three and four were combined into one group. The results showed a significance level of .000. This is less than the alpha level of .05, indicating there was a significant difference in the math MAP scales scores of students taught by TC teachers and students taught by AC teachers. The mean for AC teachers was 612.808 and the mean for TC teachers was 638.466. The mean values indicated that TC teachers have higher achieving students in math for grades three and four.

A two-sample t-test was used to determine if there is a statistically significant difference between the math MAP scale scores of students taught by TC teachers and the scores of students taught by AC teachers. Scores from the years 2012, 2013, and 2014 were used. The scores from grades five and six were combined into one group. The results showed a significance level of .000. This is less than the alpha level of .05, indicating there was a significant difference in the math MAP scales scores of students taught by TC teachers and students taught by AC teachers. The mean for AC teachers

was 651.454 and the mean for TC teachers was 678.751. The mean values indicated that TC teachers have higher achieving students in math for grades five and six.

The results from all four t-tests showed a significant difference at the .000 level. In all cases, this is less than the alpha level of .05. In all cases, the mean scale scores of students taught by TC teachers was significantly higher than the mean scale scores of students taught by AC teachers. Based on the significance level of $p < .000$ less than the alpha level of .05, the null hypothesis is rejected. Thus, teacher certification path does impact student achievement for 3^{rd}-6^{th} grade students.

Research Question 2: Do years of teaching experience play a role in the achievement of students taught by alternatively certified teachers? *Null Hypotheses:* H_2 Years of teaching experience does not impact the achievement of students.

A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3^{rd}-6^{th}) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.; see Table 1.

Table 1

ANOVA for Years of Experience and Difference in Scale Score for ELA

	Sum of Squares	Df	Mean Square	F	p value
Between Groups	4280.992	2	2140.496	7.664	.001
Within Groups	35191.842	126	279.300		
Total	39472.833	126			

* = $p < .05$

Table 1 shows the findings of an ANOVA on years of experience and its impact on student achievement. The results show a significant difference between two groups with a p value =.001. A Tukey's HSD post-hoc test was conducted to examine the differences between the groups. The post-hoc test found a statistical significance of p=.001 between two of the three groups. There is a statistically significant difference between the mean difference in scaled scores of students taught by AC teachers with one year experience and students taught by AC teachers with two years' experience. Alternatively certified teachers with two years' experience had a mean difference of 15.56 higher than AC teachers with one year experience with a standard error of 4.29. There is also a statistically significant difference between the mean difference in scaled scores of students taught by AC teachers with one year experience and students taught by AC teachers with three years' experience. Alternatively certified teachers with three years' experience had a mean difference of 15.66 higher than AC teachers with one year experience with a standard error of 4.31. There was no statistically significant difference in the student achievement between those taught by AC teachers with two and three years' experience.

A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3^{rd}-6^{th}) during the 2012, 2013, and 2014 school years, to determine if experience had an impact on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.; see Table 2.

Table 2

ANOVA for Years of Experience and Difference in Scale Score for Math

	Sum of Squares	Df	Mean Square	F	p value
Between Groups	4289.960	2	2144.980	5.517	.005
Within Groups	53855.046	136	395.993		
Total	58145.006	136			

* = $p < .05$

Table 2 shows the findings of an ANOVA on years of experience and its impact on student achievement. The results show a significant difference between two groups with a p value =.005. A Tukey's HSD post-hoc test was conducted to examine the differences between the groups. The post-hoc test found a statistical significance of p=.004 between one of the three groups. There is a statistically significant difference in the mean difference in scaled scores of students taught by AC teachers with one year experience and students taught by AC teachers with three years' experience. Teachers with three years' experience had a mean difference of 16.88 higher than teachers with one year experience with a standard error of 5.13. There was no statistically significant difference in the student achievement between those taught by AC teachers with one and

two years' experience nor was there a significant difference between teachers with two and three years' experience.

In the area of ELA, statistically significant difference ($p = .001$) was found between teachers with one year experience and teachers with two years' experience. A statistical significance ($p = .001$) was found between teachers with one year experience and teachers with three years' experience. In the area of math, statistical significance ($p = .004$) was found between teachers with one year experience and teachers with three years' experience. Because the significance levels ($\sigma = .001$ and $\sigma = .004$) is less than the alpha level ($\alpha < .05$), the null hypothesis is rejected. Therefore, teacher experience does impact student achievement for teachers with alternative certification. Teachers with alternative certification and one year of experience had significantly lower achievement scores in ELA than their alternatively certified counterparts with two and three years' experience. Teachers with alternative certification and one year of experience had significantly lower achievement scores in math than their counterparts with three years' experience.

Summary

A two-sample t-test was used to determine if there was a statistically significant difference between MAP scale scores of TC teachers and the scores of AC teachers. There is a statistically significant difference between TC teachers and AC teachers in ELA and math. Traditionally certified teachers had higher achieving students in both content areas and in both grade spans of this study. An ANOVA and Tukey's HSD post-hoc test was conducted to determine if years' of teaching experience at the same grade level had an impact on student achievement. In ELA, AC teachers with one year

experience had significantly lower achievement scores than AC teachers with two and three years' experience. In math, AC teacher with one year experience had significantly lower achievement scores than AC teaches with three years' experience. Chapter Five will consist of a summary of methods, summary of findings, implications of research, and recommendations.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The number of alternative teacher certification programs continues to rise as do the teaching candidates with alternative certificates. The research on the effects of alternative teacher certification regarding student achievement has produced mixed results. This quantitative study consisted of data analysis of MAP scaled scores for grades 3-6 in English language arts and mathematics and examined the impact certification path has on student achievement scores in the state of Missouri. This dissertation also examined the impact years of teaching experience has on student achievement scores for students taught by alternatively certified teachers.

The number of studies examining the relationships between alternatively certified teachers and student achievement at the elementary level were scarce. A majority of the studies conducted were based on perception data from surveys and not quantifiable student achievement data from state assessments. Seftor and Mayer (2003) believe studies examining the effectiveness of alternative certification have been inconclusive due to lack of clarity of comparison group, the teacher's self-selection of the alternative program, and multiple methodology reasons. Walsh (2001) believed the research in this area to be deficient. Wilson, Floden, and Ferrini-Mundi (2001) believe alternative certification programs have too much variance making them difficult to validate or generalize.

Opponents of alternative certification programs will argue that student achievement declines when students are taught by teachers with alternative certification compared to those taught by traditionally trained teachers. Challengers of alternative

programs contest they attract inferior candidates that are more likely to succumb to attrition and leave the teaching profession during their first few years (Shen, 1997; Darling-Hammond, 2001).

On the other hand, supporters of alternative certification programs believe these programs fill the teacher shortage, increase the pool of qualified teacher candidates, and increase the percentage of minority teachers (Lutz & Hutton, 1989; Miller, McKenna, & McKenna, 1998; Haberman, 1998, 1999, 2000). Additionally, supporters argue teachers with alternative certification perform at the same level as traditionally certified teachers (Goldhaber & Brewer, 2000).

This researcher has seen an increase in the number of teacher candidates with alternative certification applying for elementary teaching positions. In this researcher's experience, teacher candidates with alternative certification generally interview well, but their lack of classroom experience before employment is a concern. The pedagogical and classroom management skills emphasized in traditional programs, along with the many hours of student contact, is a key factor in a teacher's effectiveness.

The United States is at a critical point in regard to education. Public schools should be hiring the most highly qualified teachers. All teacher education programs, alternative or traditional, should be producing qualified teacher candidates. It is important to look at the data and examine the effectiveness of teachers who graduate from these programs. This study provided data that could be used to improve teacher certification programs and give school districts information to assist in the hiring process.

Research Questions

1. Does teacher certification path (traditional and alternative) impact student achievement (ELA and Math MAP scaled scores in grades 3-6)?
2. Do years of teaching experience play a role in the achievement of students taught by alternatively certified teachers?

Summary of Methods

The researcher worked in cooperation with a DESE official specializing in data requests. The data set included all Missouri public school teachers who taught grades 3rd-6th who are considered to have alternative certification, all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014, and a stratified random sample of Missouri public school teachers who taught grades 3rd-6th who have traditional certification and all corresponding MAP scaled scores in math and ELA for the years 2012, 2013, and 2014. Quantitative analysis of MAP scaled scores for grades 3rd-6th was conducted by using a two-way t-test to compare the mean scaled scores of students taught by teachers with alternative teacher certification against the mean of the random sample of students taught by traditional teachers in English Language Arts and Mathematics. Grades three and four were grouped together as were grades five and six due to the small sample size of alternatively certified teachers. This increased the validity of the study by providing a larger sample and limiting the differences due to chance and random variables not accounted for.

A three year longitudinal analysis was conducted for teachers with alternative certifications who have taught one, two, or three years in the same grade level (3rd-6th) during the 2012, 2013, and 2014 school years, to determine if experience had an impact

on student achievement. Each teacher's mean scaled scores were compared to the state average, to find a difference level, in English Language Arts and Mathematics. The mean difference level of teachers with one, two, and three years' experience were compared by using an analysis of variance (ANOVA) test.

Summary of Findings

Research Question 1: Does teacher certification path (traditional and alternative) impact student achievement (ELA and Math MAP scaled scores in grades 3-6)? Teacher certification path does have a significant impact on student achievement. Students taught by teachers with alternative certification have significantly lower achievement scores in ELA and math when compared to students taught by teachers with traditional certification.

Research Question 2: Do years of teaching experience play a role in the achievement of students taught by alternatively certified teachers? Years of experience do play a role in the achievement of students taught by alternatively certified teachers. In ELA, students taught by AC teachers with one year experience have significantly lower achievement scores than AC teachers with two and three years' experience. In math, students taught by AC teachers with one year experience have significantly lower achievement scores than students taught by AC teachers with three years' experience.

Implications of Research

Previous studies on teacher certification and student achievement has produced mixed results. There have been many studies focusing on the perception of AC teachers, but few focused on raw student achievement data at the elementary grades. Many of these studies tend to support or prefer traditionally certified teachers over alternatively certified

teachers (Shen, 1997; Gurksy, 2001; Hall, 2008; Bowen, 2004). This study adds to the body of research on the effects of teacher certification and the findings help validate past survey results with quantifiable data. The quantitative studies that have focused on student achievement data and are primarily centered on secondary education have produced mixed results. However, researchers (Miller, McKennam &McKenna, 1998; Goldbhaber & Brewer, 1998, 2000; and Wilson, Floden, &Ferrini-Mundy, 2001, 2002) found a strong correlation between student achievement and the teachers' certification status and professional preparation. This study supports these findings and adds quantifiable data at the elementary grades.

The National Center for Analysis of Longitudinal Data in Education Research (CALDER) suggested teachers' years of experience impact student achievement most during the first few years of teaching. Studies by Boyd (2007) and Kelcker (2002) have produced similar results on teacher experience and student achievement. The research suggested new teachers were less effective than more experienced teachers. This study supports previous findings and found the same to be true with alternatively certified teachers in ELA and math. In both subject areas, student achievement was higher when the teacher had more years of experience.

This study is one of the first quantitative studies centered around alternative certification and its effect on student achievement data at the elementary grade levels. The results of this study provides valuable data for teacher preparation programs and school districts as they prepare, recruit, and hire the most effective teachers possible.

Recommendations

The following recommendations will add to the current body of research examining teacher certification path and student achievement. This study focused on grades 3-6 and the state of Missouri. It would be favorable to expand the study to grades K-2, 7-12, and to expand the geographical area. It would also be advantageous to study the demographics of the class and district to include enrollment, gender ratio, disabilities, race/ethnicity, and free and reduced lunch percentage. This study focused on quantifiable student achievement data. It would be beneficial to gain the students' perceptions of teachers with alternative certification. It would also be beneficial to study the characteristics and demographics of the AC teachers including race, gender, age, original degree, and previous profession. This study looked at years of teaching experience and its role in student achievement. It would be beneficial to conduct a three to five year study on the impact an alternatively certified teachers years of teaching experience has on student achievement compared to that of traditionally trained teachers. Lastly, this study revolved around Lee Shulman's concept of pedagogical content knowledge. Shullman (1986) believed teachers needed to have both content and pedagogical knowledge to be a successful. It would be beneficial to study the alternative programs course requirements, rigor, content, and applicable AC teachers' test scores, relating to content and pedagogical knowledge, to determine if there is a correlation between those variables and student achievement.

The effects of teacher certification path on student achievement is a relatively new topic in the field of education. As the number of alternative certification programs rise so do the number of alternatively certified teachers. More research is needed on this topic as

teacher preparation programs and school districts prepare, recruit, and hire the most effective teachers possible.

Conclusion

The concept of alternative teacher certification began in 1982 in an attempt to recruit much needed liberal arts teachers. As teacher shortage areas continued to rise so did the number of alternative programs. Traditional certification programs are guided by strict standards to ensure a highly qualified candidate. Alternative programs are generally less strict in nature and are attractive options for individuals holding an undergraduate degree in a field outside of education. Supporters of alternative certification programs believe these programs fill the teacher shortage, increase the pool of qualified teacher candidates, and increase the percentage of minority teachers (Lutz & Hutton, 1989; Miller, McKenna, & McKenna, 1998; Haberman, 1998, 1999, 2000). Additionally, supporters argue teachers with alternative certification perform at the same level as traditionally certified teachers (Goldhaber & Brewer, 2000). Opponents of alternative certification programs will argue that student achievement is lower when students are taught by teachers with alternative certification compared to students taught by traditionally trained teachers. Challengers of alternative programs contest they attract inferior candidates that are more likely to succumb to attrition and leave the teaching profession during their first few years (Shen, 1997; Darling-Hammond, 2001). In this researcher's opinion, alternative certification programs are a great way to increase the pool of certified teachers, but the rigor of these programs is not the same as traditional certification programs. Teachers with alternative certification most likely do not have the hours of practicum and face-to-face time with students that traditionally certified teachers

have had. The time with students has many benefits, most importantly; it allows teachers to gain an understanding of their classroom management style and time to practice their pedagogical knowledge and skills.

The number of quantitative studies are minimal and even scarcer when looking at elementary grade levels. The studies to date have produced mixed results. The data from this study found significantly higher achievement levels in elementary students taught by traditionally certified teachers compared to students taught by alternatively certified teachers. The data from this study also support alternative teachers years' of experience has a positive influence in their students' achievement scores. Based on the findings of this study, students of traditionally certified teachers in Missouri, teaching grades 3-6, have higher achievement scores than students taught by alternatively certified teachers. Future research could help traditional and alternative certification programs produce higher quality and more effective teachers.

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Appendix A

APPROVED PROGRAMS IN THE STATE OF MISSOURI (DESE, 2014)

Agriculture Education

College of the Ozarks
Missouri State University
Northwest Missouri State University
University of Central Missouri
University of Missouri – Columbia

Art

Avila University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Lincoln University
Lindenwood University
Maryville University
Missouri Southern State University
Missouri State University
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Park University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri-Columbia
University of Missouri-Kansas City
University of Missouri- St. Louis
Washington University
Webster University
William Jewell College
William Woods University

Business Education

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Evangel University
Hannibal LaGrange College
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Northwest Missouri State University
Rockhurst University
Southeast Missouri State University
University of Central Missouri
Westminster College

Dance

Lindenwood University

Driver Education

Missouri Baptist University
Missouri State University
Northwest Missouri State University
University of Central Missouri

Early Childhood Education

Central Methodist University
College of the Ozarks
Culver-Stockton
Missouri Western State University
Northwest Missouri State University
College Park University

Evangel University
Fontbonne University
Hannibal-LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri Valley College
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Stephens College
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Webster University
Westminster College
William Woods University

Elementary Education

Avila University
Baptist Bible College
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Stephens College
Truman State University
University of Central Missouri
University of Missouri-Columbia
University of Missouri-Kansas City
University of Missouri-St. Louis
University of Phoenix
Washington University
Webster University
Westminster College
William Jewell College
William Woods University

English

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis

Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
Missouri Valley College
University of Phoenix
Washington University
Webster University
Westminster College
William Jewell College
William Woods University

English for Speakers of Other Languages

Avila University
Missouri Southern State University
Missouri State University
Missouri Western State University
Northwest Missouri State University
Park University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
Webster University

Family and Consumer Sciences

College of the Ozarks
Fontbonne University
Missouri State University
Northwest Missouri State University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia

Foreign Language - French

Central Methodist University
College of the Ozarks
Drury University
Evangel University
Lindenwood University
Missouri Southern State University
Missouri State University
Missouri Western State University
Northwest Missouri State University
Rockhurst University
Southeast Missouri State University
Saint Louis University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University
William Jewell College

Foreign Language: German

Drury University
Missouri Southern State University
Missouri State University
Missouri Western State University
Saint Louis University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University

Foreign Language: Japanese

Washington University

Foreign Language: Latin

Missouri State University
University of Missouri – Columbia

Washington University

Foreign Language: Russian
Washington University

Foreign Language: Spanish
Central Methodist University
College of the Ozarks
Drury University
Evangel University
Lindenwood University
Missouri Southern State University
Missouri State University
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri- Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University
William Jewell College

Health
Central Methodist University
College of the Ozarks
Culver-Stockton University
Evangel University
Lindenwood University
Missouri Baptist University
Missouri State University
Missouri Valley College
Northwest Missouri State University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – St Louis

Industrial Technology
Lindenwood University
Missouri Southern State University
Missouri State University
Southeast Missouri State University
University of Central Missouri

Journalism
Drury University
Missouri State University
Missouri Western State University
Webster University
Park University
University of Central Missouri
University of Missouri – Columbia

Library Media Specialist
Lindenwood University
Missouri Baptist University
Missouri State University
University of Central Missouri
University of Missouri – Columbia

Marketing
Lindenwood University

Mathematics

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
University of Phoenix
Washington University
Webster University
Westminster College
William Jewell College

Middle School: Agriculture Education

College of the Ozarks
Missouri State University
Northwest Missouri State University

Middle School: Business Education

Avila University
College of the Ozarks
Evangel University
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Northwest Missouri State University
University of Central Missouri
University of Missouri – Columbia

Middle School: Industrial Technology

College of the Ozarks
Lindenwood University
Missouri Southern State University
Missouri State University
University of Central Missouri

Middle School: Language Arts

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Missouri Valley College
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia

Hannibal LaGrange College
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University
Westminster College
William Jewell College
William Woods University

Middle School: Mathematics

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange University
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
William Woods University
Missouri University of Science and Technology
Missouri Valley College
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
University of Central Missouri
University of Missouri - Columbia
University of Missouri – Kansas City
of Missouri – St. Louis
Washington University
Webster University
Westminster College
William Jewell College

Middle School: Science

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange State College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science and Technology
Missouri Valley College
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St Louis
Washington University
Webster University
Westminster College
William Jewell College
William Woods University

Middle School: Social Science

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
Missouri Valle College
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University
Westminster College
William Jewell College
William Woods University

Middle School: Speech and Theatre

Avila University
Fontbonne University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Northwest Missouri State University
University of Central Missouri

Music: Instrumental

Baptist Bible College
Central Methodist University
College of the Ozarks
Culver-Stockton College
Drury University
Cont. Instrumental Music
Evangel University
Hannibal LaGrange College
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri Western State University
Northwest Missouri State University
Southeast Missouri State University
Southwest Baptist University
Truman State University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Webster University
William Jewell College

Music - Vocal

Avila University
Baptist Bible College
Central Methodist University
College of the Ozarks
Missouri State University
Missouri Western State University
Northwest Missouri State University
Southeast Missouri State University

Culver-Stockton College
Drury University
Evangel University
Hannibal-LaGrange College
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Webster University
William Jewell College

Physical Education

Central Methodist University
College of the Ozarks
Culver-Stockton College
Drury University
Evangel University
Hannibal LaGrange College
Lincoln University
Lindenwood University
(dropped)
Missouri Baptist University
Missouri Southern State University
Missouri State University
William Woods University
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Kansas City
University of Missouri – St. Louis
Westminster College
William Jewell College

Science: Biology

Avila University
College of the Ozarks
Columbia College
Drury University
Evangel University
Hannibal LaGrange College
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Cont.
Northwest Missouri State University
Rockhurst University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
University of Phoenix
Washington University

Cont. Science: Biology

Missouri State University
Missouri University of Science and Technology
William Woods University
Westminster College
William Jewell College

Science: Chemistry

College of the Ozarks
Columbia College
Drury University
Evangel University
Rockhurst University
Southwest Baptist University
Truman State University
University of Central Missouri

Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri University of Science & Technology
Northwest Missouri State University
Rockhurst University
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
University of Phoenix
Washington University
Westminster College
William Jewell University

Science: Earth Science

Missouri State University
Northwest Missouri State University
University of Central Missouri
Washington University
University of Missouri – Columbia
University of Missouri – Kansas City
University of Phoenix

Science: General Science

Columbia College
Missouri Baptist University
Southwest Baptist University
Truman State University
University of Phoenix
Westminster College

Science: Physics

Drury University
Maryville University
Missouri Southern State University
Missouri State University
Northwest Missouri State University
Rockhurst University
Southeast Missouri State University
William Jewell College
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Westminster College

Social Science

Avila University
Central Methodist University
College of the Ozarks
Columbia College
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Hannibal LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Saint Louis University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
University of Phoenix
Washington University
University Webster University

Missouri State University
Missouri University of Science and Technology
Missouri Valley College
Westminster College
William Jewell College
William Woods University

Special Education: Blind and Partially Sighted
Missouri State University

Special Education: Deaf and Hearing Impaired
Fontbonne University
Missouri State University
Washington University

Special Education: Early Childhood Special Education
Fontbonne University
Hannibal LaGrange College
Lindenwood University
Missouri Baptist University
Missouri State University
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Saint Louis University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – St. Louis
Webster University

Special Education – Mild/Moderate: Cross-Categorical Disabilities
Avila University
Central Methodist University
Columbia College Northwest
Culver-Stockton College
Drury University
Evangel University
Fontbonne University
Harris-Stowe State University
Missouri Valley College
Missouri Western State University
Missouri State University
Park University
Saint Louis University
Southeast Missouri State University
Truman State University
University of Central Missouri

Cont.

Cont. -Special Ed. – Mild/Moderate: Cross-Categorical Disabilities
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Missouri State University
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Webster University
William Woods University

Special Education: Severely Developmentally Disabled
Missouri State University
University of Central Missouri
Webster University

Speech and Theatre
Avila University
Central Methodist University
College of the Ozarks
Culver-Stockton College
Missouri State University
Missouri Valley College
Missouri Western State University
Northwest Missouri State University

Drury University
Evangel University
Fontbonne University
Lindenwood University
Missouri Baptist University
Missouri Southern State University
Southeast Missouri State University
Southwest Baptist University
University of Central Missouri
University of Missouri – St. Louis
William Jewell College
William Woods University

Unified Science: Biology

Central Methodist University
College of the Ozarks
Culver-Stockton College
Drury University
Evangel University
Hannibal-LaGrange College
Harris-Stowe State University
Lincoln University
Lindenwood University
Maryville University
Missouri Southern State University
Missouri State University
Missouri Valley College
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Washington University
Webster University

Unified Science: Chemistry

Central Methodist University
College of the Ozarks
Drury University
Evangel University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri Southern State University
Missouri State University
Missouri Western State University
Northwest Missouri State University
Park University
Rockhurst University
Southeast Missouri State University
Southwest Baptist University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St Louis
Washington University

Unified Science: Earth Science

Missouri State University
Northwest Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
Washington University

Unified Science: Physics

Central Methodist University
Drury University
Lincoln University
Maryville University
Missouri Southern State University
Northwest Missouri State University
Southeast Missouri State University
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis

Rockhurst University
Washington University

Career Education Director
University of Central Missouri
William Woods University

Counselor
Evangel University
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri State University
Northwest Missouri State University
Saint Louis University
Southeast Missouri State University
Stephens College
Truman State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis

Counselor – (Non-Teaching Background)
Evangel University
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri State University
Northwest Missouri State University
Saint Louis University
Southeast Missouri State University
Stephens College
Truman State University
University of Central Missouri
University of Missouri - Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis

School Psychological Examiner
Lincoln University
Lindenwood University
Missouri Baptist University
Missouri State University
Southeast Missouri State University
University of Central Missouri

Gifted
Columbia College
Drury University
Lindenwood University
Maryville University
Truman State University
University of Central Missouri
University of Missouri – Columbia
Webster University

Special Reading
Avila University
Columbia College
Drury University
Evangel University
Fontbonne University
Harris-Stowe State University
Lindenwood University
Maryville University
Missouri Baptist
Missouri State University
Missouri Western State University
Northwest Missouri State University
Park University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
University Webster University

Principal

Evangel University
Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri State University
Northwest Missouri State University
Park University
Saint Louis University
Southeast Missouri State University
Southwest Missouri State University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
Webster University
William Woods University

Special Education Director

Lincoln University
Lindenwood University
Missouri Baptist University
Saint Louis University
William Woods University
Southeast Missouri State University
University of Central Missouri
University of Missouri – Kansas City
Webster University

Superintendent

Lincoln University
Lindenwood University
Maryville University
Missouri Baptist University
Missouri State University
Northwest Missouri State University
Saint Louis University
Webster University
Southeast Missouri State University
Southwest Baptist University
University of Central Missouri
University of Missouri – Columbia
University of Missouri – Kansas City
University of Missouri – St. Louis
William Woods University

Appendix B

<table>
<tr><th colspan="4">Developmental Levels for Initial Field & Clinical Experiences</th></tr>
<tr><td rowspan="2">Levels and Definitions</td><td>Early Level</td><td>Mid-Level</td><td>Culminating Level</td></tr>
<tr><td>Observations & Limited Experiences with Students</td><td>Observations & Structured Experiences with Students</td><td>Student Teaching in Collaboration with Cooperating Teacher</td></tr>
<tr><td>Length</td><td>30 Clock Hours</td><td>45 Clock Hours</td><td>Minimum of 12 Weeks</td></tr>
<tr><td rowspan="5">Cooperating Teachers</td><td colspan="3">Minimum of 3 Years of PK-12 Teaching Experience</td></tr>
<tr><td colspan="3">Minimum Degree Requirement</td></tr>
<tr><td colspan="2">Bachelors Degree</td><td>Masters Degree</td></tr>
<tr><td colspan="3">Processes & Requirements</td></tr>
<tr><td colspan="3">State Approved Certification in the Content Area & Grade Range</td></tr>
<tr><td rowspan="11">Field & Clinical Supervisors</td><td colspan="3">Minimum Years of Experience</td></tr>
<tr><td>Minimum of 3 Years of Experience in PK-12 Schools and/or Educator Preparation</td><td colspan="2">Minimum of 5 Years of Experience In PK-12 Schools and/or Educator Preparation</td></tr>
<tr><td colspan="3">Minimum Degree Requirement</td></tr>
<tr><td>Masters Degree</td><td>Masters Degree +</td><td>Masters Degree +</td></tr>
<tr><td>General Practitioner</td><td colspan="2">PK-12 Knowledge & Expertise
Students, Content, and/or Pedagogy</td></tr>
<tr><td colspan="2">2-3 Years Experience in PK-12 Schools and/or Educator Preparation</td><td>3 to 5 Years of Experience in PK-12 Schools and/or Educator Preparation</td></tr>
<tr><td colspan="3">Ability to Interact, Mentor, Communicate with Students and On-Site Supervisors</td></tr>
<tr><td colspan="3">Number of Contacts & Observations</td></tr>
<tr><td colspan="2"></td><td>Weekly Contact with Student Teachers and Cooperating Teachers</td></tr>
<tr><td colspan="2"></td><td>One Observation Every Two or Three Weeks</td></tr>
</table>

Appendix C

<table>
<tr><th colspan="3">Site Requirements for Field & Clinical Experiences by Developmental Levels</th></tr>
<tr><th colspan="3">Initial Certification</th></tr>
<tr><th>Early Level</th><th>Mid-Level</th><th>Culminating Level</th></tr>
<tr><td>Initial Participation</td><td colspan="2">Involvement of the Candidate determined by MOU</td></tr>
<tr><td colspan="2">School principal has knowledge of the candidates and the educators who will be hosting the candidates.</td><td>District or School Principal Identifies Educators eligible to host student teachers according to the definitions on the department website</td></tr>
<tr><th colspan="3">Advanced Certification</th></tr>
<tr><th colspan="2">Entry Level</th><th>Culminating Level</th></tr>
<tr><td colspan="3">Involvement of the Intern Determined by MOU</td></tr>
<tr><td colspan="2">School principal has knowledge of the interns and the on-site supervisors who will be hosting the interns.</td><td>District or School Principal Identifies Educators eligible to host interns according to the definitions found on the department website.</td></tr>
</table>

Appendix D

<table>
<tr><th colspan="3">Educator Preparation Programs
Should Establish Transition Points</th><th>Exit Requirements</th></tr>
<tr><td colspan="4">Grade Point Averages – Cumulative, Content, & Professional Education</td></tr>
<tr><td colspan="3">Suggested 2.0 Cumulative
2.50 Content
2.50 Education</td><td>Suggested 2.50
Cumulative
2.75 Content
2.75 Education</td><td>Exit Requirements
2.75 Cumulative
3.00 Content
3.00 Education
(Candidates who do not meet these requirements may demonstrate competency via other measures approved by the board.)</td></tr>
<tr><td colspan="2"></td><td></td><td>No Professional Education Grades < C</td></tr>
<tr><td colspan="3"></td><td>Impact on Student Achievement</td></tr>
<tr><td colspan="3">Pass the Entry Level General Knowledge & Skills Assessment</td><td></td></tr>
<tr><td colspan="2"></td><td></td><td>Content Knowledge</td></tr>
<tr><td colspan="2"></td><td></td><td>Performance Based Assessments – Coursework and Field & Clinical Experiences Aligned with the Missouri Educator Evaluation System</td></tr>
<tr><td colspan="4">Requirements and Transition Points for Advanced Levels of Certification</td></tr>
<tr><td colspan="2">Entry Level</td><td colspan="2">Culminating Level</td></tr>
<tr><td colspan="2">Professional Competency Profile(s) from Previous Experience in Education Includes Impact on Student Achievement</td><td colspan="2">Professional Competency Profile for the New Area of Certification Includes Potential Impact on Student Achievement</td></tr>
<tr><td colspan="2">As defined by the department website or on Missouri Educator Evaluation System or the employing school district Educator Evaluation System</td><td colspan="2">Performance Based Assessments – Coursework and Field & Clinical Experiences Aligned with the Missouri Educator
Evaluation System</td></tr>
</table>

Appendix E

Categories	Governance	Process	Resources
Authority	Organizational Chart	Minutes & Artifacts Collected	Adequate Financing
Data Management	Policies and personnel in place to support and enforce data collection, analysis, and implementation of recommendations from data analysis	Student Demographics and Data • General Knowledge • Exit – Content • Grade Point Averages • Gender, Race, Etc. • Field/Clinical Experiences Faculty Data	Data management program, technology, and personnel to efficiently and effectively manage data
PK-12 Partnerships	Roles and responsibility of PK-12 partners in governance of unit to improve outcomes	On-going relationship with practicing PK-12 teachers	Adequate and on-going support (time and money) for faculty
		Mileage and number of required clinical supervision	Support for time & money for cooperating teachers and supervisors
			Adequate personnel and fiscal resources to support field/clinical experiences
Faculty Within the Entire Program	Evidence of collaboration between/among the entire program, the educator preparation program, and the individual certification program.		
Faculty Within the Educator Preparation Program and the Individual Certification Programs	Representation on committees that allocate budget, facilities	Systematic program evaluation to drive continuous improvement and personnel decisions	Allocation for full-time faculty versus part-time/adjunct to maintain quality of program
		Taking unit problems to the committees that allocate budget and resources	Resources for manageable class sizes, support staff
			Sufficient resources for technology, instructional materials, research, professional activities, offices
Facilities/Technology	Tools for Teaching, Learning, and Effective Communications		
Instructional	Funding Streams Necessary to Support On/Off Campus Environments for Teaching		

Appendix F

MoSPE Performance Standards	
Program Standards	**Assessments**
1) Academics	Entry Level Assessment of General Knowledge
	Grade Point Averages – Middle, Secondary, and K-12 Content Areas
	End of Program Assessment of Content Knowledge
	Standards Based Assessment from Coursework and/or Experiences
3) Field and Clinical Experiences	*Missouri Educator Evaluation System Including an Emphasis on a Specific Unit of Instruction that Explores in Depth the Candidate's Performance and Potential Impact on PK-12 Student Learning*
4) Candidates to Practitioners	Connections to Student Growth
	Missouri Model Evaluation System
	Beginning Teachers and School Leaders Surveys
	Retention in Education as a Profession at Years 1-3-5-10
6) Operations and Resources	Annual Title II Report – Outcomes in Meeting Goals and Addressing Shortage Areas by Content and/or Regionally
MoSPE Process and Resource Standards	
Program Standards	**Documentation**
1) Academics	Completion of General Studies Coursework and/or Competencies
	Meeting Certification Requirements
	Candidates Completion of the Professional Competency Profile
2) Design and Assessment	Conceptual Framework & Curriculum Design
	Matrices for Common Core State Standards, Content Specific Competencies, Professional Education, Assessment Plan, Syllabi
3) Field and Clinical Experiences	Alignment with Statewide Framework for MOUs and Master Copy of the MOUs with PK-12 Schools
	Evaluation & Feedback for Continuous Improvement – Cooperating Teachers, School Leaders, School Sites, and University Supervisors
4) Candidates to Practitioners	Research Based Admissions Processes
	Title II Report Goals and Objectives
	Educator Preparation Program Plans to Recruit and Retain Candidates
	Evidence of Individualized Support for Candidates
5) Faculty	Faculty Resume
	Evidence of Performance Evaluation
	Systematic Use of Data for Instruction and Decision Making
	Listing of Faculty Involvement on Campus and in PK-12 Schools
	Use of Technology as a Learning Tool
	Communication Ratings on Assessment and/or Evaluations
6) Operations and Resources	Organization and Flow Chart
	Listing of Leadership and Committee Structures
	Indication of Technology Resources
	Instructional Support Materials and Supplies