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A Statistical Comparison of First Time Praxis II Pass Rates between
Homegrown 4 year Students and Transfer Students
of a Medium Size Suburban University:
A Six Year Study

by

Jason Edward Holmes, Jr.

April 16, 2011

A Dissertation submitted to the Education Faculty of Lindenwood University
in partial fulfillment of the requirements for the
degree of

Doctor of Education

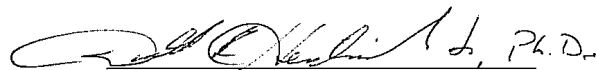
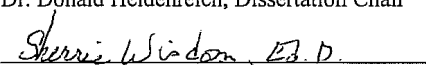
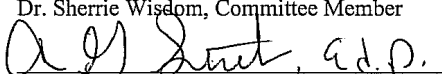
School of Education

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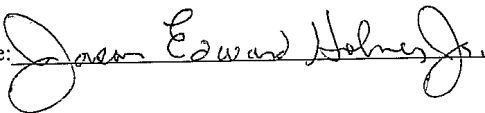
This dissertation has been approved as partial fulfillment of the requirements for the
degree of
Doctor of Education
at Lindenwood University by the School of Education

 Dr. Donald Heidenreich, Dissertation Chair	<u>5-6-11</u> Date
 Dr. Sherrie Wisdom, Committee Member	<u>5-6-2011</u> Date
 Dr. A.G. Streb, Committee Member	<u>5-6-2011</u> Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Jason Edward Holmes, Jr.

Signature:  Date: May 6, 2011

Acknowledgements

The success of this dissertation rests in the guidance and support rendered from my handpicked committee of professional educators. Dr. Don Heidenreich kept a special time for my questions and concerns on a weekly basis. He treated me with respect throughout the process, coaching and advising to stay on track and on schedule. His observations provided insight and perspective to handle problems. My favorite moment occurred when he observed that I had reached the point where I knew that the light at the end of the tunnel was definitely not an oncoming locomotive.

Dr. Sherrie Wisdom guided me first, as a caring and committed teacher of Statistics. During her class, I knew that I would receive similar guidance if she would consent to serve as my co-chair. Dr. Wisdom's passion for numbers kindled my desire to know and comprehend the procedures to provide best evidence available for this dissertation.

Dr. A.G. (Rocky) Streb also read, listened, and guided my processing. His insight kept me on track and his belief in me brought inspiration.

My mother instigated my return to school, when she asked, "What else are you going to do with your life?"

My sons and their families inspire me with questions, hugs, and the always treasured request, "Papa, will you read this to me?"

The failures are mine alone.

Abstract

In order to meet the federal mandate specified by the No Child Left Behind Act to demonstrate content competency for teaching certification, students must pass a written examination. Missouri and 37 other states chose the Praxis II to satisfy requirements. Presently, schools of education advertise the passing rate of the Praxis II as 100%, since students can take the Praxis II until they pass. This study examined only the first time Praxis II pass rates for undergraduate students in a medium sized university over a six year period. The quantitative, predictive non-experimental research study statistically analyzed first time Praxis II scores from blinded student records acquired from the Comprehensive Academic Management Systems (CAMS) to look specifically at Praxis II test data from 2005 until 2010. Students utilize various pathways as they persist toward college graduation. Some students remain in a four year institution and graduate with a bachelor's degree through a traditional route. Other students transfer at least once, either from two year institutions or from other four year institutions. This study isolated the first time that undergraduate students took the Praxis II and compared the passing rates for two groups, homegrown, students whose transcripts showed that they had taken freshmen orientation, and transfer. No distinction was made between students who transferred from two year or four year institutions, although the researcher recommends this distinction for future studies. The study disaggregated first time test takers by the reported Praxis II test code. Random samples from elementary education certification, secondary core certification, K-12 certification, and early childhood certification were drawn for analysis. Only Physical Education and Elementary Education provided large enough groups to disaggregate data by both year and group. Z tests checked for a

difference in means at the 95% confidence level. To check for year to year differences, a single factor ANOVA was applied. Chi Square tests for independence using proportions and means were calculated. No statistically significant difference between undergraduate homegrown students and transfer students, as measured by first time Praxis II passing rate, was found for any group except Physical Education.

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Increase Non-Experimental Research at Lindenwood University. Dr. Don Heidenreich, Dean of Institutional Research, and I conferred about the kind of research represented by this dissertation. Sharing the article, “It’s (Beyond) Time to Drop the Terms Causal-Comparative and Correlational Research in Education” (Johnson, 2000), reaffirmed the position that Johnson made concerning non-experimental study. The	

better way to classify this study is as Non-experimental Research which is longitudinal and predictive. Though this type of research can be predictive, this study was not intended to be so. Johnson and Dr. Heidenreich support the need for education schools to adopt the study terminology used by other disciplines when referring to this type of research..... 122

Study First Time Pass Rates for C-BASE and Compare to Praxis II First Time Pass Rates. Passage of the C-BASE test is required by the State of Missouri for entry into a School of Education. Knowledge of the first time passing rate for C-BASE would provide students and faculty with similar information for making educational decisions to this study. Because passing the C-BASE is required in Missouri by the end of the sophomore year, a study comparing the first time passing rates of homegrown and transfer students on C-BASE offers an opportunity to examine for significant differences in homegrown students and transfer students at the beginning of the School of Education experience. The scores for C-BASE are available. Using similar methodology to that described in Chapter Three would establish a similar baseline for the C-BASE. Knowledge of the C-BASE first time passing rates of homegrown and transfer students would be helpful for LU to consider in predicting which undergraduate students will be more likely to become successful teacher candidates. 123

Study the First Time Praxis II Pass Rates for MAT Students. The Lindenwood University School of Education includes a graduate pathway to teacher certification. Students who already possessed an undergraduate degree can achieve teacher certification by completing the Master of Arts in Teaching (MAT) program. In Fall,

2010, approximately 400 graduate students were enrolled in the Lindenwood University MAT program. Graduates students too, are required to pass the Praxis II before student teaching. Knowledge concerning the first time passing rate Praxis II for MAT students would benefit the university in similar ways that this study benefits the undergraduate instructors and administration. A comparison of MAT first time passing rates would offer a valuable study. 124

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Chapter One: Praxis II First Time Pass Rates

Background of the Study

The Praxis II, designed, produced, administered and scored by Educational Testing Service (ETS) is the test chosen by 38 states, including Missouri, to meet the requirement established under NCLB to become a “highly qualified” teacher. The Praxis II tests subject matter knowledge and competency in 158 different certification areas (ETS, 2011b). At Lindenwood University (LU), students must pass the Praxis II before entering student teaching. For the state of Missouri, a teacher with a provisional teaching certificate must pass the Praxis II before the end of the second year of teaching in order to obtain or retain certification (DESE, 2009).

To measure the Praxis II first time pass rate for an institution, the number of students who take the test for the first time and the number who pass on the first attempt must be identified. The Praxis II test code is a four digit number that identifies which test has been taken by a teacher candidate. For example, the test code 0011 signifies elementary education teacher. The passing score is established by the state. For example, in Missouri, the passing score for test code 0011, elementary education teacher, is 164 out of 200 possible points (ETS, 2011a).

The Praxis II pass rate refers to the number of students who take the Praxis II and pass the test. Students may take the Praxis II as many times as necessary until they pass the test. There are no penalties, nor time frames restricting when the test may be re-taken. Theoretically, the pass rate for an institution could be 100%. In reality, some students find the expense of taking test multiple times as cost prohibitive, yet the state of

Missouri requires passing the Praxis for eventual certification. No published data reports pass rates other than 100% from an institution.

NCLB specified that, “every room shall be staffed by a highly qualified teacher” and defined the term, highly qualified teachers. A highly qualified teacher must demonstrate subject level mastery. To demonstrate competency and subject level mastery, teachers show, “...passage of a state-developed test.” (DOE, 2004, para. 16) States could either develop their own test or choose a test to meet the requirements. In Missouri, this is the Praxis II test (DESE, 2010a). Definition of the term, “highly qualified teacher,” incorporated the passing of an exit examination to be determined by the State Education Department upon completion of the teacher certification program. At LU, prospective teachers must pass the Praxis II earlier than required by Missouri law. While Missouri law allows a graduate to teach until the end of the second year before passing the Praxis II, the LU School of Education requires that students pass the Praxis II prior to consideration for placement of the student teaching experience (Bice, Blackburn, & Johnson, 2008, pp. 2, 9).

A high first time Praxis II passing rate offered a valid, formative yardstick for the University to benchmark and measure student achievement in the future. This study is important to the University because it offers the members of the faculty and the administration the opportunity to examine an important part of the process of teacher certification in ways that can offer standards for comparison. It also offers a formative measurement in order to assess if students meet the criteria of a highly qualified teacher at a particular point in their development.

As the reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA), the No Child Left Behind Act of 2001 (NCLB) specified that all students in the United States would achieve the level of proficient by 2014. Among the goals that NCLB mandated included, placement of a highly qualified teacher in every classroom. Placement of a highly qualified teacher in every classroom responded to the criticism that many students matriculated in classrooms where the teacher either did not possess a teaching certificate or the teacher was in charge of a classroom for which she did not hold certification. To insure that states stayed on target to achieve the 2014 goal, the law specified various steps that public schools must meet on an annual basis, Adequate Yearly Progress (AYP) (DESE, 2010b).

Most of the classrooms not led by “highly qualified teachers” were located in poor performing schools. Often the poor performing schools were part of financially struggling districts. While Missouri made excellent progress on a state wide basis in achieving the goal of placing a highly qualified teacher in every classroom, the hard to staff schools remained those most likely to be staffed by teachers who have not achieved certification (DESE, 2010b). By aiming to place a highly qualified teacher in every classroom, the lawmakers acknowledged that teachers make a difference in student achievement.

Research showing the effect that high quality teachers make on student achievement drove enthusiasm to put a qualified teacher in every classroom.

The future of our American democracy depends upon recognition of the necessity of developing in the United States a system of public education

(1) which will remove illiteracy;

(2) which will provide for the Americanization of every foreigner who would continue to live among us;

(3) which will include a programme of physical education and health service, providing for every boy and girl until sixteen years of age, and on part time, in daylight hours, on the employer's time, for those who work between sixteen and eighteen years of age (The Week, 1919, p. 422).

Mr. George Strayer, President of the National Education Association, (NEA) offered this analysis, regarding the state of public education in the United States at the General Assembly meeting of the Association in July 1919 (The Week, 1919, p. 422). Strayer's analysis read remarkably similar to goals expressed in the No Child Left Behind Act (NCLB) legislated by the United States Congress in 2002.

Following World War I, the United States emerged with a different status in world power. The President proposed a League of Nations but was unable to marshal support for the United States to join. The Great War transformed men who had never traveled more than a few miles from their birthplace to experience new problems, new technologies, new strategies, and different cultures. The returning soldiers realized that education for children and youth would need to be significantly higher than the eighth grade level which most of the population experienced prior to the war (The American Legion, 2010). However, a portion of the population neither recognized nor accepted the new role of world leader and world power. It would require victory in another great war before the United States accepted the role.

The 1919 NEA call for developing a system of public education expanded with succeeding generations (The Week, 1919). My reflection upon the changes taking place

in education from 1919 to 2002 recognized that more children were included in the public schools. Children who had not been allowed to attend public schools were compelled to attend, and schools were required to meet their specific needs. Higher standards were designed for all children to achieve. Classroom teachers were expected to plan for success for all children.

Beginning in the 1970s, transfer students made up more than 40 per cent of the undergraduate degree students. Four decades later, the numbers exceed that percentage by another 23 per cent (Borden, 2004). More than half of the undergraduate degree completers showed transcript records from more than one degree granting institution (Adelman 2006; Borden, 2004). At Lindenwood, a similar ratio for the number of transfer students to homegrown students hold true. A variety of reasons were offered to explain the growth in number of undergraduate transfer students. Reasons for transferring from one higher education institution to another included: economics, socioeconomic class, dissatisfaction with the original institution, and academic progress.

Other transfer students come to LU from various 4 year institutions of higher learning. The literature refers to transfers from one 4 year institution to another, as lateral transfers. Students who transferred to LU used both the junior college transfer route and the lateral transfer route. This study examined the potential differences in transfer students' preparation for Praxis II exams when compared to homegrown students' preparation through measuring performance on first attempt. For example, at LU, the undergraduate education enrollment measured by the number of students who took the Praxis II for the first time from 2005 to 2009, showed an increase of more than 200%.

The rapid growth of the undergraduate teacher education program contributed greatly to the overall growth of the university.

At the time of writing this dissertation, the only recorded passing rates for the Praxis II were for overall passing rates. Virtually all teacher certification schools reported 100% passing rates. However, these reports were not measures of the passing rates the first time that teacher education students completed the test. I could find no schools that published the first time passing rates for Praxis II. In this study, LU is not measured on the overall passing rate. I seek to determine the LU first time passing rates for Praxis II undergraduates, both homegrown and transfer, over a six year period.

The Praxis II examination is important because of its connection to the definition of the highly qualified teacher. More recently, Race To The Top (RT3) reached beyond the scope of the highly qualified teacher, defined and targeted in NCLB, by introducing a new terminology. Instead of the highly qualified teacher from NCLB, RT3 identified recognized and targeted development of the “highly effective teacher”. RT3 identified a highly effective teacher, as a teacher whose students grew more than expected during the one academic year in which that teacher served the tested students. RT3’s creators chose the terminology; “*grew more than expected,*” (DOE, 2009, p. 9) in order to account for normal maturation and growth during the time the teacher and students were together. Identification, production, and development of highly effective teachers offered the best hope towards meeting the goals specified in NCLB. Presently, RT3 does not include Missouri; though the state applied to be a part of the program, the Missouri application was not accepted during the first round (DOE, 2010a). However, Missouri did apply for

the second round of RT3. A study to determine first time Praxis II pass rate success provides important information for the school during such changing times.

ESEA and NCLB tied federal funding to reduction and elimination of the documented achievement gap between children from poverty and the middle class, between selected racial groups and subgroups. Under NCLB, Congress mandated elimination of the Achievement gap as the primary goal for educators in public schools. Disaggregated data from such subgroups established accountability measurements to evaluate school effectiveness. NCLB set the deadline to eliminate the achievement gap by 2014. Failure to eliminate the achievement gap, measured by Adequate Yearly Progress, (AYP) resulted in severe penalties to public schools (DOE, 2004).

Because NCLB recognized that teachers represented the largest variable in student achievement which a school district could control, lawmakers were eager to claim that every classroom was led by a highly qualified teacher (Hattie, 2003). Implementing the compromise of NCLB included problems and opportunities. Getting opposing parties to agree on the definition of highly qualified teacher seemed easy. The agreed upon definition for highly qualified teacher turned out to represent a minimum standard.

Finding and developing “high quality teachers,” offer more problems for both sides of the opposing viewpoints. One side believes that teacher education is unnecessary. In fact, that side believes that teacher education is a barrier to placing excellent teachers in the classroom (Hanushek, Kain, O’Brien, & Rivkin, 2005). The other side believes that excellent teachers must be developed. That side believes the first step in developing excellent teachers occurs in excellent teacher preparation schools (Darling-Hammond, Holtzman, Gatlin, & Vasquez, 2005).

NCLB accelerated change in the nation's public schools. In addition, NCLB focused on improving the preparation of new teachers. The three pronged definition for highly qualified teacher, which includes the minimum of a Bachelor's Degree, state certification, and passing performance on Praxis II, provided emphasis for teacher certification institutions.

Purpose of Study

The Praxis II represented one aspect of the three pronged definition of highly qualified teacher presented in the No Child Left Behind Act of 2002. The purpose of comparing the first time passing rate of the Praxis II test takers at Lindenwood is to gather and analyze in-depth information by disaggregating the students. Disaggregation of data between the students who studied at Lindenwood for four years and those students who attended for less than four years provided an opportunity to focus on student achievement. In turn, that focus will provide faculty and administration with information to improve delivery of service to education students.

Accurate, valid, and reliable information regarding undergraduate teacher education programs offers value to the administration and faculty of teacher preparation institutions. Teacher education programs strive to produce highly effective teachers for the nation's classrooms. Knowledge regarding which students are admitted to teacher education programs offers accurate and reliable information on how to maximize delivery of program content.

Homegrown students. For this study, the term homegrown student referred to the students often referred to as "traditional students." The homegrown student is one who entered the university as a freshman, then took classes continuously until graduation. In

this study, identification of homegrown students was determined by whether or not the student took the course, LU101, or the Lindenwood freshmen experience. It was possible for a homegrown student to enter LU with up to 24 semester hours. For some homegrown students, these hours came from Advanced Placement coursework completed through high school.

Homegrown students were those who attended LU for the four year course of study. Homegrown students completed one education practicum (EDU 110) prior to admission into the LU School of Education. EDU 110 was designed to offer the prospective teacher a taste of classroom teaching. Non-traditional students may or may not have experienced a similar formative course on which to assess their aptitude for a successful teacher education. Other institutions may not offer an introductory course such as EDU 110, or the student may have changed the major area of study when transferring between institutions. At the time of writing this dissertation, admission into the LU School of Education followed successful completion of the sophomore year. To enter the School of Education, LU students must have maintained a minimum GPA of 2.5, completed a majority of general education courses, and passed the Missouri Department of Elementary and Secondary Education (DESE) administered College Basic Academic Subjects Examination (CBASE). The institution where the student was enrolled for teacher preparation is a major variable, along with student performance on the Praxis II, considered in this study.

In order to receive teaching credentials in the state of Missouri, a teacher candidate must pass the Praxis II (DESE, 2009). In order for Lindenwood teacher education graduates to “look more like second year graduates, Lindenwood requires that

students pass the Praxis II earlier than the state requirements, prior to beginning the student teaching experience.

Students who passed the Praxis II on their first attempt held advantages over those who did not. Having passed the Praxis II on the first attempt, before the student teaching experience, candidates concentrated solely on the student teaching experience compared to candidates from other schools.

Some entities within the LU School of Education feel that students attending all four years at the same university would benefit from consistent delivery of content which leads to successful passage of Praxis II examination. By determining whether or not a difference between homegrown and transfer students exists, LU can pursue effective means of measuring progress. In addition, LU School of Education improves its service delivery to teacher candidates.

Statement of Problem

The essential problem is for the Lindenwood University School of Education to graduate highly effective teachers. Passing the Praxis II represents one vital step in that process. To produce highly effective teachers, LU must assure that undergraduate education majors receive adequate preparation to pass the Praxis II exam on the first attempt. In 2010, the School of Education targeted production of highly effective teacher candidates, identifying LU education graduates who were first year teachers who looked, sounded, and acted like second year teachers. Such graduates enhance the perception of value from the market, schools, and districts who hire LU teacher education graduates. That change in perception sparks confidence for administrators when scheduling interviews and establishment of priority hiring, even during difficult markets. Building

strong perceptions of highly effective teachers offers a clear benefit for the LU School of Education. First time passing of the Praxis II benefits the students and the University because LU guarantees passage of the test and benefits the student by avoiding a delay in entering the career of teaching. This study questions whether homegrown students are better prepared than transfer students. At LU, students who do not pass the test can audit courses they need to cover and re-learn on the test.

Research Hypothesis

The hypothesis is, “There is a difference in academic performance between homegrown students and transfer students at LU as measured by the first time Praxis II pass rates.”

The null hypothesis is, “There is not a difference in academic performance between homegrown students and transfer students as measured by the first time Praxis II pass rates.

Definition of Terms

Definitions for highly qualified teachers and highly effective teachers marked a big difference. The definition of a highly effective teacher used by the United States Department of Education is founded upon the results that his or her students achieved when their State approved standardized assessments were returned and examined. Highly effective teachers were defined as those teachers whose students grew, on average, more than one year during a school year (DESE, 2009; Sanders & Rivers, 1996). At the time of writing this dissertation, highly effective teachers were the only known quantifiable variable under the control of a school board to indicate movement to close and eliminate

the achievement gap. Other variables under the control of a school included the climate of the classroom, regulation of temperature, or the books selected for the curriculum.

Other terms required precise updated definitions for the sake of improving clarity. For example, I chose to use the term, homegrown students, rather than traditional students. Others use the term “Native” in the literature to define the same group referred to here as homegrown. The term, “Native students”, provides some possibility of confusion with such other groups of students as Native American students (Li, 2010).

Achievement Gap. The achievement gap “in education refers to the disparity in academic performance between groups of students” (Achievement Gap, 2004, para. 1). When the achievement gap was recognized, the ESEA was written with the stated intention of elimination of the achievement gap. NCLB, as reauthorization of ESEA, recognized that the gap had not been eliminated but had widened in many cases. NCLB increased the accountability for school institutions and personnel to eliminate the achievement gap. To address the problem of achievement gap emphasis was given to developing highly qualified teachers. A part of the accountability of the highly qualified characteristic was the passing of the Praxis II exam in the content area.

Comprehensive Academic Management Systems (CAMS). CAMS identifies the data management system used by LU to keep track of vital student information.

Department of Elementary and Secondary Education (DESE). In Missouri, DESE serves as the State organization charged with assessment of delivery of public education. DESE reported to the governor, and ultimately, to the citizens of the state. To make reports that meet the criteria established under NCLB, DESE created and administered the Missouri Assessment Program (MAP). Results from the MAP formed

the basis for the report of AYP required under NCLB to report the progress each year by state, district and school to insure that all children will be successful on standardized tests by 2014.

DIKW Model. Data-Information-Knowledge-Wisdom is a model for systems thinking. DIKW serves as the model for this longitudinal quantitative study. The DIKW model outlines processing that begins with collection of Data. The data is processed by reducing into essential Information. Further processing organizes the information into patterns to produce Knowledge. Synthesizing understanding of the data, the information and the knowledge of patterns requires Wisdom (Bellinger, Castro, & Mills, 2004).

Educational Testing Service (ETS). An independent, non-profit founded in 1947 when American Council on Education, the Carnegie Foundation for the Advancement of Teaching and the College Entrance Examination Board contributed assets and employees to form one organization. ETS developed, administered, and scored the Praxis II (ETS, 2011c).

Highly effective teacher. The term highly effective teacher is based on the Tennessee Department of Education “value added model” (VAM) of assessment. To determine if a teacher met the criteria to be called effective, the students under the teacher’s care must show growth as measured by at least two standardized tests. The first test is administered before the teacher worked with the students. The second test is administered at the end of the teacher’s instruction, typically one year. Student growth was compared to expected growths from similar populations of students. To be called, highly effective, the teacher’s students must score more than expected growth (Sanders &

Horn, 1994). The term, highly effective, teacher was employed in the legislation entitled, Race to the Top (RT³).

Highly qualified teacher. NCLB called for a highly qualified teacher in every classroom by school year 2005-2006. The Missouri legislature wrote a three part definition.

1. Obtained full State certification as a teacher or passed the State teacher licensing examination and holds a license to teach in the State, and does not have certification or licensure requirements waived on an emergency, temporary, or provisional basis;
2. Holds a minimum of a bachelor's degree; and
3. Demonstrated subject-matter competency in each of the academic subjects in which the teacher teaches, in a manner determined by the State and in compliance with Section 9101 (23) of ESEA. The Educational Testing Services website maintains a current listing of states and territories that participate in examination through use of the Praxis II (ETS, 2011b).

Homegrown student. For this study, homegrown student referred to the students often referred to as, "traditional students". The homegrown student is one who entered the university as a freshman, then took classes continuously until graduation. In this study, identification of homegrown students was determined by whether or not the student took the course, LU101, or the LU freshmen experience.

No Child Left Behind Act (NCLB). NCLB was the law passed to reauthorize the Elementary and Secondary Education Act of 1965 (ESEA Title I), ESEA provided "federal funds to help low income students". NCLB greatly expanded Title I by offering

more funding. NCLB mandated greater controls on school districts, school administrators and teachers. NCLB imposed the goal that 100% of America's high school graduates would meet standards of proficiency by 2014. The terms identifying student achievement in NCLB were borrowed from National Assessment of Educational Progress (NAEP), the producer of the Nation's Report Card. NAEP identified four levels of student achievement, (Below Basic, Basic, Proficient and Advanced). For NAEP, Basic was considered a passing score. For example, earning Basic in fourth grade reading, students demonstrated ability "to locate relevant information, make simple inferences, and use their understanding of text to identify details that support a given interpretation or conclusion" (DOE, 2009a, para 4). However, when the politicians signed on for NCLB, they made a score of Basic, a failing score and opted for a passing score identified as Proficient. To achieve Proficient, the fourth grade students must "be able to integrate and interpret texts and apply their understanding of the text to draw conclusions and make evaluations" (DOE, 2009a, para 5). Schools evaluated as not making Adequate Yearly Progress (AYP) towards achievement of the goal of 100% proficient for all students were subject to withholding of federal funds. As a result of accountability regulations put in place through NCLB, schools were subject to reorganization up to and including the firing or replacement of school and district administrators, or the schools could be closed (DOE, 2004).

Praxis II. The Praxis II is the test chosen by most states, (including Missouri) to meet the requirement established under NCLB to become a highly qualified teacher. The Praxis II is designed, produced, administered and scored by ETS. The Praxis II tests subject matter knowledge and competency in 158 different certification areas (ETS,

2011b). At LU, students must pass the Praxis II before entering student teaching. For the State of Missouri, a teacher must pass the Praxis II before the end of the second year of teaching.

Praxis II First time pass rate. To measure the Praxis II first time pass rate requires access to institutional records. The percentage of students who take the test for the first time and the number who pass on the first attempt must be known. The passing score is established by the state. For example, in Missouri, the passing score for test code 0011, elementary education teacher, is 164 out of 200 possible points.

Praxis II Pass rate. The Praxis II pass rate refers to the number of students who take the Praxis II and pass the test, no matter how many previous attempts were made. Students may take the Praxis II until they pass the test. There are no penalties, nor time frames restricting when the test may be re-taken.

Praxis II Test Code. The Praxis II test code is a four digit number that identifies which test has been taken by a teacher candidate. For example, the test code 0011 signifies elementary education teacher.

Race To The Top (RT3). In 2009, The American Recovery and Reinvestment Act (ARRA) laid the foundation for education reform by supporting investments in innovative strategies judged most likely to lead to improved results for students, long-term gains in school building and school system capacity, and increased productivity and effectiveness. The ARRA provided \$4.35 billion for the RT3 Fund, a competitive grant program designed to encourage and reward States that were; creating the conditions for education innovation and reform, achieving significant improvement in student outcomes, including making substantial gains in student achievement, closing

achievement gaps, improving high school graduation rates, and ensuring student preparation for success in college and careers; and implementing ambitious plans in four core education reform areas:

1. Adopting standards and assessments that prepare students to succeed in college and the workplace and to compete in the global economy;
2. Building data systems that measure student growth and success, and inform teachers and principals about how they can improve instruction;
3. Recruiting, developing, rewarding, and retaining effective teachers and principals, especially where they are needed most; and
4. Turning around our lowest-achieving schools. (DOE, 2009b)

Student teaching. At LU, “the student teaching experience is the most important component of the teacher education program” (Bice et al., 2008, pp. 2, 9). Student teaching is a 12 hour credit course. The student teacher connects the education received throughout the coursework completed through education classes to a practical application by working with students for either an 8 week or a 16 week program. Student teachers are responsible for planning lessons and activities, executing the daily duties of classroom teachers, and attending school meetings, enforcing school policies and assessing student achievement. In addition, student teachers meet with cooperating classroom teachers and university coordinators. Student teachers received observations and feedback regarding their performance during the student teaching experience.

Teacher certification. The license issued by the state to certify that an individual is qualified to teach children. Teachers who received certification prior to 1988 may hold lifetime teaching certificates. In 2010, Missouri offered five routes to achieving a

certificate of license to teach. They are as follows: Traditional route, Alternative or Innovative route, Temporary Authorization route, Out-of-State Certified route, and Doctoral route (DESE, 2010a).

Transfer student. A transfer student is one who came to LU with more than 24 hours college credit. Transfer students arrive at LU from different routes. The most common transfer is from a junior college for one or two years. Most of the LU junior college transfer students come from St. Charles Community College or St. Louis Community Colleges.

Limitations of Study

Standardized tests present recognized concerns and limitations. Those who used test results frequently accepted them as reliable indicators of student achievement. Test scores often do not offer a complete picture of student achievement. Two concerns that standardized test scores present are: scores may include error of measurement and scores can be corrupted or inflated (Koretz, 2002). In this study, the ETS reports are accepted by the state of Missouri as unlikely to be either corrupted or inflated. ETS established validity and reliability checks for the Praxis II.

Test data may “differ markedly across tests that purport to measure the same domains” (Koretz, 2002, pp. 3-4). Another issue regards standard error of measurement of an individual score and standard errors of aggregate scores. In addition, limitations within test data can occur in aggregation (Koretz).

Pencil and paper standardized tests often discriminate against people who attended K-12 schools located in high poverty areas. The much publicized racial bias case won by black fire fighters regarded the requisite passing score on a written exam

(Gardner, 2010). The written exam contained irrelevant information for job performance, therefore it discriminated against those who owned a skill set relevant to the job at hand, but did not possess a skill set to include passing a written test (Gardner).

Over the course of this study, ETS changed the Praxis II content and format (ETS, 2010a). The changes in the new content and format did not cover similar material on the test with which LU curriculum for the previous test had been aligned. In addition, in a presentation to college and university Physical Education faculty regarding the new test outcomes, ETS reported a significant difference in the area of Physical Education when the scores were disaggregated by race (ETS, 2010b).

Students chose to take the Praxis II tests based upon the field of education in which they wished to obtain teacher certification from DESE. Because a student took a particular Praxis II did not necessarily identify the student as one who completed a course of study in the field measured by that test. Disaggregating the Praxis II passing rates by race showed a significant gap. The passing rate for whites was reported at 82% and the passing rate for blacks was reported at 51% (ETS, 2010b). Such a disparity in passing rates by race as determined using a single test limits the number of prospective minority teacher candidates who will be identified as highly qualified teachers. The disaggregation refers to total numbers of person who took the test and passed. The figures do not report the first time passing rates for Praxis II.

Another limitation discussed in the literature regarded an observation that the Praxis II measured knowledge students acquired during K-12 schooling rather than during college undergraduate education. The most identified knowledge was the test taking skills acquired by the student. Students who attended high quality K-12 school

districts exhibited no trouble passing the Praxis II on the first attempt. Students who did not attend the top schools frequently did not pass Praxis II on the first attempt. The Praxis II may not provide a reliable measure for undergraduate education. It may measure the quality of the K-12 program attended by the test taker (McNeal & Lawrence, 2009; Sutton, 2004)

Conclusion

Data-informed decisions offer institutions the best route in order to move from good to great. Accurate data analyzed effectively enables leaders and faculties to measure the stark reality of the services offered and the services received. In order to know that improvement occurred, reliable measurement is required. In education, these are the services provided by faculties to students. Data is captured in many forms. In order to provide information, frequently it is necessary to disaggregate data and regroup to learn and observe an accurate picture.

The literature review collected an understanding of the Praxis II and analyzed the information along several tangents. Teacher leaders and researchers connected the Praxis II with NCLB, the achievement gap, teacher certification, high quality teachers, highly effective teachers, high stakes testing, and transfer students. Each tangent strongly connected both the problems and promise of the Praxis II. Teacher leaders and researchers examined the strands from differing, often opposing viewpoints. While unfortunate, the reenactment of ESEA, NCLB, represented highly charged politics. Though, as educators and as citizens, we may hope that the education of children would be devoid of politics, in reality, every decision about public education is a political decision.

Chapter Two: Literature Review, Praxis II

Any study purporting to examine a single aspect regarding the use of a high stakes test, like the Praxis II, to make certification decisions in order to place a high quality teacher in every classroom, requires understanding the background and rationale for employing high stakes testing. This literature review traced six important issues (NCLB, the achievement gap, teacher certification, high stakes testing, defining high quality teachers, and transfer students) debated in the literature directly connected with development and utilization of the Praxis II. The degree of importance for each idea varied, in order to reflect the diversity of viewpoints contained within the entire spectrum of political thought from the stake-holding parties (teachers, administrators, teacher educators, politicians, parents, and the taxpayers) involved in U.S. public education.

Unlike other large modern nations, most noticeably, China and India, the United States contracted with its citizens via the government to make the dream of universal education legally binding. NCLB, in fact, promised to make every child in the United States public education system an “A” or “B” student by 2014. In a speech to the Missouri National Education Association, Diane Ravitch (2010, November) explained that the term “proficient” used in NCLB to modify “student” came directly from the Nation’s Report Card, the report from the National Assessment of Education Progress (NAEP). NAEP separates the numeric scores achieved by students into four levels, (Below Basic, Basic, Proficient and Advanced). Ravitch who served as a director for NAEP explained what those levels translate to in terms of student achievement. Advanced identifies students who can make an A in any class with little or no effort. Proficient identifies students who can with effort make an A in the classroom. Basic

identifies the targeted standard for student achievement and understanding for the particular grade level measured. Below basic identified the students who required extra help to achieve the standards. The politicians who wrote and signed NCLB adopted Proficient as the standard for every student by which success of the educational system would be measured. The debate over whether or not the dream of universal education and literacy is possible continues.

The public school system hinges on political decisions. Politicians look for messages to win elections. There is no requirement for a politician to test a message, a proposal, or a program for reliability or validity. To win elections, perceptions matter more than facts. Politicians often attack public education in order to garner votes. Perception is more easily manipulated and more quickly altered than real progress, in both the political system and the educational system. Passage of NCLB was more of a political decision based on public perceptions rather than a decision based educational research.

Teacher Certification Changes

Though the history of public schools in the United States contains many changes, for approximately 150 years, teacher preparation changed very little. The “normal school movement produced four categories of study for teachers” which included observation and practice, in school practicum, field experience and practice teaching (Robinson, 2010, para. 5). Those four categories remain the cornerstone for teacher preparation in colleges and universities.

Though substantive changes occurred in public schools between 1882 and 1945, the one room rural schoolhouse stood like a colossus in the minds of many Americans.

Educators strived to make changes to improve the instruction of children. Americans believed education to be a key to a better life for their children.

In 1882, 15 year old Laura Ingalls accepted the position of teacher in a one room school building (Miller, 1998). The location, 12 miles from her hometown, DeSmet, South Dakota where she completed eighth grade, made daily transportation from home to school and back impossible. To teach children in grades 1-8, an eighth grade education was deemed adequate preparation. The County School Superintendent, who granted her teacher's certificate, requested Laura to serve as a teacher based on her performance as a student. Throughout the academic year, as a part of her pay, Laura was housed, fed and lived at the mercy of the farm families whose children she served.

Sixty-three years later, in 1945, 23 year old Dorothy Goff accepted the position of teacher in Owl's Roost School, a one room school in Dunklin County, Missouri (Holmes, 2010). After serving as a "Rosie, the Riveter" in Warner-Robbins, Georgia, during World War II, Dorothy, a high school graduate, returned to her hometown of Hornersville, Missouri. Owl's Roost School was located 12 miles away, near a turnaround school bus stop, so getting to the one room school required an additional half mile hike. By riding the bus, and trudging the additional half mile on a logging road, rutted too deeply for the school bus axles to negotiate, Dorothy could live at her parents' home, instead of being housed by the neighboring farmers in the proximity of the school building, as part of her pay. She rose early to ride the rural route. At the end of the day, rain or shine, sleet or snow, Dorothy waited at the turnaround, when the driver returned the high school students to the bus stop. Like Laura Ingalls, the County Superintendent requested and certified Dorothy to serve as a teacher based on her performance as a

student, though Dorothy, unlike eighth grade graduate Laura, graduated high school. During Dorothy's first year of teaching, the County Superintendent told Dorothy that times were changing. She would need to attend college and begin working on a degree to continue teaching with a certificate.

At the turn of the 20th century, the vast majority of American citizens completed education at or below eighth grade. Veterans of World War I realized that American children required more than an eighth grade education to compete effectively in the new global marketplace (Goldin & Katz, 1999a). As had the Civil War veterans before them, World War I veterans gathered in reunions. But, in addition to regaling in the past, these veterans resolved to look for and build programs to improve the Nation's future. The future, they realized, had been purchased at terrible cost. And as the veterans talked about the future they wished to see to fruition, they concluded that investing in the educational development of children and youth offered the most promising return. Among the four pillars of their charter, the Great War veterans included a call for universal free high school education. Education of Children and Youth became a continuing goal (The American Legion, 2010).

In the next sixty three years, 1945-2008, teacher certification changed drastically. From the discretion of selection by the County Superintendent, the state would exercise its Constitutional authority, Article IX (Missouri Constitution, Section 1, 1945) by granting a license to teach. In Missouri, the license would be granted upon successful completion of college graduation through a teaching program.

Until 1988, the state of Missouri granted Lifetime Teaching Certificates upon the approval of a faculty recommendation from teacher education institution. After 1988,

lifetime certification remained in place only for those who already possessed the certification. After 1988, Missouri offered professional teaching certificates, provisional (two year nonrenewable) teaching certificates, temporary (one year renewable) certificates, and substitute certificates (DESE, 2011).

In the new century, requirements for teacher certification changed. NCLB recognized that many children still attended classes led by teachers who did not hold qualifications for the courses they were teaching. Missouri responded to the NCLB call to place a highly qualified teacher in every classroom.

The Missouri certificate of license to teach identified the license holder as a highly qualified teacher, to meet the requirements of NCLB. At the time of this writing, Missouri offered five routes to achieve a “certificate of license to teach.” They are called: Traditional route, Alternative or Innovative route, Temporary Authorization route, Out-of-State Certified route, and Doctoral route (DESE, 2010a). Interestingly, as public trust in American education waned, the process of certifying teachers became more standardized and far less personal than placement of trust in the professional judgment of the County Superintendent.

Societal norms for what constituted a “good teacher” changed rapidly. Members of Congress, led by Senator Edward Kennedy and President George W. Bush decided on the definition of highly qualified teacher in NCLB. Students and faculty from teacher education universities continued to develop and work on the perception of an accurate, helpful, definition of a highly qualified teacher. Helping teacher candidates understand the greater demands placed on them “transcends certification and state teacher testing requirements (Brown, Morehead, & Smith, 2008).

The debate between those who believed that strong preparation programs are essential for increasing student achievement, and those who believed that teacher effectiveness is merely a relationship to general academic ability or strong academic knowledge, materialized at the heart of the Educational Reform Movement, which spawned NCLB. Those who asserted that there was no need for strong certification programs also argued that alternative routes would produce significant cost savings to people willing to enter the field of teaching. If their assertions were found to be true, then the entire certification process of teacher preparation at the university level could be and should be dismantled (Darling-Hammond et al., 2005).

Researchers asked many important questions to determine the effectiveness of the teacher education certificated teachers compared to those teachers who acquired a certificate through alternative routes. One of the most highly touted alternatives formed to provide and place teachers into hard-to-staff schools has been Teach for America (TFA). TFA was touted as a means of easing the shortage of high quality teachers in hard-to-staff districts by placing non-education graduates from highly acclaimed universities in those schools. Two studies cited by the opponents of traditional certification routes compared TFA teachers with similarly experienced teachers in similar schools found evidence that TFA recruits' students achieved comparable or better gains (Decker, Mayer, & Glazerman, 2004). However, in those two studies, the control group teachers to whom the TFA teachers were compared were not certificated teachers. Darling-Hammond et al. (2005) compared TFA recruits to certificated teachers and found that TFA recruits' student achievement was below the achievement of traditional certificated teachers on all six achievement tests (Darling-Hammond et al, 2005).

The Role of the Federal Government: Changes and Expansion into the Public

School System

Even while World War II raged, veterans groups from both World Wars I and II urged the federal government to establish the Servicemen's Readjustment Act of 1944, (GI Bill). Almost eight million World War II (WWII) veterans took advantage of the Act. Many, who would never have considered pursuing higher education before the wartime experience, earned a means to pursue college degrees. Two hundred thirty-eight thousand WWII veterans became classroom teachers (Sass, 2010).

The GI Bill made possible another monumental change in United States public education. Many returning veterans began teaching in America's public schools during the late 1940s and 1950s. World War II veterans brought new perspectives to the classroom based on war time experiences. To begin teaching in America's schools, the veterans needed a college education. The Truman Commission Report (1947) supported the expansion of access to college to more citizens. Included in the recommendations were double college enrollments by 1960, and extend free public education through a network of community colleges. During the 1950s, the original GI Bill received modification to include Korean War veterans (Sass, 2010).

Among the changes that occurred following the addition of more than 200,000 veterans into the public school teaching force was the organization of classroom teachers into unions for the purpose of collective bargaining. During my career as a public school teacher, collective bargaining led to the ability for breadwinners to earn adequate salaries for those who remained in the classroom to raise families and join the economic middle

class. Prior to collective bargaining, teacher salaries were totally at the discretion of local school boards.

The Supreme Court became the first branch of the federal government to invoke major decisions which impacted public education. Beginning with *Brown v Topeka*, 1954, the latter half of the twentieth century witnessed change in education from a new source (Dudley 1994; Sass, 2010). *Brown* was the first of many decisions to overturn established customs or codes, like “separate but equal,” and court case decisions like *Plessy v Ferguson*. In *Brown*, the court determined that racially separate schools were inherently unequal. Further, the Court found that the State bore the brunt of reducing the damage done by *Plessy v Ferguson*. To move towards implementation of *Brown*, it would be necessary to open the public schools to all citizens. From 1962 until 1989, the Supreme Court ruled on nine cases involving public schools. Public schools and the perception of public schools changed rapidly as a result of several court cases.

Of equal importance to the court cases, the concept of public education came under review. Congress enacted further laws affecting public schools, including; Title I, Title II, Title and IX of the ESEA. Since the 1960s, new laws provided more accessibility to more children. Section 504, Public Law 94-142, and IDEA established federal protection for handicapped children in the public schools (Sass, 2010). Girls were guaranteed access to all programs; children from financially deprived areas were guaranteed access to quality education. Children with disabilities, whether physical, emotional or mental, were also granted equal access.

The Executive Branch of the Federal Government increased its involvement in public education. In New Orleans, Louisiana, in 1960, President Eisenhower committed

United States marshals to desegregate public elementary schools. Ruby Bridges was the first African-American student to attend a previously white elementary school as a first grader. To desegregate the University of Mississippi, President Kennedy ordered 160 United States marshals to enforce the “law of the land.” James Meredith became the first black student at the University of Mississippi at Oxford (Sass, 2010).

During the sixties, the third branch of the federal government, the legislature, became involved in public schooling. The passage of the Elementary and Secondary Act, (ESEA) Title I, provided “federal funds to help low income students” (Sass, 2010). Following this landmark legislation, Congress created more changes. In 1968, Congress passed the Bilingual Education Act, Title VII. Though the legislature was the last to become active, it continued to be involved at a higher pace than both of the other branches combined. In 1972, Title IX opened access for females to all programs in public education. In 1973, Congress passed more access for people with disabilities under Section 504. In 1975, the Education of All Handicapped Children Act (PL 94-142). Public Law 101-476, the Individuals with Disabilities Education Act (IDEA) replaced PL 94-142. In 1998, The Higher Education Act (HEA) was amended and reauthorized. HEA required states and institutions to produce “report cards” regarding teacher education (Title II). By 1965, the federal government firmly established itself as a primary source of authority, funding, and accountability for public schools (Sass, 2010).

No Child Left Behind

In 2002, President George W. Bush signed the NCLB. NCLB reauthorized ESEA. Controversy arose because of the politics of accountability. NCLB established stiff penalties to punish schools and by extension, educators, when their students failed to

meet goals for Adequate Yearly Progress (AYP). The goals, which the legislators who wrote the Act contritely confessed were impossible to reach, became the yardstick that one side of the political spectrum used to beat up public schools. According to Sen. Edward M. Kennedy, chairman of the Senate education committee, "The idea of 100 percent is, in any legislation, not achievable," (Paley, 2007, para. 2).

In the years following the signing of NCLB, little evidence supported the concept that the federal government continued to hold the states accountable to provide only teachers who met the legal definition of highly qualified in the classrooms of urban America. In America's largest cities, students who are economically poor and often culturally diverse, continued to be taught by teachers who did not meet NCLB guidelines. Many classes were led by teachers who had not demonstrated evidence of being a highly qualified teacher for the classes they were actually teaching (Talbert-Johnson, 2006). Talbert-Johnson argued that NCLB failed to report on the "intangibles" for effective teaching including; caring for students, efficacy, enthusiasm, practicing a disposition that affirms the value and worth of each student. In addition, Talbert-Johnson pointed out that while some teachers are denied the right to teach because they exhibit weak academics, other people ought to be denied because they lack emotional stability. Praxis II makes no attempt to determine the emotional stability of a teacher candidate. To improve student achievement required that teachers gather and maintain knowledge about their students, in addition to stating a belief that all children can learn and achieve to meet high expectations.

NCLB offered one specific measure for teacher effectiveness by compelling candidates to pass a standardized test, but testing alone is insufficient to assess teacher

quality (Cibulka, 2010). The position of the National Council for Accreditation of Teacher Education (NCATE), as cited by the organization's president, James Cibulka, stated that the measurement of teacher effectiveness required sorting and compiling "pieces of a complex puzzle" (Cibulka 2010, para. 1). Even with the puzzle pieces in place, no guarantee existed that teacher evaluation tools held the ability to measure what "leads to student learning." Cibulka argued for collecting longitudinal data in order to measure by utilization of a "greater variety of assessment tools" (para. 1). Cibulka documented gaps in programs which showed that even though topics were identified as covered, no evidence showed the candidate's "ability to handle it in practice" (p. 3). Teachers reported that despite extensive work during the undergraduate experience, they felt they were "not ready for what they found in the classrooms" (p. 4). At the time of this dissertation, NCATE reported that there are ways to assess accurately what a teacher knows, what a teacher does, and how effective a teacher is (Cibulka). This study deals with the first time passing rate of the Praxis II, a test designed to assess what a teacher candidate knows.

The *New York Times* referenced results from the National Assessment of Educational Progress proclaimed that NCLB is not closing the racial gap. Officially, NCLB is described as an Act to Close the Achievement Gap. Citing results from 2004 to 2008, even though minority scores improved, the changes failed to close the difference between whites and minorities, notably the two largest minority groups, African American and Hispanic children (Dillon, 2009).

According to some experts, producing a rational, comparable form of standards for the entire nation is an undeniable imperative (Cronin, Dahlin, Adkins, & Kingsbury,

2007, p. 5). Though not a belief shared by all educational experts, Cronin et al. believed a complete reworking of state standards was necessary. They argued that the fresh look at standards for student achievement is a more rational approach (p. 5). Instead of beginning at grade three, Cronin et al. advised that educators start by looking at what a graduating high school student should be able to accomplish in a proficient manner. Initially, all stakeholders should agree on the goals for high school graduates. The next step is to reach consensus to set state and comparable national standards for high school graduation. Then, backwards design the achievement benchmarks for students at each grade level along the journey towards high school graduation (p. 5). All stakeholders agree that it is the teacher who makes the biggest difference in student achievement. The Praxis II was designated to assist in identification of the highly qualified teacher. Preparation for Praxis II exam could be planned with backward design in mind.

Among the most logical criticism to the issues created by what they call the Congressional errors in fashioning NCLB, were points offered by Cronin et al. (2007, p. 5). Concerned with setting world class education for all students, a large nation requires consistency in measurement values in order to track progress. In addition, Cronin et al. stated that the adherence to achievement of “100 percent proficient by 2014” mandate helps no one (p. 6). Research demonstrates that formative assessment is a more powerful learning tool than summative assessment. The Praxis II operates as summative assessment, rather than formative. In my experience, few if any students know or care about their individual MAP scores, because the MAP is administered in early April and the results are not returned to the school in October. By that time, students have moved on to a different grade, teacher or building. Formative assessments established as

benchmarks along the way toward high school graduation and proficiency levels offer a more compelling means to help students care about achieving proficiency throughout their educational journey. Progress is sometimes more visible when viewed in smaller increments, as with benchmarks along the way compared to an end of course examination.

The Achievement Gap

By title alone, the federal government's intention in passing No Child Left Behind was to eradicate the achievement gap. The achievement gap is defined as the "disparity in academic performance between groups of students" (Achievement Gap, 2004, p.1). Usually, the term is used to illustrate gaps found between white students and other minority groups. Most often the gap refers to either, white students and African-American students, or white students and Hispanic students. The distinction between racial groups is based upon which minority is dominant in a local community. For example, some communities are represented with the African American ethnic group as the dominant minority and others may have Hispanic as the dominant minority. NCLB commands each state and each school district to "disaggregate student achievement data by racial subgroups..., including black and Hispanic students, so that performance gains for all children can be tracked" (Achievement Gap, para. 11). Praxis II is supposed to aid in the goal by identifying highly qualified teachers.

NCLB targeted the destruction of the achievement gap by tracking disaggregated data measuring the performance of students within sub-groups. Sub-groups included; ethnicity, children receiving free or reduced lunch, English as a Second Language (ESL) or special needs children. The belief was that strict accountability measures alone would

be sufficient to insure gains in achievement. However, accountability alone records little changes in the gap between whites and African-Americans, or between whites and Latinos (Dillon, 2009; Paley, 2007).

Closing the achievement gap was the stated reason for establishment of the strict accounting measures contained in NCLB. Research showed that “assigning great teachers five years in a row to a class of disadvantaged children could close the achievement gap between them and their privileged peers” (Hanushek, Kain, O'Brien, & Rivkin as cited in Varlas, 2007, para 1). While NCLB stated that the achievement gap will disappear by 2014, another researcher sets the odds that any child, let alone a disadvantaged child, would be assigned a great teacher for five consecutive years at 1 in 17,000 (Walsh, 2007).

High Stakes Testing

“I can tell you who won't be a great teacher, the idiots who took that test and flunked...” stated Thomas Finneran, Speaker, Massachusetts House of Representatives (Cochran-Smith, & Dudley-Marling, 2002, p. 104).

Over the last two decades, high stakes testing continued to evolve from the nationally standardized tests first given in the late 1950s. In 1957, the United States feared that the Russians moved ahead because of the successful launch of the first artificial earth satellite, *Sputnik*. In an attempt for the United States to catch up, nationally standardized tests were given to identify potential scientists and engineers (Sass, 2010). The first tests were not high stakes. I recall my teachers, counselors, and parents perusing the results from the standardized tests to guide me toward “aptitudes” and career choices.

After four decades of familiarity with standardized tests, many Americans placed great faith in the ability of test scores to measure an individual. From the first, national tests were designed to measure the relationship of an individual test score to that of a population. One of the measurements reported was a percentile score (DOE, 2009a).

Unfortunately, test results may be misused, for example, to measure items and concepts that the tests were not designed to assess. School administrators naturally wanted to understand how all the students in the school or district scored when compared by percentiles. Few educators understood the problems inherent in making certain that their school percentile measured high when compared at the expense of others. By accepting percentile measurement of achievement as a defensible assessment, educational leaders doomed a large number of American students to failure. The “bell curve” divides the test completers into those who are above average, the 50th percentile, and those who are below average. If below average constituted an unacceptable score for a school, the first definition, above average, marked half the population as failures.

The United States began using testing for admission to colleges and universities in the 1960s. But, there were no high stakes tests for teachers until the national teacher test in the 1990s. Teacher certification tests became part of the process for admission into teacher education programs after 1988 (Miller, 2002). In many universities, passing a standardized test is required for admission into a School of Education. For all Missouri education programs, the entrance exam is the C-BASE (DESE, 2008). Passing a standardized test is required to obtain a teaching license. In Missouri, that test is the Praxis II (DESE, 2010a).

The American experience with high stakes testing for teachers is very recent. The National Teacher Test served as the precursor to the call for teacher candidates to pass a test in order to receive state certification. Educational Testing Services responded to the call by producing the primarily multiple-choice Praxis II Series of tests (Sass, 2010). States continued to hold the right and responsibility to make teacher certification decisions. At the time of this writing, more than 38 states chose to utilize the Praxis II Series for the state certification test. Not all states used the same cut off scores to indicate which candidates pass the Praxis II. States like Pennsylvania and Massachusetts set higher cut off scores (ETS, 2011b).

In Missouri, the passing score for elementary education (test code 0011) on the Praxis II is 164 out of 200 possible points. The percentage for a successful score is 82, but, the more telling score is the percentile score. The raw score, 164, represented the 25th percentile of all times that the test was taken (ETS, 2011a). Some made a compelling case that the passing score was set too high for teacher candidates of color, especially, African-American and Hispanic teachers (Sutton, 2004, p. 468). A reasonable case for lowering the cut-off scores compared the differences in scores between white female candidates, who made up the overwhelming majority of elementary education majors, to the scores of African-American and Hispanic candidates. “83% of White students exceeded the passing score, while only 51% of African-Americans and 65% Hispanics and 64% of Asians did in Ohio” (Sutton, p. 1). Such a disparity in passing rates inevitably increased the difficulty for school districts and states to develop a faculty representative of the racial diversity within the American society. Many teacher educators argued that the cut-off score is too severe, since it limits minority candidates, (African-

American, Hispanic, and Native American) because as disaggregated groups their average percentile scores are significantly below whites (Albers, 2002).

Though high stakes testing in the U.S. is only a few decades old, one society has kept records on high stakes testing for more than 1,200 years (Suen & Yu, 2006). The Chinese Civil Service Exam began in the year 606 and continued until 1905. The exam was high-stakes and offered at five levels. The test taker was required to pass the first level before taking the second level test, and pass the second level before taking the third level, and so forth. Successful test completers received highly sought positions of power and influence within the society. Those who failed did not.

Problems and Limitations with High Stakes Testing

Careful records maintained by the Chinese over the course of 13 centuries, revealed that all of the present day concerns regarding the validity and the reliability of the scoring of high-stakes tests have been previously questioned throughout the long history of the Chinese high stakes tests. The Chinese noted concerns with cheating, with corruption, with test construction errors, with test scoring errors, and with the health of the test takers, (physical, mental and emotional). Questions were often raised about the test format (Suen & Yu, 2006). The Chinese realized many limitations to high-stakes tests. In the United States stake holders know there are limitations as well.

The question of error in test construction continued through the present day. Sutton reported a Praxis II question on Maslow's Theory of Needs, even though Maslow's theory shows "little current support" (Sutton, 2004, p. 3). As students prepared for the Praxis II, they were expected to study the most important ideas and theories. If, for example, the test construction was flawed because the test incorrectly identified the

most important current theory, students are confused. Only those students skilled in test taking strategies would have a chance to select a correct, multiple choice response.

At Sutton's school, Cleveland State, most students are minority, economically disadvantaged, and weak on test taking skills and strategies (Sutton, 2004). The passing rates on Praxis II reflected that only 51% of African American students pass on the first time. The white students passed at a rate of 83%. The disparity in passing rates by race contributed to the decline of the supply minority teachers available to teach. Teachers of color can be expected to be more effective in minority schools (Sutton).

Economists saw the use of standardized testing as a barrier to entry for otherwise qualified applicants (Angrist & Guryan, 2004). The incorporation of standardized tests into teacher education affected students because many programs focus on certification for their students. On the Praxis II, graduates from accredited teacher education schools scored higher (Darling-Hammond et al., 2005). However, economists estimated that the impact of testing showed no evidence that teacher quality improved as a result of testing (Hanushek et al., 2005). One major concern noted by economists was that Praxis II appeared to lower the number of Hispanic candidates to enter the field of teaching.

Several researchers documented that Praxis II worked as a barrier to minority candidates (Albers, 2002; McNeal & Lawrence, 2009). From a program to place minority students into the neighborhood where they attended public schooling, McNeal and Lawrence (2009) found that more than thirty percent of the graduates were "not working as certified teachers based solely on the fact that they have not passed Praxis II exams in their content areas" (McNeal & Lawrence, 2009, p. 7). The minority students graduated from college. They met and maintained the GPA requirements to complete the

scholarship. One problem noted, “the misalignment between NCTE standards and Praxis II content exams in English and language arts” (McNeal & Lawrence p. 8). McNeal and Lawrence criticized Praxis II content area tests because they frequently measured “low-level knowledge of kindergarten through twelfth-grade curriculum” (p. 9). Minority students were the very students who had been harmed by the well documented “achievement gaps” in underperforming schools as determined by NCLB. McNeal recommended that potential teachers representing minorities receive monitoring, mentoring, and tutoring during undergraduate education. To help minority students pass Praxis II, instructors and education schools should consider providing practice tests in standardized format during all four years of college.

Unintended Consequences of High Stakes Testing

High stakes tests overshadowed what teachers and students were achieving when they used alternative and formative assessment techniques to benchmark student learning, progress, and achievement. The zest to achieve high numbers of students with passing scores encouraged district and building administrators to place almost all resources and instructional time into test preparation. The high stakes test format was usually delivered in multiple choice objective formats that are easily, quickly, and cheaply scored (Miller, 2002). Reflective teaching particularly was damaged by the emphasis on standardized testing (Miller). The continued employment of classroom teachers was tied to how students scored on the tests. In the St. Louis, MO, region the Riverview Gardens Schools District let staff and administration go in an issue related to student performance on state assessments. “There are 6,600 students in Riverview Gardens. The high school and two

middle schools have recently been identified as some of the lowest performing public schools in Missouri” (Anselmo, 2010).

Highly Qualified Teacher

During the latter half of the 20th century, the perception of quality in public education underwent an evolution. NCLB called for a highly qualified teacher in every classroom by school year 2005-2006. The term, highly qualified teacher, required a precise definition. In Missouri, the legislature, rather than a task force containing all stakeholders, defined a highly qualified teacher, as the teacher who:

1. Obtained full State certification as a teacher or passed the State teacher licensing examination and holds a license to teach in the State, and does not have certification or licensure requirements waived on an emergency, temporary, or provisional basis;
2. Holds a minimum of a bachelor’s degree; and
3. Demonstrated subject-matter competency in each of the academic subjects in which the teacher teaches, in a manner determined by the State and in compliance with Section 9101 (23) of ESEA. In Missouri, this is the Praxis II Test (DESE, 2010a).

The legal definition for highly qualified teacher posed danger for all stakeholders in public education (Amrein-Beardsley, 2004). The Education Department’s adopted definition ignored what parents, teachers, administrators and students know about teaching. Narrowing the concept of highly qualified teacher to three minimum standards made a political statement by establishing an entry floor for educators, rather than building a solid foundation to improve the achievement for every child.

Achieving agreement on the definition of a high qualified teacher turned out to be a rather complicated concept. Even though the legislation contained a precise definition, the definition seemed actually to be a statement of the minimal requirements for state licensure, rather than a desirable concept modified by the adjective, “highly.” The precision within the legal definition conveyed a message designed to appeal more to perceptions than reality.

The term, “qualified”, appealed to different audiences holding differing concerns. The *Oxford English Dictionary* defined “qualify” as, “To invest with a quality or qualities.” When the adjective, “qualified”, modifies the noun, “teacher”, the implication was that the teacher would be invested with quality. In the State’s legal definition, however, the word “quality” did not literally appear. Therefore, the law writers seemed to have played a semantic game, by assigning the term, “highly qualified teacher”, to a teacher who met the minimum legal requirements. This semantic game played upon the concerns of parents, who rightly believed that their children were taught by a high quality teacher, when in fact, the term referred to a teacher who had only met the minimum state standards for a teaching license.

ETS added to the definition of teacher quality by stating that certain things are known about quality teaching (McAllister & Latham, 2004). The paper repeated the axiom, “Good teachers produce good students.” If indeed the purpose of teaching is to produce good students, the next definition would logically contain the definition for good students. Or a reader should expect a composite, or at least, a list, containing the characteristics of good students. In the absence of such definitions, there was much incentive for an educator to work where good students already existed. There would not

seem to be much incentive then, to teach where the majority of the students are not good students. By stating that “good teachers produce good students”, ETS disregarded reality.

ETS did not mention the characteristics of a good student in the position paper. Nor has anyone else discussed the attributes and characteristics of good students in the literature connected to NCLB. Readers were left with the rather unfortunate conclusion, that there was only one measure to determine a good student, and that was a student who scored proficient or exceptional on a high stakes test, like the state examinations, mandated by NCLB.

The known correlations identifying teacher quality cited by ETS included teacher verbal ability and student achievement, teachers who teach the subjects in which they majored are better teachers of the subject than those who have not, content based pedagogy showed “a positive impact on student learning”, and “teachers with considerable experience are likely to make a greater contribution to student learning than teachers with a few years of experience” (McAllister & Latham, 2004, p. 4). In the ETS paragraph discussing what is “known” about quality teachers, these are the identified limits regarding what is known about quality teaching.

Further discussion by ETS regarded evidence concerning qualifications. ETS called for more study concerning the available evidence. Interestingly, ETS emphatically did not claim that a teacher candidate’s score on a certification exam should be used as, or expected to be, a predictor of the quality of teacher a candidate will become. The paper pointed out that the “score on the bar exam does not predict how good a lawyer will be” (McAllister & Latham, 2004, p. 7)

In a following paragraph, ETS recommended that the states “raise the bar for content rigor by reviewing and increasing passing scores.” In light of the statement about the correlation of scores on the bar and quality attorneys, it is difficult to follow such logic. It might be prudent to remember that ETS is in the business of making, marketing and selling tests used for certification and licensure (McAllister & Latham, 2004).

Parents choose “highly qualified teachers” to teach their children. Some parents perceive that teachers make the difference in the growth and achievement of their child. Even more than the families and the neighborhoods where children reside, what teachers offer determines students’ academic growth (Sanders & Horn, 1994). A highly qualified teacher should bring special skills and attitudes to benefit each child. According to Boers (2001), among the adjectives parents expect in such a definition of highly qualified teachers for their children are; enthusiasm, energy, happiness, positive, competent, research-based, well-read, confident, personable, communicativeness, respectful, welcoming, student-center, differentiating, homework-efficient, work-responsive, well-planned conferencing, complete, honest, and holistic. Skills and attitudes included in this list are more likely to be identified by personal observations than through standardized testing. Certainly, the ETS reports do not account for such attributes from the Praxis II.

Students too, know that highly qualified teachers possess far more than the three minimum legal requirements. University level students identify twelve common characteristics employed by successful teachers. The students and the literature agreed upon what makes a highly qualified teacher. Those characteristics included displaying fairness, holding a positive outlook, preparation, using a personal touch, a sense of humor, creativity, willing to admit mistakes, being forgiving, respectful to students,

maintaining high expectations, showing compassion, and developing a sense of belonging for students (Thompson, Greer, & Greer, n.d).

The effect of teachers is more than “folk knowledge” (Nye, Konstantopoulos, & Hedges, 2004). Nye found that the “differences among teachers is substantial in comparison to the variance between schools” (p 247). Rowan, Correnti, and Miller (2002) compared two groups of children who lived in identical societies and attended the same school but are assigned to classrooms with similar classroom populations. Those studies found significantly differing rates of achievement growth due to separate instructional strategies and teaching methods (Rowan, Correnti & Miller). Parents are right; it does matter which teacher their child is assigned for the school year.

Elementary teacher candidates possessed a conceptual image of what makes an effective teacher which does not fit with the legal definition of a highly qualified teacher (Brown, Morehead, & Smith, 2008). Results from a focus group with elementary candidates revealed that the most important attribute was that the effective teacher loves and cares about kids. Assigning such importance to the characteristics of an effective teacher varied greatly with what the policy makers defined. It is desirable for teacher candidates to keep the image of caring and concern. The teacher candidates held a view that parents and grandparents valued. Defining teacher effectiveness as highly qualified teachers because they met three standards, contrasted sharply with the teacher candidates’ self images. By the same measure, parents want a teacher highly proficient in content knowledge, armed with strategies to deliver such knowledge and instruction skillfully to a classroom filled with students representing diverse backgrounds, varying needs and abilities.

Brown et al. (2008,) also stated the imperative to view knowledge more accurately and broadly than by a “contemporary public definition of simply content knowledge as defined by passing tests and taking content work” (p. 179). He argued that the highly qualified teacher possessed a breadth of “multi-dimensional understanding” (p. 179).

Opposition to the necessity of teacher preparation coursework to the development of high quality teachers was offered by others (Ballou & Podgursky, 2000). Opposing arguments targeted national organizations committed to advancing the role and development of professional standards for teachers. Citing the national teacher organizations as private interest groups, opposing authors claimed there was bias against those who entered the teaching profession without professional training or licensing. Opponents argued against the importance of attaining advanced degrees as an indicator of teacher quality. The primary argument made by the opposing authors cited their own detective work, “pointed out numerous discrepancies between the commission’s claims and what the research literature actually said” (Ballou & Podgursky, 2000, p. 3).

Opponents to teacher preparation coursework claimed that the burden of proof is on the “private education organizations” (Ballou & Podgursky 2000, p. 1). Repeatedly, the authors painted the private education organizations as having little or no accountability. Such statements did a disservice to the highly educated and well informed members of the profession of teaching and education administration who held themselves accountable to high standards.

In fact, the Ballou and Podgursky paper functioned as an attack synthesis of four reports (Ballou & Podgursky, 2000). The first attack was on the process of statistical

controls. That attack was followed by an attack on the randomness of the studies. Next, Ballou and Podgursky attacked administrative hiring practices. The opponents cited the belief system that administrators brought to which candidate will become a high quality teacher. To confound matters, in the next paragraph, Ballou and Podgursky conceded credit to administrators who did make good hires, but then, categorically stated that it is impossible to know if the hire is truly based upon a causal relationship. Opponents even attacked the output model for student achievement which they acknowledged having used, “Even though I have written papers in this tradition myself...” (p. 9).

Ballou and Podgursky (2000) closed with an attack on researchers who have researched the obvious. The paper finally cycled a full 360 degrees. The questions Ballou and Podgursky and opponents left unasked and unanswered included the most important questions for administrators charged with hiring teachers. How does an administrator: Identify high quality teachers? Hire high quality teachers?, Retain high quality teachers?, and Develop high quality teachers?

In the American Association of Colleges for Teacher Education (AACTE) policy paper (2010), *The Clinical Preparation of Teachers*, recommendations for changing the legal definition of the highly qualified teacher were offered. Their recommendations included the revision,

to require that teachers establish not only their content expertise but their ability to teach it effectively, as measured by their actual performance in classrooms, following extended clinical experience. Prospective teachers should exhibit consistent success through a substantial pre-service clinical experience in a challenging school setting supervised by both university- and school-based

faculty. This requirement should pertain to both traditional- and alternative route candidates. A minimum of 450 sequential hours of closely monitored and supervised clinical experience should be required. No candidate should serve as a teacher of record until he or she has completed a preparation program. (p. 11)

AACTE based such recommendations on results of research comparing the difference in student achievement between the teachers who received extensive instruction and supervised practice in teaching, compared to those who received neither. The differences that AACTE reported were marked. Further, AACTE reported that the federal government “has sent mixed messages to potential teachers, parents of K-12 students, policy makers, providers, and accreditors about the role of clinical preparation for teachers” (p. 11). Such mixed messages seem deliberately designed to be read differently by each audience. AACTE asked for clarification. AACTE cited the alternative routes, (e.g. ABCTE and Teach for America) as lacking in clinical experience. For those routes to deliver teachers who can be accurately labeled as highly qualified, it was imperative that additional field clinical experiences be added to their preparation.

The mixed messages were also noted when clinical preparation was deemed “critical to effective preparation” by Education Secretary Arne Duncan in his address to NCATE, November 2010, (DOE, 2010b). In addition, the Higher Education Opportunity Acts signature teacher preparation program, the Title II Quality Partnership (TQP) grants required extensive quality clinical experience (AACTE, 2010, p. 11).

Confusion reigned when professional classroom teachers found themselves confined by the definition of highly qualified teacher (Harrell, 2007). She pointed out the fallacy of the definition because the legislature’s nomenclature reflected their naiveté

regarding the education process. Harrell pointed out that standardized testing became the sole measure of teacher effectiveness. Further, she described that the most common assessment questions shared the multiple choice format. In reality, then, the sole measurement of teacher effectiveness became how well did a teacher teach, or train, her students to use the multiple choice format. In addition, Harrell noted that teachers were often pressured to teach one format, and she identified the format as, to match the standardized tests. A balanced, well rounded approach to education became lost when teachers were forced to teach to the test. Ironically, Harrell concluded, teaching to the test harmed the very group of students that the legislators allegedly did not want to “leave behind”, those identified beginning in 1965, (ESEA) and again in 2001, (NCLB).

NCLB intended to focus on the achievement gap (Talbert-Johnson, 2006). Yet the greater diversity in the urban schools presented new problems for teachers and teacher preparation schools. Program development considered the “needs, abilities and experiences of the growing numbers of ethnically diverse, bilingual, and impoverished students...” (Talbert-Johnson, 2006, p. 150). Children who live in the diverse culture of urban America, “tend to be more dependent on their teachers [for student achievement]”, than White children (Talbert-Johnson, 2006, p. 151). In addition, when minority children did not like their teachers, the performance minority children exhibited was often described as poor or failing. New teacher education graduates often begin their careers working in racially diverse institutions. The recent graduates reported that they did not feel adequately trained to succeed in teaching at racially diverse schools.

Because NCLB required each state to set proficiency standards for math and reading, some reformers thought that comparing the scores from state to state, would

offer a clear picture of the way that children achieved in public schools. However, the states found ways which continued to confuse the issue. Without the guidance of national standards, some states set student proficiency at low levels. Other states set proficiency at high levels (Cronin et al., 2007). The magnitude of the problem of different state standards identified by these differences was staggering, 53 percentile points difference identified an eighth grader as proficient in the neighboring states of Montana and Wyoming, for example. Students with the exact same skill set scored, “proficient” in one state and “at risk” across the state line.

Highly Effective Teachers

While various members of the population hold various understandings for the definition of a highly qualified teacher, defining the term provided even more room for discussion. Politicians sought to simplify the message in order to sell their agendas. In doing so, the simplification often confounded the stakeholders. “Working definitions of teacher effectiveness are often elusive or so politically charged that they are unusable” (Varlas, 2010, p.1)

Secretary of Education Arne Duncan wished to place the highly effective teacher, the one whose students grow more than one year, in every classroom (DOE, 2010a). No one argued against this vision. But, by definition, this measurement required that teachers demonstrate one year’s experience in order to work in the classroom. New teachers are at a significant disadvantage because they cannot show one year’s experience.

In opposition to the simplistic legal definition of a highly qualified teacher, Gene Carter, of ASCD, argued that, “. . . defining teacher effectiveness is not about creating a

simplistic single view. . . It is about a dramatic conceptual shift from focusing exclusively on the teacher to focusing on the act of learning” (Varlas, 2010 p.1).

On August 21, 2009, the New Teacher Center (NTC) submitted a definition for the effective teacher that included a measurement of student achievement represented by at least one grade level or more of improvement in an academic year (Moir, 2009).

The National Board for Professional Teacher Standards (NBPTS) recognized the need for redefining teacher quality as well. The driving force to accurately change the definition was contained in the fact that “research has shown that the single most influential school-based factor affecting student achievement is teacher quality” (New Teacher Support Pays Off, 2007, p. 1). Under current ESEA, NCLB, the focus on highly qualified teacher lessened the importance of findings from teacher practice and educational research that offered evidence of effective instruction and engaged learning. Using the current NCLB definition meant that the states report nearly 100% of classroom teachers as highly qualified. “The term [highly qualified] becomes virtually meaningless” (Redefining Teacher Quality, 2010, p. 1).

Resolving even an issue like the new teacher dilemma required that a stakeholder commitment to develop measurement processes was necessary (CSDE, 2006). Some researchers advocated considering different ways to measure teacher effectiveness (Goe, Bell, & Little, 2008). While student achievement offered the most politically expedient measure of a highly effective teacher, the job description extended far beyond test score improvement. Politicians and administrators were attracted to test score reporting because such measurements were often published as school report cards. Newspapers and television outlets are eager to publish report cards on school districts and schools. In

2010, the *Los Angeles Times* published ratings of individual teachers based completely on the scores achieved by the students in their classrooms. At least two documented cases of teacher suicide followed the reports. One of the teachers had been acknowledged as a teacher of the year previously (Zavis & Barboza, 2010). Because the tests are given in April, and the results are not returned to the school until October in the following school year, it is rare to find a single public school student who knows the score she made on the state achievement test (Assistant Superintendent, personal communication, March, 2011). Commenting on the reports and the newspaper and media stories offered free, ready-made publicity for a politician regardless of the stance on public education.

In the zest to remove ineffective teachers, defenders of the “data driven” approach to teaching disregarded other means of measuring teacher effectiveness. Realizing that the scope of an effective teacher’s job extended far beyond test scores, Goe et al. (2008) listed six more responsibilities which highly effective teachers contribute on a regular basis, including the following:

- helping students by practicing cooperative learning,
- teaching students how to behave appropriately in the classroom,
- teaching students to practice respectful conflict resolution
- teaching students to understand the roles of a citizen,
- meeting with colleagues to identify students who have special needs, and
- plan appropriate learning tasks for those students.

Praxis II does not account for these teacher responsibilities.

After analyzing research, policy and standards, all of which addressed teacher effectiveness, a clearer definition of highly effective teacher was required for teachers

and administrators. Recognition of how much more is expected from effective teachers than the solitary measurement of student achievement pushed Goe et al. (2008 p. 8) to produce a “five point definition”.

Effective teachers:

1. Hold high expectations for every student,
2. Guide student toward positive academic, attitudinal and social outcomes,
3. Utilize a variety of resources to structure engaging lessons, monitor formative assessments, adapt lessons employing data collected in several ways,
4. Value diversity, and
5. Collaborate with all stake holders in the learning community (Goe et al., 2008)

The National Board for Professional Teaching Standards proposed *NBPTS Five Core Propositions* to define “highly effective teacher”. The five propositions are as follows. Highly effective teachers:

1. Are committed to students and their learning.
2. Know the subjects and how to teach those subjects to students.
3. Are responsible for managing and monitoring student learning.
4. Think systematically about their practice and learning from experience.
5. Are members of learning communities. (Redefining Teacher Quality, p. 1)

Several measures of teacher effectiveness were already in use, “including; principal evaluations, analysis of classroom artifacts, rating teacher assignments, rating student work, teaching portfolios; teacher self-reports of practice, surveys, teaching logs, interviews; and student ratings of teacher performance” (Goe et al., 2010, pp. 14-19).

Use of a particular method for evaluating a teacher should match the reason for the evaluation. Some methods suit some purposes, but fail for other purposes.

Comparisons for evaluation methodology offered a professional educator the opportunity to select the most appropriate choice to improve instruction and increase student achievement.

Goe et al. (2010) compared Value-Added evaluation to Classroom Observation evaluation by listing advantages and disadvantages side by side. Glaring inadequacies to Value-Added Measures stood out immediately. For example, the disadvantages included expense of building the data system, lack of information concerning effective teachers' actual classroom performance, no information offered to help teachers improve, and the fact that some teachers [elective teachers, physical education, art, music, technology, foreign language teachers] received no information.

Advantages for Value-Added assessment included expense, after the infrastructure has been deployed, focus only on student learning, relative objectivity, can be compared across schools, districts, nation-wide, assuming that all are using equivalent statistical methodology and same achievement testing instrument. "Value-added measures can provide useful information; however, they provide little guidance for teachers who want to improve their practice. If the goal is to improve teacher practice, classroom observations may be more useful" (Goe et al., 2010 p. 15).

On the other hand, the advantages to using Classroom Observations were that they incorporate high buy-in and face validity, teachers participate in the process, formative information is useful to classroom teachers and Classroom Observation is based upon comparing what had been observed to acknowledge best teaching practices

(Marzano, Gaddy & Dean, 2001; Rolheiser & Fullan, 2010). Historically, since the advent of Normal schools and teacher education preparation schools, classroom observations had been employed as the preferred way to assess the skills of beginning and master teachers.

The disadvantages for Classroom Observations included personnel cost expense, administrators possessing inadequate training, measures used for high stakes decisions may differ from those for low stakes, and it is possible that student achievement may not be accounted.

Because the need for a highly effective teacher in every classroom was so urgent, the call for clear definition of highly effective teacher was imperative. The educational community should not only develop a working definition, but build professional support, maintain, construct measurement methodology and sustain incentives for growth (Varlas, 2010).

Highly Effective Teachers and Teacher Effects

One way of examining what made a teacher highly effective was to analyze the factors which a teacher may influence on student learning. Rowan, Correnti, and Miller (2002) studied what researchers used in order to examine the overall teacher effects on student achievement. When Sanders and Rivers (1996) claimed that “differences in the effectiveness of individual classroom teachers are the single largest contextual factor affecting the growth of ...students”, the claim disputed decades of prior research (p. 2).

Finding a single “silver bullet” to improve instructional effectiveness proved elusive. Instead of lamenting the failure to find a single silver bullet, Sanders & Rivers (1996) opted to predict that setting up desirable conditions and situations maximize

powerful learning combinations. When educators worked together to plan such implementation, students benefitted.

The meta-analysis work done by Marzano (1998) found that effect sizes of certain instructional techniques could be identified as dramatically strong. To practicing classroom teachers, administrators, and teacher preparation institutions, knowledge of the effects of instructional strategies brought comfort and security because all stakeholders knew that the teachers were doing the right stuff for their students. Nine highly effective instructional strategies were reported. For each strategy, effect size and percentile gain were computed and compared. When teachers used the nine strategies, they did so with the confidence that they were presenting best practices as represented by the “highly effective” teaching strategies to their students. Administrators benefitted from knowing and observing classroom teachers and students using highly effective strategies in the classroom. The nine strategies are considered in the development of the Praxis II exam.

The nine Marzano et al. (2001) highly effective strategies were culled from 1,251 peer reviewed educational studies. Listed in order of most effective to least, the strategies and percentile gain are displayed in Table 1.

Table 1

Highly Effective Teaching Strategies

Strategy	Average Effect Size	Percentile Gain
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Identifying Similarities and Differences	1.61	45
Summarizing and Note taking	1.00	34
Reinforcing effort and Providing recognition	0.80	29
Homework and Practice	0.77	28
Nonlinguistic representation	0.75	27
Cooperative Learning	0.73	27
Setting objectives and Providing feedback	0.61	23
Generating and Testing Hypotheses	0.61	23
Questions, Cues and Organizers	0.59	22

Note: Marzano et al., 2001

For administrators tasked with finding and developing highly effective teachers in the first year of teacher employment, a logical approach would be to use classroom observation of teachers, rather than wait until the end of the school year to examine data collected from normed, standardized testing. The classroom observations would be highly focused on the use of strategies and tactics the new teacher wrote in the lesson plans. Each lesson plan would always include at least one of the highly effective strategies. While the new teacher matriculated through the process of gaining experience and learning to build professional rapport, the principal and teacher use highly effective strategies in their professional growth discussion.

To teacher education universities, use of the Rowan, Correnti, and Miller's (2002) and Sanders & Rivers' (1996) findings, which utilized combination strategies, offered a significant advantage. Professors explained the theory behind the combination approach. Then, they demonstrated combining strategies. Professors explained the theory behind the Marzano et al. (2001) highly effective strategies. Then, they discussed how to select task appropriate strategies from Marzano et al. (2001) highly effective strategies. By coupling the combination approach to highly effective strategies, professors presented the theory for, modeled, taught and practiced state of the art best practices.

Though there was no “silver bullet” for improving student achievement, there were strategies which work and contain high effect sizes. Using the best known task appropriate strategies in combination offered the present state of the art to identify a highly effective teacher. Students who graduate from an institution practicing the combination of highly effective teaching strategies approach in every education class gain a distinct advantage.

Transfer Students

Beginning in the 1970s, part-time students made up more than 40 per cent of the undergraduate degree students. Four decades later, the numbers increased (Borden, 2004). More than half of the undergraduate degree completers showed transcript records from more than one degree granting institution (Adelman, 2006; Borden, 2004). A variety of reasons were offered to explain why this change occurred. Included were economics, socioeconomic class, dissatisfaction with the original institution, and academic progress. The traditional route to achieving a four year degree “has grown more and more obsolete” (Woosley, 2005, p.1).

Historically, the process of transferring to a four year college was designated a primary function for two year colleges. Two year colleges measured the success of how their transfer students performed in a four year institution. The measurement served as a means of reporting two year college educational quality (Glass & Harrington, 2005).

The number of students who began in one four year institution and transferred challenges the image which professors, administrators, parents and the public held for higher education. Instead of entering a tunnel that resulted in graduation four years later, more than half the students who obtained bachelor’s degrees attended more than one

college (Adelman, 1999). Such numbers invited careful study to learn about why and how students made such transitions. Knowledge regarding both the reasons for transfer, and data measuring success, or lack of success, helped educators to meet the needs of transfer students. Students who attended more than one four year institution did not receive equal attention from higher education (Li, 2010). Li numerated three reasons for the lack of attention given to transfer students.

Theories and models measuring persistence to graduation targeted academic and socialization only on the original school. Those who transferred to another school were simply labeled “dropouts.”

Policymakers failed to realize the difficulties posed on transfer students who moved from one four year school to another. There was an urgent need for articulation, alignment of curricula, and a standardized course numbering system between all regional four year institutions. An effective argument could be made for a nationalized curricula and course numbering system. The inefficiency of the transfer process hindered students from graduating in a timely manner.

Higher education administrators injected ambiguity when they used transfer students to fill upper level courses which historically lose many students. At first glance, this strategy seemed to be an effective utilization of educational resources, but if transfer students were unsuccessful with such classes, the cost of instruction increased. Because the results were mixed, transfers, who receive no articulation guarantees and lose their financial aid if they are unsuccessful, also offer little attraction and low priority for administrators.

Three questions, “Do four-year college students of lower SES transfer because they lack information, financial resources or academic preparation? Among more advantaged students, is college transfer based more on personal preference or educational expectations on financial or academic necessity? And, what consequences does changing colleges hold for completing a degree?” guided Deil-Amen and Goldrick-Rab’s (2009) research. They identified two types of transfer other than the two year to four year planned transfer. Lateral transfer was defined as; from one four year institution to another four year school. Reverse transfer identifies a move from a four year to a two year school. Their findings included that while a reverse transfer is disadvantageous relative to staying in a four year college or a lateral transfer it is preferable to starting in a two year institution. The highest completion (79%) occurred with students who stayed with original 4 year college. Students who remained continuously enrolled with a lateral transfer (69%) also showed a high rate of success. Those who reverse transferred on their path obtained the lowest rate (22%). But students who reverse transferred, and later returned, or moved to a four year school, substantially increased their graduation rate (49%) (Deil-Amen & Goldrick-Rab, 2009).

Each student designed, modified and re-designed the route toward degree completion. Four year universities would do well to treat transfers from four year colleges in an individualized, rather than homogeneous process. Transfers from two year colleges often found success using institutionally designed programs. Students who reverse transferred, and then returned to a four year college, benefitted from either approach, but success most likely occurred after a highly qualified advisor interviewed

and reviewed the pathway the student already traversed to arrive at the four year institution (Deil-Amen & Goldrick-Rab, 2009).

Meeting the needs of transfer students brought a crucial component for four year institutions (Jacobs, Lauren, Miller, & Nadler, 2004). Concerns for the academic transfer students' success began with the admissions process. This concern included those students who transferred through a collaborative agreement between two year colleges and the university.

Advisors and residence hall directors benefitted from reports and interviews with individual transfer students. Positive findings included that transfer students were more confident academically, more committed to the university, brought clearer goals and a positive, initial academic experience. The major concern for transfer students was that they were more likely to struggle socially than homegrown students (Woosley, 2005).

Glass (2002) recommended that four year institutions "continue to seek effective ways of reaching out" to community college transfers, especially during the first semester they attended because that is the time they are most "at risk" (Glass, 2002, p. 427). Four year colleges offer several services which could help transfer students to succeed. However, the transfer students were often unaware that helpful services were available. Transfer students do graduate, but like "native [homegrown] students" often they did not graduate until after the second semester of senior year. Most college dropouts occurred by the end of junior year. Students who persisted through the end of the junior year, graduated

A call for "high quality mandatory advising programs" was issued to enable students to meet the scholastic issues necessary to build and enjoy a successful college

experience (Deil-Amen & Goldrick-Rab, 2009). Getting students to connect with advisors presented a further challenge. While making connections mandatory may at first glance seem to be the solution, in a free society, mandatory obligations can present the antithesis of learning how to handle freedom. To meet the needs of incoming students, a University of Utah advising program designed and implemented an incentivized approach to reach out to new students. Students who met with advisors received priority registration on coursework. The program used an advising committee to develop and synchronize professional development for campus advisors, developed a website linking resources, collaborated with student government and academic advisors to put in place a calling campaign, and targeted those who had not yet registered (Stewart & Reilly, 2010).

Transfer students were often lumped together. This approach invited problems to institutions and advisors. Recognition of specific differences in the type of transfer student who presented to the institution, lateral, four year to four year, two year to four year, or reverse transfer, four year to two year enhance the opportunity to build success. Check on policies and programs to provide equity for all students (Grites, 2010). Three problems to examine included to recognize that transfer shock exists, strengthen articulation agreements and use technology expeditiously.

Four recommendations were offered to resolve those and other issues to bolster retention and graduation rates for transfer students.

1. Enhance communication.
2. Establish "Transfer Centers".
3. Improve orientation programs or develop Transfer Courses.

4. Treat transfer students identically to “native” [homegrown] students. (Grites, 2010, pp. 13-14)

Praxis II

The *Oxford English Dictionary (OED)* (2010) devoted more than 1200 words to discuss the definition and nuances of the word “praxis”. First printed in English by Sir P. Sidney, the (word) “praxis” differed from knowledge (gnosis) in an Aristotelian maxim, “For as Aristotle sayeth, it is not *Gnosis*, but *Praxis* must be the fruit”, (p. 1). The first definition for praxis is: “Action or practice; spec. the practice or exercise of a technical subject or art, as distinct from the theory of it; (also) accepted or habitual practice or custom” (p. 1).

Other important information connected with the term from *OED* include; “...synthesis of theory and practice seen as a basis for a condition of political and economic change. Also: an instance of this; the application of a theory or philosophy to a practical political, social, etc., activity or programme” (Praxis, p. 1.) The shades of meaning slightly alter the usage with this understanding. Certainly, politicians wished to build a practical political programme with the adoption of NCLB.

Interestingly, the *OED* noted that praxis “has been increasingly used since the 1960s, following the translation into English of Marx’s early writings, (Praxis, p. 1).” One of the connections noted that “knowledge evolves from the interaction of reflection and action (or praxis) to transform the social conditions” (p. 1). Politicians who voted for NCLB may have understood this usage.

As a marketing company, ETS would benefit from locking into all the meanings and shaded nuances by choosing Praxis as the title of their teacher assessment and evaluation instruments. For example, “Action entailed, required, or produced by a theory, or by particular circumstances.” This additional information, especially the term, “required,” makes the term praxis very attractive for ETS to choose to name the test(s). In addition, “praxis” is used in medicine to connect with a test, a collection of examples and an instrument or practice or a working model. These definitions and examples make the choice of the term, “praxis”, for the ETS Praxis series trademark a powerful connection to a diverse range of audiences.

“When should a student take the Praxis II?” presented an important question for faculty advisors to consider when students make their first attempt to pass the Praxis II. The optimal time for taking the Praxis II depends upon the level (early childhood, elementary, middle school, secondary subject) of the test. For elementary education students, the LU director recommended that the student successfully complete the course titled Analysis and Correction of Reading Problems. Professors reported that five questions on the test are referenced in that course.

For secondary education students, LU professors recommended that students take the Praxis II following successful completion of all content area courses. For middle school, both content and pedagogical test questions were referenced in the Praxis II. Therefore, LU education advisors guided students to successfully complete four education courses recommended by professors before taking the Praxis II (Dr. Frank Thouvenot, Dr. Ken Johnson, personal communication, February, 2011).

Students are accepted into the Lindenwood University School of Education after completion of sophomore year and passing the C-BASE. While there may be some leeway, since students must pass the Praxis II before they are considered for placement in student teaching, the Dean of the School of Education identified early spring of the junior year as the optimal time to take the Praxis II. The more information that advisors can access regarding their assigned individual student, helps the advisors make the best recommendation regarding when to take the Praxis II. Sutton (2004) identified the top factor in predicting success to pass the Praxis II as where the student attended K-12 schooling as. Other helpful information includes student Grade Point Average (GPA), and for elementary and middle school test takers, which Education courses have been completed. To pass Praxis II for 9-12 certification, the more coursework completed in the student's major, the greater the likelihood of first time pass on the Praxis II (Dr. Frank Thouvenot, personal communication, February, 2011).

Summary

Two groups dominated the arguments regarding educational reform during the construction of NCLB. One group claimed that public schools are failing the children. That group sought to change public education completely. That group insisted on writing NCLB to hold public schools accountable, up to, and including, closing of the school for failure to meet established goals of adequate yearly progress. That group also believed that teacher education schools failed to produce a high quality teacher, and later, a highly effective teacher. That group believed the United States population contained plenty of highly effective teachers who are not allowed to enter the teaching profession only because they fail to possess teaching credentials. That group accused teacher education

schools of holding a monopoly on teacher certification. That group insisted upon a teacher achievement test under NCLB as part of the teacher certification process. That group also demanded other routes to teacher certification rather than through a teacher education program. That group did not value teacher education schools.

The second group believed in teacher education schools. The second group acknowledged that public education owns some problems, but did not believe that every school failed to educate students. The second group believed that a teacher is a professional who is best served by attaining a rigorous education to prepare for a lifetime career of serving children. The second group believed that educational research served to guide professional teachers to identify and use the best practices for education through research based instruction.

**Chapter Three: Methodology: Cut Data to Gain Knowledge,
D – I, Processing Data to Produce Information**

Research Perspective

This predictive non-experimental research study examined six years of data to determine if a significant difference as measured by the first time Praxis II Pass rates between Lindenwood University homegrown students and transfer students exists. The initial data included all Lindenwood University records for the Praxis II. All graduate Praxis II scores were eliminated. This review isolated the first time that undergraduate students took the Praxis II and analyzed the passing rates for two groups, homegrown, (students whose transcripts showed that they had taken freshmen orientation), and transfer, (defined in this study as students who arrived at the university after taking 25 or more hours and transferred from one or more other schools). The 2,565 undergraduate scores included 1,005 Praxis II test results for homegrown undergraduate students, and 1,560 Praxis II test results for transfer undergraduate students. After eliminating duplicate Unique Identification (UIDs), there remained 305 first time Praxis II scores from homegrown students and 492 first time scores for transfer students.

Predictive Non-Experimental Research

This quantitative study barely seemed to fit into the confines established in educational statistics texts, like Bluman's (2008) *Elementary Statistics: A Step by Step Approach*. In fact, I was often confused as to whether the quantitative study should fit into causal-comparative or correlational research. To help clarify the kind of study, I researched the two terms (causal-comparative and correlational). I discovered that I was not the only educational researcher confused by these two concepts. In a paper entitled,

It's (Beyond) Time to Drop the Terms Causal-Comparative and Correlational Research in Education, Johnson, (2000) established a classification system to describe the type of non-experimental research educators often utilize.

This study examined a collection of longitudinal data to identify trends. Referencing Johnson's (2000) article enabled me to understand why I experienced difficulty in determining the kind of research I was conducting. Other disciplines used different terminology to identify this type of study as, non-experimental research. Under Johnson's descriptors, this study is predictive non-experimental research.

Data-Information-Knowledge-Wisdom (DIKW)

“Knowledge is always gained by the orderly loss of information.” (Boulding, 1970, p .2) This study incorporated the Data-Information-Knowledge-Wisdom (DIKW) (Bellinger et al., 2004; Moursond 2002; Sharma 2004) model. DIKW guided systems thinking for data processing by organizing content of the human mind into five categories:

1. Data - or symbols,
2. Information - or data processed to become useful,
3. Knowledge - or application of data and information,
4. Understanding - an appreciation of why things work
5. Wisdom - or evaluated understanding.

DIKW served as a model, but Weinberger (2010), who readily accepted the first two ideas, connecting the transformation of data to information, pointed out limitations on the last two transformations. Weinberger refused to overturn Plato's 2,500 year old definition of knowledge, “a set of beliefs that hold true and that we are justified in

believing” (p. 1). Knowledge makes the “pieces go together to make something true and beautiful” (p. 1).

To compare Praxis II first time passing rates between homegrown and transfer students, required a thorough understanding of quantitative data. The DIKW model began with collection of data. For this study, processing initiated by subtraction of data, in order to acquire essential information. Remaining information was organized and reorganized to search for patterns.

The purpose of the study was to determine whether or not a statistically significant difference in passing rates between homegrown students and transfer students existed, when students take the Praxis II for the first time. First time passing rates were calculated.

Alternate Hypothesis: There is a difference in academic performance between homegrown students and transfer students at Lindenwood University as measured by the first time Praxis II pass rates.

Null hypothesis: There is not a difference in academic performance between homegrown students and transfer students as measured by the first time Praxis II pass rates.

Determination of statistical significance occurred following the computation of first time passing rates. This quantitative study used z test values obtained from random samples for Elementary Education (homegrown and transfer) and Physical Education (homegrown and transfer). All subject areas were examined, but Elementary Education and Physical Education provided numerous enough scores to analyze random samples. To generate data for testing required working with only one test code at a time because

each test code had its own passing score. Comparing one test code to another test code would not yield valid statistical results. The passing scores are set by the state of Missouri Department of Elementary and Secondary Education (DESE). Four random samples were drawn, based upon Praxis II test codes. The random samples were obtained after the data was sorted into test codes and divided into homegrown and transfer data sets. To randomize the data, Randomizer software was used.

Context and Access

During the first decade of the 21st century, the School of Education at LU grew into a sizable teacher certification institution. LU collected and stored various data for all students who complete the process of attaining teacher certification in Comprehensive Academic Management Systems (CAMS). Such rich data offers the opportunity to examine progress by looking for trends over time, in this case a six year span from first records in 2005 until records from summer, 2010.

Access to LU School of Education data on individual program completers offered the opportunity to draw random samples. Information from student personnel data was blinded so that researcher possessed no knowledge of names or other identifying characteristics. A unique identification number was assigned to each individual set of information in order to identify statistical queries, check for duplicates and results.

Homegrown students were identified as those who had completed course LU110, required of all entering freshmen with fewer than 21 hours of previous post-secondary course credit. Under the Homegrown column on the spreadsheet created for data management for this study, “yes” identified a homegrown student. A blank cell identified a transfer student.

Participants

Participants in the study included all undergraduate students who took the Praxis II from school year January 2005, through June 2010. Only the undergraduate student records were accessed. Students chose to take the Praxis II tests based upon the field of education in which they wished to obtain teacher certification from DESE. Because a student took a particular Praxis II did not necessarily identify the student as one who completed a course of study in the field measured by that test. No restriction is placed on an examinee to produce evidence of completing a specific set of coursework, either by Lindenwood University or the State of Missouri. Since the University required that students pass the Praxis II before student teaching, there is pressure for an undergraduate to pass the Praxis II before the middle of the senior year. The Praxis II taken by the student was identified by the test code and indicated the score received. I entered the passing score for each test code in the specific column to check against the reported score and indicated passing.

Table 2

Elementary, Secondary, and Physical Education by Gender and Ethnicity

Test Code	Male	Female	Black	White	Other
Elementary					
HG	5	131	1	133	2
TR	16	222	4	232	2
Total	21	353	5	365	4
Physical Education					
HG	35	23	4	51	3
TR	46	14	4	55	1
Total	81	37	8	106	4
Secondary					
HG	24	59	1	80	2
TR	24	94	3	114	1
Total	48	163	4	194	3

Note: HG: homegrown; TR: transfer

Calculations for the percentage of first time passers for Test Code 11 for both Homegrown (HG) and Transfer (TR) were completed. From 2005 through June 2010, 337 HG and 461 TR students took Praxis II for the first time. Two hundred twenty-nine HG and 309 TR passed on the first try. Overall, the passing rate for HG students was calculated to be 67.95%, and the passing rate for TR students was calculated at 67.03%. A total of 798 Praxis II tests were taken for the first time. Five hundred thirty-eight students passed the Praxis II for the first time for an overall percentage first time passing rate of 67.42%.

Table 3

Elementary, Secondary and K-12 by Homegrown and Transfer First Time Pass Rates

Test Code	HG Number	HG Pass	HG% Pass	TR Number	TR Pass	TR %Pass
Elementary	137	90	65.93	239	149	62.34
Secondary	84	65	77.38	103	84	81.55
K-12	116	74	63.79	119	76	63.87
Total	337	229	67.95	461	309	67.03

Note: HG: homegrown; TR: transfer

Procedure

Collecting the data constituted the first step to determine first time passing rates for Praxis II. ETS sent reports generated following each time the test was administered to the schools of higher education in which the students were enrolled. At Lindenwood, the data were stored on paper for three years in education archives. Student information data were also stored electronically on CAMS. After meeting with the Dean of Institutional Research, I constructed headings for an Excel-7 spread sheet. In addition to input from the Dean, at his suggestion, I also met with Dr. Andrea Alameda, professor of Physical Education, who worked with Praxis II information. The headings for the spreadsheet were submitted to the CAMS supervisor.

The amount of academic data available in CAMS is rich. The university measured and maintained numerous categories. I created headings to collect data on the spreadsheet used for data organization for this study. The headings included gender, age (in 5 year increments), Homegrown, (those who started with fewer than 24 hours and took LU10), transfer students, Praxis II Test Code, Major, Praxis II Major Test Score, Minor, Praxis II Minor Test Score, ethnicity, Missouri resident, Other United States resident, International student, Overall GPA, Major GPA, Education GPA, Middle

School content test score, Five education course cluster completed, MAT student, Date of Taking Praxis II.

Accessing Praxis II Data

Dr. Andrea Alameda collected Praxis II scores for the university for several years. I shared the spreadsheet and column titles with her and requested input. She added Test Code passing scores for a heading. When Dr. Alameda received the Praxis II scores, she sent them to the CAMS supervisor. Dr. Alameda said that CAMS supervisor performed queries through CAMS to identify the Praxis II test takers. The supervisor of CAMS formatted the Praxis II information into an Excel 7 document meeting the requested heading requirements.

Collecting Data

Due to the size of the School of Education, random samples of students from both homegrown and transfers were selected. Data from a random sample provided valid and reliable numbers for both descriptive and inferential manipulation for the study areas of elementary education and physical education.

Scores for Elementary Education Praxis II (0011) constituted data for one population. Early Childhood Education (0021, 0690) was not included with elementary education. Early Childhood Education scores were reported descriptively in tables only because the samples were not large enough.

Descriptive information for secondary core subjects was included for Praxis II test codes in the areas of math (0069, 0061), communication arts (0049, 0041), social studies (0089, 0081) and science (0439, 0235, 0245, 0571, 0435). Student counts for passing scores in Business Education (0101), Family and Consumer Sciences (0121) and

Marketing Education (0561) were also included with the secondary core subject category. The passing secondary test scores from each of these areas were combined to determine the secondary passing rate.

K-12 certification subjects include Art (0133), Music (0113), and foreign languages, French (5174), German (5183), and Spanish (5195). Special Education Praxis II exams were included in this category (0281, 0271, 0353, 0542, 0543, 0544, 0545).

Physical education (0091) and Health (0550) represented a large number of Lindenwood University Praxis II test takers. A random sample was drawn from Physical Education (0091) data for analysis.

Organizing Information

I sorted columns by Praxis II test codes. For example, elementary education was test code 11. Many students took multiple Praxis II test codes. Because the sort was by test code, their Unique Identification codes (UID) and Test Date columns were used to identify the first time an individual student took each Praxis II test. In order to study only the first time that the student took a particular Praxis II, I eliminated duplicate UIDs on each Praxis II test code.

Each Praxis II Test Code was sorted from highest to lowest using a custom sort of the test scores column. I color coded scores for passing and above in green. The scores below passing were coded in red. I compared scores to the passing score for that Praxis II code, counted the number of scores, and counted the number of passing scores. To calculate the percentage of first time passers for each test code, I divided the number of passing scores by the total number of first time exam takers.

Table 4

Compare First Time Praxis II Pass Rates Homegrown (HG) to Transfer (TR)

Test Code	Number HG	1 st Pass HG	HG %age	Number TR	1 st Pass TR	TR %age
Elementary	137	90	65.93%	239	149	62.34%
Secondary	84	65	77.38%	103	84	81.55%
K-12	116	74	63.79%	119	76	63.87%
Total	337	229	67.95%	461	309	67.03%

Note: HG: homegrown; TR: transfer

Elementary Certification

Praxis II test code 11 represented the students who took the elementary education test for certification. Elementary education represented the largest number of students from the university who completed at least one test code. Elementary education majors take the appropriate Praxis II exam for certification in grades K-6. Elementary education teachers represent almost half of all teachers working in K-12 education.

Secondary Education Certification (Middle School and 9-12)

To measure secondary teacher candidates’ academic preparation, those candidates who intended to teach grades 7- 12, test scores were disaggregated first, for core subjects; communication arts, mathematics, science and social studies. The subject areas of communication arts, mathematics, and social studies were represented by two tests each; one for secondary content and one for middle school. The subject area of science was represented by tests for individual topics; one test for middle school and five tests to represent the topics of Biology, Chemistry, Earth Science, General Science, and Physics.

Table 5

Praxis II Certification Secondary Test Codes

Subject	9-12 Test Codes	Middle School Test Codes
Communication Arts	41	49
Math	61	69
Social Studies	81	89
Science	0235, Biology 0571, General Science 0265, Physics 0245, Chemistry 0435, Earth Science	0439

Eight different Praxis II test codes were reported for secondary education.

Secondary education consisted of both 9-12 and Middle School certification. Eighty-five homegrown students took secondary content Praxis II tests for the first time. Sixty-four passed on the first attempt, for a first time pass rate of 75.92%.

One hundred fourteen transfer students took secondary content Praxis II tests for the first time. Eighty-five passed on the first attempt, for a pass rate of 74.56%. The difference in first time passing rate for secondary content Praxis II was a negligible 1.36%. The passing rates and test score ranges for each Praxis II exam in the Secondary Education Certification category are summarized in Tables 5 - 12.

Communication Arts

Table 6

9-12 Communication Arts

Test Code 41	Total	Pass	Percentage	Range
HG	11	11	100	168-187
TR	16	16	100	165-198
Total	27	27	100	165-198

Note: HG: homegrown; TR: transfer

Table 7

Middle School Communication Arts

Test Code 49	Total	Pass	Percentage	Range
HG	7	4	57.15	143-200
TR	13	11	84.61	149-198
Total	20	15	75.00	143-200

Note: HG: homegrown; TR: transfer

Mathematics

Table 8

9-12 Mathematics

Test Code 61	Total	Pass	Percentage	Range
HG	9	6	66.67	123-173
TR	7	5	71.43	109-174
Total	16	11	68.8	109-174

Note: HG: homegrown; TR: transfer

Table 9

Middle School Mathematics

Test Code 69	Total	Pass	Percentage	Range
HG	17	12	70.59	145-195
TR	20	15	75.00	103-192
Total	37	27	72.97	103-195

Note: HG: homegrown; TR: transfer

Social Studies

Table 10

9-12 Social Studies

Test Code 81	Total	Pass	Percentage	Range
HG	19	18	94.73	149-188
TR	36	32	88.89	138-194
Total	45	40	88.89	138-194

Note: HG: homegrown; TR: transfer

Table 11

Middle School Social Studies

Test Code 89	Total	Pass	Percentage	Range
HG	10	7	70.00	141-185
TR	22	18	81.82	132-194
Total	32	25	78.13	132-194

Note: HG: homegrown; TR: transfer

Science

Table 12

9 – 12 Biology

Test Code 235	Total	Pass	Percentage	Range
HG	3	1	33.33	144-152
TR	3	2	66.67	
Total	6	3	50.00	

Note: HG: homegrown; TR: transfer

Table 13

Middle School Science

Test Code 439	Total	Pass	Percentage	Range
HG	7	4	57.14	139-167
TR	14	13	92.86	141-187
Total	21	17	80.95	139-187

Note: HG: homegrown; TR: transfer

Secondary Education

Eight different Praxis II test codes were reported for secondary education.

Secondary education consisted of both 9-12 and Middle School certification. Eighty-five homegrown students took secondary content Praxis II tests for the first time. Sixty-four

homegrown students passed on the first attempt, for a homegrown first time pass rate of 75.92%.

One hundred and fourteen transfer students took secondary content Praxis II tests for the first time. Eighty-five transfer students passed on the first attempt, for a pass rate of 74.56% for transfer students. The difference in homegrown and transfer students’ first time passing rate for secondary content Praxis II was a negligible 1.36%.

K – 12 Certification

Six different Praxis II test codes were reported for K-12 certification. In addition to Physical Education (091), K-12 test codes represented were Health (550), Music (113), Art (133), French (173), and Spanish (191). One hundred sixteen homegrown students took the Praxis II for the first time. Seventy-eight homegrown students passed on the first attempt, for a first time pass rate of 67.21%.

One hundred sixteen transfer students took content Praxis II tests for the first time. Seventy-five transfer students passed Praxis II on the first attempt for a first time pass rate of 64.65%. The percent difference was a negligible 2.57%. The passing rates and test score ranges for each Praxis II exam in the K-12 Certification category are summarized in Tables 13 - 18.

Table 14

Physical Education

Test Code 91	Total	Pass	Percentage	Range
HG	58	25	43.10	131-170
TR	60	34	56.67	104-168
Total	118	59	50.00	104-170

Note: HG: homegrown; TR: transfer

Table 15

Music

Test Code 113	Total	Pass	Percentage	Range
HG	15	14	93.33	145-179
TR	13	10	76.92	126-178
Total	28	24	85.71	126-179

Note: HG: homegrown; TR: transfer

Table 16

Art

Test Code 133	Total	Pass	Percentage	Range
HG	10	6	60.00	133-171
TR	15	10	66.67	140-178
Total	25	16	64.00	133-178

Note: HG: homegrown; TR: transfer

Table 17

French

Test Code 173	Total	Pass	Percentage	Range
HG	2	2	100.00	177-191
TR	2	2	100.00	176-190
Total	4	4	100.00	176-191

Note: HG: homegrown; TR: transfer

Table 18

Spanish

Test Code 191	Total	Pass	Percentage	Range
HG	7	5	71.43	144-196
TR	3	3	100.00	166-175
Total	10	8	80.00	144-196

Note: HG: homegrown; TR: transfer

Table 19

Health

Test Code 550	Total	Pass	Percentage	Range
HG	24	19	79.17	540-730
TR	27	18	66.67	540-790
Total	51	37	72.55	540-790

Note: HG: homegrown; TR: transfer

K-12 Certification

Six different Praxis II test codes were reported for K-12 certifications. In addition to Physical Education, K-12 test codes represented; health, music, art, French, and Spanish. One hundred and sixteen homegrown students took the Praxis II K-12 content certifications for the first time. Seventy-eight homegrown students passed on the first attempt, for a first time pass rate of 67.21%.

One hundred and sixteen transfer students took Praxis II K-12 content certification tests for the first time. Seventy-five transfer students passed Praxis II K-12 content certification tests on the first attempt for a first time pass rate of 64.65%. The percent difference between homegrown and transfer students in K-12 certifications on first time Praxis II was a negligible 2.57%.

Early Childhood Certification

Early Childhood Education (20) was counted as its own category. Twenty-one homegrown students took Early Childhood Praxis II for the first time. Nineteen homegrown students passed the Early Childhood Praxis II on the first attempt, for a first time pass rate of 90.48%.

Sixty transfer students took Early Childhood Praxis II for the first time. Fifty-five transfer students passed the Early Childhood Praxis II on the first attempt, for a first time pass rate of 91.67%. The difference in first time pass rate between homegrown and transfer Early Childhood scores was a negligible 1.19%. The passing rates and test score ranges for the Praxis II exam in the Early Childhood Certification category are summarized in Table 20.

Table 20

Early Childhood Education

Test Code 20	Total	Pass	Percentage	Range
HG	21	19	90.48	147-197
TR	60	55	91.67	139-200
Total	81	74	91.36	139-200

Note: HG: homegrown; TR: transfer

Analysis of Information

After calculating passing rates for each group, homegrown (elementary, secondary, K-12, and early childhood) and transfer (elementary, secondary, K-12, and early childhood), I compared the pass rates. The pass rates were computed for the entire population of all first time Praxis II takers for each test code.

Custom sorts placed the scores for the entire six year span from earliest to latest. Use of random generator obtained 30 pieces of data from each list, (homegrown and transfer).

A *z* test for the difference in proportions of first time passes between the homegrown and the transfer groups of students was calculated. The raw scores from the two random samples using a *z* test for difference in means were compared. The *z* tests for the random samples for the two elementary education groups (homegrown and transfer)

were calculated at the 95% confidence level. The null hypothesis was: Over a six year span of time, for undergraduates attending Lindenwood University, there is no difference in first-time pass rate proportions of homegrown students and transfer students as measured by Praxis II.

After completing the z tests for difference in proportions, a z test for difference in average mean scores was applied. To confirm the accuracy of results, a p test compared to the alpha value on the two groups was performed. The p test determined whether or not a significant difference existed between the means of the two random samples. The null hypothesis was: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores achieved by homegrown students and transfer students as measured by Praxis II.

A Chi-Square comparison of the variance of the random sample scores for the two groups, Homegrown and Transfer, was performed to support the results from the comparison of means. The null hypothesis was: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in variance of scores achieved by homegrown students and transfer students as measured by Praxis II.

An Analysis of Variance, ANOVA, was applied to samples from each of the six years. The purpose of the ANOVA was to check to see if one or more of the years represented noticeably different means from the others. Single factor ANOVAs were performed on the two largest groups, Elementary Education and Physical Education. The ANOVA was performed at the 95% confidence level. The null hypothesis for the ANOVA was: Over a six year span of time for first-time Praxis II takers at Lindenwood University, there will

be no difference in the average mean score for the Homegrown group of students and the average mean score for the Transfer group of students.

A year-to-year comparison of average scores, along with a Chi-Square test for independence was applied to determine whether any differences existed on a long term basis.

The null hypothesis for the Chi-Square test for independence was: Over a six year span of time, for Lindenwood University undergraduates, the rate of first-time passing is independent of the type of preparation (Homegrown or Transfer), as measured by Praxis II in the field of Elementary Education.

ANOVA results were supported with a Chi-Square test for independence using proportions and using mean scores. A Chi-Square comparison of the variance of the random sample scores for the two groups (Homegrown and Transfer) was performed to support the results from the comparison of means. The comparison of means, in turn, supported the results from the comparison of the proportion of first-time pass rates. Chi-Square was calculated for elementary and physical education. The Chi-Square triangulated the data. The Chi-Square was performed at the 95% confidence level.

Summary

The methodology described can be replicated at other institutions who maintain access to information provided by ETS. Schools who utilize the CAMS or a similar system of managing information can input the data onto an Excel 7 spreadsheet. The mechanics of the EXCEL7 spreadsheet support manipulation of data in order to analyze data and build information.

Employment of the DIKW model guided me. Though data can be overwhelming, subtracting extraneous data leads researchers to find the vital information in order to learn the answers posed in the study. Calculating first time Praxis II passing rates was accomplished by dividing the number of first time passing scores by the total number of first time scores. The research questions were answered after quantitative data was processed into information. Analysis of the information helped lay a foundation to upon which to build a baseline of knowledge concerning Praxis II first time passing rates for the University.

The methodology appropriately explained step by step how to replicate the study. First, access and collect the appropriate data. Second, reduce and eliminate extraneous data. Third, organize essential information. Fourth, calculate the percentages. Then, perform the statistical analysis.

Use z tests to compare the findings from the information in order to provide statistical comparisons. Chi Square tests for independence confirmed the results from the z tests and triangulated the study findings.

Chapter Four: K, Knowledge Results

The goal of the Lindenwood University School of Education is to produce a teacher graduate who “looks and acts like a second year teacher upon completion of the student teaching experience” (Bice et al., 2010). In order to be hired as a high quality teacher, a teacher must pass the Praxis II in their assigned content area. The Praxis II content test is one measure that the University maintains. By examining the first-time passing rate of the Praxis II, the School of Education builds a baseline of knowledge to record and benchmark the student success based on this measurement. The state of Missouri does not require that the Praxis II is passed until the end of the second year of teaching. However, LU required that education students pass the Praxis II prior to participation in the student teaching experience.

Observable differences in first time Praxis II passing rates existed within subgroups. Due to the observable differences, questions arose pertaining to quality of student preparation. This study analyzed the first-time passing rates for undergraduate education majors at LU for the years including 2006 through the summer session of 2010. In this chapter, an analysis of the results from tests for statistical significance is presented.

Alternate Hypothesis: There is a difference in academic performance between homegrown students and transfer students at Lindenwood University as measured by the first time Praxis II pass rates.

Null hypothesis: There is not a difference in academic performance between homegrown students and transfer students as measured by the first time Praxis II pass rates.

The two largest populations of test-takers University were Elementary Education (11) and Physical Education (91). The total number of students participating in these two Praxis II exams provided sufficient data for a statistical analysis for comparison.

Elementary Education

The passing score for Elementary Education, Test Code 11 is 164 out of a possible 200 points. A score of 164 therefore represents 82% of the test score.

Step one involved a careful examination of scores for the Elementary Education (11) Praxis II in order to find the vital statistics for this study. The researcher removed duplicate scores for students on the list in order in order to measure only the student’s earliest recorded score.

After removing duplicate scores for all years combined, the first time scores were sorted by date from earliest to latest. Then, a similar sort was applied to data separated by the year the score was reported. Table 21 summarizes the results.

Table 21

Elementary Education Praxis II Test Code 11

Year	Homegrown				Transfer			
	Number of Students	Pass	% Passed	Range	Number of Students	Pass	% Passed	Range
2005	14	7	50.00	126-190	22	16	72.72	138-189
2006	15	10	66.67	136-195	34	21	61.77	128-192
2007	20	12	60.00	128-193	35	23	65.71	134-199
2008	37	28	75.68	134-195	49	33	67.35	103-187
2009	21	12	57.14	119-188	53	28	52.83	127-190
2010	27	18	66.67	109-191	39	27	69.23	133-191
Total	138	88	64.71	109-195	239	149	61.92	103-199

Analysis and Results: z-test for difference in first-time passing proportions**Elementary Education**

A z-test for the difference in proportions of first time passes between the Homegrown group of students and the Transfer group of students was performed. The Randomizer software was used to create a random sample of 30 scores from each group.

Null Hypothesis: Over a six year span of time, for undergraduates attending Lindenwood University, there is no difference in first-time pass rate proportions of homegrown students and transfer students as measured by Praxis II in the field of Elementary Education.

Results: Test-value $z = 1.92$ at a 95% confidence level. The critical values were +1.96 and -1.96. Since 1.92 fell below the critical value of +1.96, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis that there was a difference in first time passing rates of the Praxis II for undergraduate students in the area of Elementary Education.

Because the test-value and critical value were so close, the p -value for comparison to $\alpha = 0.05$ was computed. Analytical results were the same: $p = 0.0548$. Since 0.0548 is larger than $\alpha = 0.05$, do not reject the null hypothesis.

Analysis and Results: z-test for difference in average scores Elementary Education

For Elementary Education (11) the average raw scores from the two random samples were compared using a z test for difference in means. Results of the test are summarized in Table 22.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores achieved by

homegrown students and transfer students as measured by Praxis II in the field of Elementary Education.

Table 22

z-Test: Two Sample for Means

	<i>Homegrown</i>	<i>Transfer</i>
Mean	170.1666667	162.5333
Known Variance	168	396
Observations	30	30
Hypothesized Mean Difference	0	
Z	1.760497055	
P(Z<=z) two-tail	0.078323566	
z Critical two-tail	1.959963985	

Note: Confidence Level: 95%.

Results: Test-value $z = 1.76$ at a 95% confidence level. The critical values were +1.96 and -1.96. Since 1.76 fell below the critical value of +1.96, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis that there was a difference in first attempt average scores achieved by homegrown students and transfer students as measured by Praxis II in the field of Elementary Education.

Single Factor ANOVA for Elementary Education (11)

Homegrown Students

To check for year-to-year differences among the homegrown undergraduates, a Single Factor ANOVA was applied to random samples of thirty scores from each of the six years to decide if one or more of the years represented noticeably different means than the others. Descriptive information and results of the ANOVA are summarized in Tables 23 and 24.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores, in one or more years, achieved by homegrown students as measured by Praxis II in the field of Elementary Education.

Table 23

Descriptive Summary of Statistics for Homegrown Elementary Students

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
2005	14	2272	162.2857	468.0659
2006	15	2498	166.5333	243.1238
2007	15	2426	161.7333	326.4952
2008	15	2645	176.3333	169.8095
2009	15	2446	163.0667	389.3524
2010	15	2525	168.3333	221.381

Table 24

ANOVA Results for comparison of Homegrown Elementary Education Student Mean Score, Year-to-Year

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between Groups	2266.651	5	453.3303	1.505832
Within Groups	24987.12	83	301.0497	
Total	27253.78	88		

Results: Test-value $F = 1.505832$ at a 95% confidence level. The critical value was 2.324473. Since 1.505832 fell below the critical value of 2.324473, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis

that there was a difference in average scores achieved by homegrown students for one or more years, as measured by Praxis II in the field of Elementary Education.

Transfer Students

To check for year-to-year differences among the transfer undergraduates, a Single Factor ANOVA was applied to random samples (30) from each of the six years to decide if one or more of the years represented noticeably different means than the others.

Descriptive information and results of the ANOVA are summarized in Tables 25 and 26

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores, in one or more years, achieved by transfer students as measured by Praxis II in the field of Elementary Education.

Results: Test-value $F = 1.51023$ at a 95% confidence level. The critical value was 2.316858. Since 1.51023 fell below the critical value of 2.316858, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis that there was a difference in average scores achieved by transfer students in one or more years, as measured by Praxis II in the field of Elementary Education.

Table 25

Descriptive Summary of Statistics for Transfer Elementary Education Students

Groups	Count	Sum	Average	Variance
2005	15	2483	165.5333	260.2667
2006	15	2482	165.4667	361.2667
2007	15	2534	168.9333	348.9238
2008	16	2640	165.0000	170.4000
2009	17	2811	165.3529	223.6176
2010	17	2854	167.8824	298.1103

Table 26

ANOVA Results of Comparison of Transfer Elementary Education Student Mean Scores, Year-to-Year

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	207.785	5	41.5569	0.15102	0.97924	2.31686
Within Groups	24490.1	89	275.169			
Total	24697.8	94				

Chi-Square test for independence using proportions and mean scores Elementary Education (11)

The z test and ANOVA results for Elementary Education (11) were supported with a Chi-Square test for independence using mean scores converted into proportions. The Chi-Square test for independence measured a year-to-year comparison, in order to determine whether differences in scoring depended upon the type of student preparation;

homegrown or transfer. Calculation values for the Chi-Square test for independence are summarized in Tables 27 – 29.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, the rate of first-time passing is independent of the type of preparation (Homegrown or Transfer), as measured by Praxis II in the field of Elementary Education.

Table 27

*Observed Values for calculating the Chi Square test for dependency:
Elementary Education*

	2005	2006	2007	2008	2009	2010	Total
HG	50	66.67	60	75.68	57.14	66.67	376.16
TR	72.72	61.77	65.71	67.35	52.83	69.23	389.61
Total	122.72	128.44	125.71	143.03	109.97	135.9	765.77

Table 28

*Expected Values for calculating the Chi Square test for dependency
Elementary Education*

	2005	2006	2007	2008	2009	2010
HG	60.28227	63.09204	61.75101	70.25891	54.01924	66.75652
TR	62.43773	65.34796	63.95899	72.77109	55.95076	69.14348

Table 29

*Formula calculations for the Chi Square test for dependency
Elementary Education*

	2005	2006	2007	2008	2009	2010	test value
HG	1.753834	0.202907	0.049652	0.418285	0.18029	0.000112	
TR	1.693289	0.195902	0.047938	0.403845	0.174066	0.000108	5.120228

Note: Critical Value: 11.071.

Results: Test-value $\chi^2=5.120228$ at a 95% confidence level. The critical value was 11.071. Since 5.120228 fell below the critical value of 11.071, the null hypothesis

was not rejected. The data did not provide evidence to support the hypothesis that over a six year span of time, for Lindenwood University undergraduates, the rate of first-time passing was dependent upon the type of preparation (Homegrown or Transfer), as measured by Praxis II in the field of Elementary Education.

A Chi-Square comparison of random sample information for the two groups (Homegrown and Transfer) supported the results from the comparison of means, which in turn supported the results from the comparison of the proportions for first-time pass rates.

Elementary Education Test Code 91, 137 homegrown students completed the Praxis II for the first time. Ninety homegrown students passed Elementary education on the initial attempt. The passing rate for homegrown Elementary education Praxis II test takers was 65.69%. Two hundred and thirty-nine Transfer students completed the Praxis II for the first time. One hundred and forty-nine Transfer students passed Elementary education Praxis II on the initial attempt for a first time passing rate of 62.61%. There was an observable difference in the first time passing rate. However, the observable difference was not statistically significant.

Elementary education Praxis II test takers presented an observable difference in the first time passing rate measured by the difference in means of the random samples. The z -test for a difference in means verified that the difference between homegrown and transfer students in Elementary education, though observable, was not statistically significant.

The Single Factor ANOVA for homegrown Elementary education was determined at a 95% confidence level. Though an observable difference in the six year

groups of homegrown students Praxis II scores existed, the F value showed no statistically significant difference.

For transfer students who took Praxis II for the first time, a Single Factor ANOVA was determined at a 95% confidence level. Neither an observable nor a statistically significant difference was observed.

A Chi-Square test for dependency using proportions and mean scores for those who completed Elementary education Praxis II test for the first time supported the results from the comparison of proportions measured in the z-test. The Chi-Square supported the results that there is no evidence of dependence of passing Praxis II on the first attempt based upon whether a student is homegrown or transfer.

Physical Education (091)

The passing score for Praxis II Physical Education (091) in Missouri is 153 out of 200 possible. The raw score, 153, represents 77% of the total possible score.

Over the six year span, 58 homegrown students took the Physical Education (091) Praxis II for the first time. Twenty-five homegrown students passed on the first attempt, for a first time passing rate of 43.10 %. Sixty transfer students took the Physical Education (091) Praxis II for the first time. Thirty-five transfer students passed on the first attempt, for a first time passing rate of 56.67%.

Data for Physical Education (091) was organized with a process similar to that described for treatment of data for Elementary Education (11). The number of students and proportion of students passing the exam on the first attempt are summarized in Table 30.

Table 30

Physical Education Praxis II Test Code 91

Year	Homegrown				Transfer			
	Number of Students	Pass	% Passed	Range	Number of Students	Pass	% Passed	Range
2005	4	3	75.00	141-160	9	6	66.67	146-166
2006	3	0	0.00	141-152	4	1	25.00	136-157
2007	7	4	57.15	144-170	17	10	58.82	138-168
2008	12	3	25.00	139-170	8	6	75.00	140-165
2009	18	10	55.55	131-165	11	6	54.54	134-167
2010	8	5	62.70	146-163	11	4	36.36	104-165
Total	58	25	43.10	131-170	60	34	56.67	104-168

Analysis and Results: z-test for difference in first-time passing proportions Physical Education

A z test for the difference in proportions of first time passes between the Homegrown group of students and the Transfer group of students was performed.

Null Hypothesis: Over a six year span of time, for undergraduates attending Lindenwood University, there is no difference in first-time pass rate proportions of homegrown students and transfer students as measured by Praxis II in the field of Physical Education.

Results: Test-value $z = 1.92$ at a 95% confidence level. The critical values were +1.96 and -1.96. Since -2.12 fell below the critical value of +1.96, the null hypothesis was rejected. Information did provide evidence to support the hypothesis that there was a difference in first time passing rates of the Praxis II for undergraduate students in the area of Physical Education (PE).

Because the test-value and critical value were so close, the p -value for comparison to $\alpha = 0.05$ was computed. Analytical results were the same: $p = 0.0548$. Since 0.0548 is larger than $\alpha = 0.05$, do not reject the null hypothesis.

Analysis and Results: z-test for difference in average scores Physical Education

For Physical Education (091) the average raw scores from the two random samples were compared using a z test for difference in means. Results of the test are summarized in Table 32.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores achieved by homegrown students and transfer students as measured by Praxis II in the field of Physical Education.

Table 31

z-test results for the difference between Homegrown and Transfer Physical Education Student Scores

	<i>PE HG</i>	<i>PE TR</i>
Mean	150.4194	154.8065
Observations	31	31
Hypothesized Mean Difference	0	
z	-2.11739	
$P(Z \leq z)$ two-tail	0.034226	
z Critical two-tail	1.959964	

Because -2.11729 is less than the Critical Value of -1.959964, the null hypothesis is rejected. There is a statistically significant difference between Homegrown and Transfer Physical Education students mean scores as measured by first time Praxis II passing rates. This comparison encapsulated data generated from the entire six year span, from 2005 through 2010. It is also notable that the mean score for Homegrown

students of 150.4194 is approximately one and a half points below the passing score of 153. The mean score for Transfer students of 154.8065 is almost two points above the passing score.

Single Factor ANOVA for Physical Education (091)

Homegrown. To check for year-to-year differences in average scores, a Single Factor ANOVA was applied to samples from each of the six years to decide if one or more of the years represented noticeably different means than the others for homegrown students. Descriptive information and results of the ANOVA are summarized in Tables 33 and 34.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores, in one or more years, achieved by homegrown students as measured by Praxis II in the field of Physical Education.

Table 32

Descriptive Summary Statistics for Homegrown Physical Education Students

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
2005	4	610	152.5000	65.6667
2006	3	445	148.3333	40.3333
2007	12	1837	153.0833	75.7197
2008	13	1962	150.9231	105.5769
2009	18	2731	151.7222	117.6242
2010	8	1231	153.8750	46.9821

Table 33

ANOVA Results for Comparison of Homegrown Physical Education Mean Scores, Year-to-Year

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	100.0075	5	20.0015	0.221011	0.951901	2.392953
Within Groups	4705.9930	52	90.4998			
Total	4806.0000	57				

Results: Test-value $F = 0.221011$ at a 95% confidence level. The critical value was 2.392953. Since 0.221011 fell below the critical value of 2.392953, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis that there was a difference in average scores achieved by homegrown students in one or more years, as measured by Praxis II for homegrown students in the field of Physical Education.

Transfer. For Physical Education (091), to check for year-to-year differences, a Single Factor ANOVA was applied to samples from each of the six years to decide if one or more of the years represented noticeably different means than the others for transfer students. Descriptive information and results of the ANOVA are summarized in Tables 35 and 36.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, there is no difference in first attempt average scores, in one or more years, achieved by transfer students as measured by Praxis II in the field of Physical Education.

Table 34

*Descriptive Summary Statistics for Transfer
Physical Education Students*

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
2005	9	1403	155.889	47.8611
2006	4	584	146.000	75.3333
2007	17	2587	152.177	82.6544
2008	8	1251	156.375	87.1250
2009	11	1677	152.455	88.8727
2010	11	1656	150.546	278.8727

Table 35

*ANOVA Results for Comparison of Transfer Physical Education
Mean Scores, Year-to-Year*

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	435.2443	5	87.04886	0.755889	0.585514	2.38607
Within Groups	6218.689	54	115.1609			
Total	6653.933	59				

Results: Test-value $F = 0.755889$ at a 95% confidence level. The critical value was 2.38607. Since 0.755889 fell below the critical value of 2.38607, the null hypothesis was not rejected. The data did not provide evidence to support the hypothesis that there was a difference in average scores achieved by homegrown students in one or more years, as measured by Praxis II for transfer students in the field of Physical Education. There was no difference in average scores, year to year.

Chi-Square test for independence using proportions and mean scores Physical Education (091)

The z-test and ANOVA results for Physical Education (091) were supported with a Chi-Square test for dependency using mean scores converted into proportions. The Chi-Square test measured a year-to-year comparison, in order to determine if differences in scoring depended upon the type of student preparation; homegrown or transfer.

Calculation values for the Chi-Square test for independence are summarized in Tables 36 and 37.

Null Hypothesis: Over a six year span of time, for Lindenwood University undergraduates, the rate of first-time passing is independent of the type of preparation (Homegrown or Transfer), as measured by Praxis II in the field of Physical Education.

Table 36

Expected Values for calculating the Chi-Square test for independence

	2005	2006	2007	2008	2009	2010
HG	65.90305	11.62968	53.94774	46.5187	51.21244	45.98839
TR	75.76695	13.37032	62.02226	53.4813	87756	52.87161

Table 37

Formula calculations for the Chi-Square test for independence

	2005	2006	2007	2008	2009	2010
HG	1.255701	11.62968	0.190081	9.95416	0.36738	5.928306
TR	1.092225	10.11564	0.165335	8.658253	0.319552	5.156515
Chi-Square test value	54.83282					

Results: Test-value $\chi^2=5.120228$ at a 95% confidence level. The critical value was 11.071. Since 5.120228 fell below the critical value of 11.071, the null hypothesis

was not rejected. Information did not provide evidence to support the hypothesis that over a six year span of time, for Lindenwood University undergraduates, the rate of first-time passing was dependent upon the type of preparation (Homegrown or Transfer), as measured by Praxis II in the field of Physical Education.

A Chi-Square comparison of the random samples for the two groups (Homegrown and Transfer) supported the results from the comparison of means, which in turn supported the results from the comparison of the proportions for first-time pass rates.

For LU students who completed the Physical Education Praxis II, the first time the results differed from the Elementary Education results. Physical Education results showed observable differences. Transfer students displayed higher first time Praxis II passing rates in Physical Education than homegrown students. Over the six year span, 58 homegrown students took Physical Education Praxis II for the first time. Twenty-five students passed on the first attempt, for a first time passing rate of 43.10 %. 60 transfer students took Physical Education Praxis II for the first time. Thirty-five passed on the first attempt, for a first time passing rate of 56.67%.

The mean score for transfer Physical Education students was just above the passing score. For homegrown students, the mean score was below the passing score.

After applying the statistical tests, z-tests, p-tests, ANOVA and Chi-Square, the differences in students' scores who took Physical Education for the first time were judged statistically significant.

Summary

Over the six year period, 2006-2010, undergraduates took the Praxis II 2565 times over all subject areas. The Praxis II was taken by undergraduate homegrown students

1,005 times. The Praxis II was taken by undergraduate transfer students 1,560 times. After eliminating duplicate UIDs, 931 undergraduates, 356 homegrown students and 575 transfer students, took the Praxis II for the first time from Lindenwood University. A total of 653 undergraduate scores were evaluated passing on the first attempt. The overall first time passing rate at Lindenwood University was 70.31%.

The overall homegrown first time passing rate was 67.70%. The overall transfer student first time passing rate was 71.65%. Transfer students performed as well as, or slightly better than, homegrown Lindenwood University undergraduate students as measured by the first time Praxis II test attempt in all subject areas. No statistical difference was found for any sub-group except Physical Education in which transfer students had a significantly higher passing rate.

Chapter Five: So What?

Comparison of Homegrown and Transfer First Time Pass Rates.

Over the six year period, 2005-2010, Lindenwood University undergraduate students took the Praxis II, 2565 times. Homegrown Lindenwood undergraduate students took the Praxis II, 1005 times. Transfer Lindenwood undergraduate students took the Praxis II, 1,560 times during that time span. After eliminating duplicate scores, a total of 931 Lindenwood undergraduate students, 356 homegrown students and 575 transfer students, took the Praxis II for the first time at Lindenwood University. A total of 653 undergraduate scores from the total of 931 passed on the first attempt. Over the course of the study, 2005-2010, the Lindenwood University undergraduate first time passing rate for the Praxis II was 70.31%.

The overall homegrown first time passing rate was 67.70%. The overall transfer student first time passing rate was 71.65%. Transfer students scored observably better than, homegrown Lindenwood University undergraduate students as measured by the first time Praxis II test attempt. After disaggregation of test codes, no statistical difference was found for any sub-group of Lindenwood University undergraduate students, except in Physical Education, (Test code 91).

The higher first time pass rate of transfer students in Physical Education was determined to be statistically significant. A Chi-Square comparison of random sample information for the two groups of Physical Education students (Homegrown and Transfer) supported the results from the comparison of means. The comparison of means

and the Chi-Square comparison of random samples supported the results from the comparison of the proportions for first-time pass rates.

This study provided a thorough examination regarding one aspect of the Lindenwood School of Education undergraduate teaching program, the rate at which undergraduates pass the Praxis II on the first attempt. The Praxis II first time pass rates offered vital information for both the prospective teacher and the School of Education. This study examined six years of test score data for all undergraduate students who took the Praxis II for the first time. Collectively, those scores offer faculty and administration an opportunity to examine a snapshot over time by analyzing scores from 2005 to 2010.

Separating the two undergraduate groups into homegrown students and transfer students in order to examine first time passing rates initiated the process. In reflecting upon the results of this study I have determined that data alone offers insufficient evidence to determine a complete conclusion. In medical language, the term, data-driven decision making, is unacceptable for important reasons. When decisions are made only by data (data-driven decisions) whether the data is quantitative or qualitative in nature, such decisions are made more quickly, and more economically, by the combination of a computer and corresponding software. Likewise, when decisions in education are based solely upon data, no professional judgment is required from the educators. Educational leaders who claim to make “data-driven decisions” fail, because they do not add their professional judgment. Successful professionals combine data with their education, their knowledge and their wisdom to make choices that are not “driven by data”, but “informed by data”.

Professional judgment requires the transformation of raw data into processed information. To find, to assess, and to determine both reliability and validity involves cutting through noise, stripping away extraneous data and organizing information to make meaning. In medicine, rather than use the term, data driven decision making, the preferred terminology is, “evidence based decisions” (Adad, Jadad, Haynes, Hunt, & Broman, 2000). Educational decision makers would do well to follow the medical language. Incorporated with the precision of the term, evidence based decisions is the clear implication that knowledge and wisdom possessed by a professional add significant, even dramatic, value to the evidence to make the best informed, though often difficult choices.

Elementary Education Test Code 11)

During the six year period, 2005-2010, 376 undergraduate students took the Elementary Education Praxis II, (Test Code 11), for the first time. Two hundred thirty nine undergraduate students passed the Praxis II on the first attempt. The overall first time passing rate for Elementary Education (Test Code11) was 63.6%

One hundred thirty seven homegrown students completed the Praxis II for the first time. Ninety homegrown students passed on the initial attempt. The passing rate for homegrown Elementary education (Test Code 0011) Praxis II test takers was 65.69%.

Two hundred and thirty-nine transfer students completed the Elementary education (Test Code 0011) Praxis II for the first time. One hundred and forty-nine transfer students passed on the initial attempt for a first time passing rate of 62.61%. There was an observable difference in the first time passing rate. However, the

observable difference for Elementary education (Test Code 0011) was not statistically significant.

Elementary education Praxis II test takers presented an observable difference in the first time passing rate measured by the difference in means of the random samples. The z-test for a difference in means verified that the difference between homegrown and transfer students in Elementary education, though observable, was not statistically significant.

The Single Factor ANOVA for homegrown Elementary education was determined at a 95% confidence level. Though an observable difference in the six year groups of homegrown student Praxis II scores existed, the F value showed no statistically significant difference.

For transfer students who took Praxis II for the first time, a Single Factor ANOVA was determined at a 95% confidence level. Neither an observable nor a statistically significant difference was observed.

A Chi-Square test for dependency using proportions and mean scores for those who completed Elementary education Praxis II test for the first time supported the results from the comparison of proportions measured in the z-test. The Chi-Square supported the results that there is no evidence of dependence of passing Praxis II on the first attempt based upon whether a student is homegrown or transfer.

Physical Education (Test Code 0091)

The only test code showing a statistically significant difference between the homegrown and transfer students was Physical Education (Test Code 0091). I met with Dr. Andrea Alameda, Assistant Professor of Physical Education, to discuss the results for

the statistically significant difference. Dr. Alameda offered six concerns connected to the Physical Education Praxis II (Test Code 0091).

First, Dr. Alameda noted a concern with inconsistency in state standards regarding passing scores for the Praxis II. Missouri's passing score of 153 placed the state as third highest passing score nationally. Bordering states required lower passing scores including: Tennessee (152), Arkansas (149), Kansas (148), and Kentucky (147) (ETS, 2010a).

Dr. Alameda wondered if there would be a significant difference between homegrown and transfer undergraduate students at LU, if Missouri accepted a passing score of 151 rather than 153. Compared regionally with neighboring states, a score of 151 would be more aligned. She noted that if the passing score were 151, rather than 153, then the average score for the homegrown students taking Praxis II for the first time would be a passing score (ETS, 2010a).

To examine the idea that there would be no significant difference if the passing rate was set at 151 rather than 153, the data for homegrown and transfer PE students was re-opened. Population data for both groups were first re-accessed. The cutoff score was re-drawn at 151 rather than 153 for both homegrown and transfer populations. The new cutoff score admitted 9 more homegrown students and 3 more transfer students into the passing scores on the first attempt.

However, to do the statistical comparison, it was necessary to re-examine the random samples for each group and enter the lower passing score. After re-opening the random samples, there was one more transfer in the passing scores and there were 6 more homegrown passing scores.

Null: There is no difference in proportions of first time passing rates between homegrown (HG) and transfer (TR).

The new z scores for 151 passing score were re-calculated. The new z score showed a critical value of -7.14. The critical value for .95 confidence level equals -1.96. Since -7.14 lies beyond -1.96, therefore, reject the Null Hypothesis. There is a significant difference in passing rates when the passing score is 151.

Even though the passing rate changed for both types of students taking the physical education Praxis II exam, the difference in change of the first time passing rate was not statistically significant. However, the lower passing score of 151 meant that 19% more homegrown students passed the Physical Education Praxis II on the first attempt. A score of 151 is higher than the required Physical Education score for most of the states surrounding Missouri (ETS, 2010b). Perhaps University personnel working with Missouri Department of Education can discuss the reasons why the state selected the cutoff score at 153 (ETS, 2010b).

Second, Dr. Alameda noted that during the time period of this study, 2005-2010, many faculty changes occurred. The university hired more adjunct professors. There was significant turnover of teaching staff. These changes occurred at the precise time that Praxis II was introduced and NCLB implementation began. Many changes were made in the Methods Courses in attempt to align the syllabi of Physical Education courses to meet the standards tested by Praxis II. To study the differences made by new hires, staff turnover and changes in curriculum alignment are beyond the scope of this dissertation.

Third, Dr. Alameda pointed out that transfer students often come to the university with more credits in Physical Education than homegrown students. Homegrown students

take the course, History and Philosophy of Physical Education, as freshmen. Students are tested on the Praxis II two or three years later. Since this course covers content that directly prepares the student for Praxis II examination, plans are in effect to revise the course sequence to revisit History and Philosophy of Physical Education near the time of taking the Praxis II.

Fourth, the population of undergraduate students taking the Praxis II in Physical Education is more diverse than other groups of students taking the Praxis II at LU. More males take Physical Education Praxis II than any other Praxis II test code at LU. However, ETS national statistics for Physical Education Praxis II report no difference in the passing rate between males and females (ETS 2010b). ETS does not report first time passing rates for any group.

A higher proportion of African Americans take Physical Education (Test Code 0091) Praxis II than other tests. ETS reported the average score for African Americans taking Physical Education (Test Code 0091) as significantly lower than the average score for whites or Asians (ETS, 2010a). The figures from ETS do not indicate either a passing rate or a first time passing rate.

Fifth, transfer students come to LU at an older age than the homegrown students. The added age, experience and maturity may significantly reflect added knowledge for transfer students. To determine the difference between ages for homegrown and transfer students, I opened the data again. I constructed a frequency chart for both homegrown and transfer student ages. To obtain the age of the students, I subtracted year of birth from the year of the test. Homegrown students included 12 students aged 21 and under. Transfer students included only 1 student under age 21. There were only 2 homegrown

students aged 28 and over while there were 11 transfer students aged 28 and over. The mode for homegrown age is age 22, and the mode for transfer age is age 23. The median for homegrown is age 22, and the median for transfer is age 24.

While the difference in age between homegrown and transfer students is not statistically significant, there is a visible difference in their ages. It may be tempting to recommend that students wait until a certain age to take the Praxis II, however, such a recommendation is not practical. Students need to graduate on time. Their parents also need the students to graduate on time. In order to graduate on time, undergraduate students are required to pass the Praxis II before they student teach in order to graduate from LU.

Sixth, the Physical Education Praxis II (Test Code 0091) changed in school year 2009. Previews to that test consisted of the following:

I. Fundamental Movements, Motor Development and Motor Learning (29 questions, 24% of total score)

II. Movement Forms (29 questions, 24% of total score)

III. Fitness and Exercise Science (23 questions, 19% of total score)

IV. Social Foundations (13 questions, 11% of total score)

V. Biomechanics (10 questions 8% of total score)

VI. Health and Safety (16 questions 14% of total score). (ETS, 2004, p. 8)

In 2009, the Physical Education Praxis II consisted of the following:

I. Content Knowledge and Student Growth and Development (36 questions, 30% of total score)

II. Management, Motivation and Communication (30 questions, 25% of total score)

III. Planning, Instruction, and Student Assessment (30 questions, 25% of total score)

IV. Collaboration, Reflection, and Technology (24 questions, 20% of total score)

(ETS, 2010a, p.1)

The new Physical Education (Test Code 0091) version of the Praxis II no longer aligned with the curriculum which the Physical Education faculty constructed for the preceding test. Changes in the test indicated that the test moved from a mostly content area test to a pedagogical test. The listed sections of the new Praxis II (Test Code 0091) do not even identify the test as a Physical Education test. The Physical Education faculty is working to correct the alignment changes.

For LU students who completed the Physical Education (Test Code 0091) Praxis II, the first time, the results differed from the Elementary Education results. Physical Education results showed observable differences and differences judged statistically significant. Transfer students displayed higher first time Praxis II passing rates in Physical Education (Test Code 0091) than homegrown students. The mean score for transfer Physical Education (Test Code 0091) students was just above the passing score. For homegrown Physical Education (Test Code 0091) students, the mean score was below the passing score.

The Single Factor ANOVA for the homegrown students showed no difference in one or more years over the six year span in Physical Education. The observable difference covers the six year span but is not statistically significant.

Recommendations**Review Alignment of Curriculum and Objective Test Taking Strategies.**

Another important reason to align curriculum was discovered during the Physical Education discussion. The Praxis II changed. In the Physical Education example, the first test format offered a strictly content area test. The Physical Education Department aligned the Physical Education curriculum to match the content area objectives. Later, ETS changed the test. Instead of a content rich test, the new test measured pedagogy and teaching skills. In order to align the curriculum to the new Praxis II test required that the faculty gain access to the change in format. To deliver effective preparation for students to pass the Praxis II on the first attempt, the School of Education should stay informed of the periodic changes in the Praxis II.

The Lindenwood University faculty and administration should consider incorporating alignment of Praxis II content within all undergraduate coursework. When faculty accesses Praxis II test results, they will receive data informed feedback that reflects, not only affective information, as the present student survey feedback provides, but specific information regarding how students scored on a specific standardized achievement test of high importance to students. Public schools routinely offer achievement test scores to guide teams of teachers to fashion individualized educational plans (IEPs) incorporating both formative and summative assessments. Usually, such strategic planning occurs at least twice a year, near the beginning (formative) and near the ending (formative and/or summative) of the school year. Information from Praxis II reports should lead towards the development of highly effective instruction and highly accurate assessment processes.

Lindenwood University should incorporate objective test taking strategies for standardized tests in all undergraduate courses. In the literature, mastery of test taking strategies was identified by several authors as a predictor of Praxis II test taking success (Sutton, 2004). Many undergraduate students have not experienced learning effective test taking strategies. Teachers and professors do their students a great service by incorporating effective test taking strategies during the course of instruction.

Upon receipt of my approved IRB, I accessed data on the Praxis II warehoused in the School of Education. To familiarize myself with the data I first looked for information to identify the first time students took the Praxis II in Elementary Education, Test Code 0011. The paper copies began with year 2008, followed with 2009 and completed with summer 2010. The ETS report made no distinction between those who took the Praxis II for the first time compared to those who took it multiple times. However, the report was filed by names and included the date the test was taken.

After working with three years of data, including reports containing test scores from multiple dates within each year, I noticed several students with multiple entries. Some students took the Praxis II several times. While working with the three years of paper data, I found one student took the same test 12 times over the course of the three years. In 2010, the cost of taking the Praxis II was \$140. Later, after accessing six years of electronic data, I found another student who took the Praxis II 14 times. A student who took the test 12 times before passing the test spent \$1,680 for administration of the test. To some students, spending \$1680 to pass a test may not seem significant, however, to many undergraduate students, that sum may stop them from becoming a licensed teacher.

Encourage Faculty Access to Individual Praxis II Scores.

ETS sends disaggregated individual scores for the Praxis II to the University.

These individual reports identify the errors made by the individual. Making the reports available to faculty and advisers would provide specific information for an individual.

There would be no need to focus on those students who passed on the first attempt. The value lies in being able to diagnose for those who did not pass on the first attempt in order to plan to address those topics during future instruction and to treat those students who failed on attempt one to improve their opportunity to pass on the second attempt.

If the information from the individual reports was offered to instructors in the aggregate, they would be able to identify topics where a significant number of LU students do not pass. These reports should provide valuable information to guide course alignment with measured objectives. Breaking down the scores should show the faculty what LU students understand well and upon where there is a measured need to improve. Identification of deficiency patterns, whether they are deficiencies in knowledge or test taking strategies, should be useful for instructors as they plan coursework, for students as they learn to master the coursework, and for administration to plan for successful staff development. Identification of deficiency patterns should offer more than a report based on numeric scores alone. Workshops for faculty to examine the identified deficiencies and develop curriculum together, in order to address the identified topics, should offer substantial benefits to education students.

Knowing what the Praxis II covers should enable faculty members to enhance instruction. Looking at what parts of the test are scored high by Lindenwood students should boost confidence to students taking Praxis II for the first time. Knowledge of

what parts of Praxis II are not scored high on the first attempt should guide faculty members to address those issues within the coursework and for students to learn.

Set a University Goal for First Time Praxis II Pass Rate.

The faculty and administration of Lindenwood University should consider setting and reporting goals for percent of first time passing for Praxis II test takers to the faculty and administration. Setting and reporting such goals would offer value-added assessment possibilities. Stakeholders in the LU teacher certification process would clearly benefit from this highly visible accountability. Use of first time pass rate information by faculty members provides an additional measurement to gauge the effectiveness of their instruction based on reported outcomes from an important test for the students. Knowing how the students fare the first time they take the Praxis II should help faculty members to focus on both aligning curriculum content and delivery of instruction, within the course of study for which a faculty member is responsible. Such focus should help their students achieve success in passing the Praxis II on the first attempt.

Student knowledge of the Lindenwood University Praxis II passing rates should serve as additional motivation for students to achieve success on the first time attempt. In addition, knowledge of first time passing rates provides students with a basis for comparing their own timetable, their own preparation, and how their own scores fit into the results for the entire student body.

Provide Professional Development for New Faculty Advisors.

The faculty and administration of Lindenwood University should consider a blueprint calendar for advisors to consult regarding when to recommend an individual student take Praxis II for the first time. Drawing attention to first time Praxis II passing

rates should guide faculty members to make certain they understand what is covered on the Praxis II within their subject area and course requirements. In addition, knowing the first time Praxis II passing rates should help the faculty members develop a strong commitment to favorably affect the first time passing rates for all students at Lindenwood University.

The faculty and administration of Lindenwood University should consider developing a support group for both transfer students and the new faculty members who advise transfer students. A blueprint calendar should serve to strengthen student confidence before take the Praxis II for the first time. The blueprint will show students that they covered the concepts contained within the teacher certification entrance examination.

Professional development for advisors should build confidence and knowledge of the teacher certification course of study. The experienced advisors understand the course of study scope and sequence thoroughly. New advisors sometimes feel lost in their ability to help students who are taking Praxis II for the first time. By establishing clear goals for knowing the course of study scope and sequence, new advisors will develop confidence in their ability to communicate why and how the scope and sequence works. In turn, the advisors' confidence will help them to build success with their student advisees.

While advising education students about when to take the Praxis II, LU should provide advisors the ability to access several inputs, including the K-12 experience attended by the student. In addition, regional K-12 experiences ought to be identified by quality. One of the most important pieces of input information is the K-12 experience of

the student. Students who attended school districts with known high quality K-12 preparation passed the Praxis II with little difficulty. Knowledge of the quality of the school district the student attended should be collected and referenced in such a way that advisors can easily find. As reported in the literature, some students benefit from taking Praxis II very early because they can pass without difficulty.

Other students benefit from exposure to the identified five core courses required for a degree in education. Identifying when a particular student is ready to successfully complete the Praxis II is a critical decision for the student and the advisor. Making education advisors aware of the K-12 experience of an education student seems to be identified as critical information regarding the Praxis II pass rate. While there are indicators of correlation between K-12 preparation and first time Praxis pass rates, there were no indications that a correlation existed between K-12 preparation and teacher quality. There does not seem to be a need to make the first time pass rate a significant measure of individual progress toward teacher certification, at the time this dissertation was written.

Unduly alarming individual students regarding the first time pass rates could, in fact, harm their confidence level when taking the Praxis II. This concern could be especially true for minority candidates. At the same time, all students ought to be aware of study guides and LU classes designed to help students pass the Praxis II on the first time attempt. The University should make special attempts to help minority students access all available resources to prepare for the Praxis II (Albers, 2002; Zigo 2002).

However, use of the first time Praxis II passing rates should offer a significant benchmark to measure internal institutional progress. Continuing to measure internal

institutional progress through a periodic examination of Praxis II first time passing rates should provide a further check to track alignment of curriculum with standards of teaching and learning published by academic organizations including National Council of Teachers of English, National Council for the Social Studies, National Council of Teachers of Mathematics and National Science Teachers Association.

Identify and Track Students Who Take Praxis II for Multiple Certifications.

Taking the Praxis II to achieve multiple certifications offers benefits to those students who have attained their first teaching certification who then would like to certify in an additional area(s), at a relatively low cost (DESE, 2009). Many students take several Praxis II tests in order to achieve multiple certifications. For some students, taking multiple Praxis II tests works well. Students able to pass on the first attempt, earn an additional certification for the investment of one testing fee (\$140 in 2010). Students who possess excellent test taking skills benefit from passing the Praxis II to earn multiple certifications.

Multiple certifications represent valuable assets for new teachers. However, when students take Praxis II for a certification for which they have not received professional training, the University does not identify such students as to whether or not they are enrolled within the content area. When those students are unsuccessful on the first attempt at Praxis II, their scores affect both the passing rate and first time pass rate for the individual Test Code and the overall Lindenwood University passing rate.

The faculty and administration of Lindenwood University should consider disaggregating first attempts for each Praxis II Test Code in order to differentiate those students who received professional preparation for a given Test Code from those who did

not. Disaggregating the first time scores for students who took Praxis II in Test Codes for which they did not receive recommended instruction would clarify the connection between educational preparation and test taking skills. It would be necessary to differentiate the students who received professional preparation from those who did not, in order to provide valid and reliable feedback to the faculty concerning the first time pass rates to measure the influence of curriculum and instructional delivery for faculty and school administration.

Lindenwood University and the School of Education measure success of programs in many ways. The bottom line for teacher education programs is getting graduates hired as successful classroom teachers. Teachers who possess multiple certifications provide building administrators with options when they develop school building schedules. Often, school building administrators hold manpower equivalents available for hire in less than a full time equivalent (FTE). For example, a candidate who majored in English and passed the social studies Praxis II, would qualify to teach a .6 (FTE) in English and a .4 (FTE) in Social Studies. Adding the two teaching assignments together allows the building administrator to hire one full time teacher, rather than two part time teachers. Obviously, the example offers the new teacher a better salary, better compensation and benefits as a full time teacher, rather than part time.

Infuse Test Taking Skills throughout the Undergraduate Curriculum.

Acknowledging that the difference in instruction and practice of test taking skills exists for incoming college students is an important step to help reduce and eliminate the gap.

When the faculty and administration of a university acknowledge the existence of such a difference, they recognize the need for helping identified students to achieve. The way that high quality school districts develop effective test taking strategy instruction is to incorporate effective test taking strategies within every course.

Students who attended recognized high quality school districts displayed little or no difficulty in passing the Praxis II with high scores. Students who attended school districts which do not routinely report high standardized test scores, showed difficulty in passing Praxis II on the first attempt. The reported difference in skills possessed by the two groups of students is that the high quality school district graduates received explicit instruction in and practiced effective test taking skills throughout their K-12 education.

No previously conducted research shows that to hold a separate test taking or study skills course is effective.

Increase Non-Experimental Research at Lindenwood University. Dr. Don Heidenreich, Dean of Institutional Research, and I conferred about the kind of research represented by this dissertation. Sharing the article, “It’s (Beyond) Time to Drop the Terms Causal-Comparative and Correlational Research in Education” (Johnson, 2000), reaffirmed the position that Johnson made concerning non-experimental study. The better way to classify this study is as Non-experimental Research which is longitudinal and predictive. Though this type of research can be predictive, this study was not intended to be so. Johnson and Dr. Heidenreich support the need for education schools to adopt the study terminology used by other disciplines when referring to this type of research.

Dr. Beth Kania-Gosche, Assistant Professor in the Lindenwood doctoral program, expressed a desire for more Lindenwood doctoral students to consider using University

generated data to research and compose dissertations. Dissertations using data generated by an educational institution serves multiple purposes. Bringing faculty members together to account for longitudinal and predictive data offers an opportunity to study for in-depth knowledge. In addition, such dissertations invite researchers to invent and validate methods which can be replicated to measure, and improve, the quality of services delivered to clientele.

Study First Time Pass Rates for C-BASE and Compare to Praxis II First Time Pass Rates. Passage of the C-BASE test is required by the State of Missouri for entry into a School of Education. Knowledge of the first time passing rate for C-BASE would provide students and faculty with similar information for making educational decisions to this study. Because passing the C-BASE is required in Missouri by the end of the sophomore year, a study comparing the first time passing rates of homegrown and transfer students on C-BASE offers an opportunity to examine for significant differences in homegrown students and transfer students at the beginning of the School of Education experience. The scores for C-BASE are available. Using similar methodology to that described in Chapter Three would establish a similar baseline for the C-BASE. Knowledge of the C-BASE first time passing rates of homegrown and transfer students would be helpful for LU to consider in predicting which undergraduate students will be more likely to become successful teacher candidates.

More information concerning C-BASE to new undergraduate advisors would benefit students. The C-BASE may be taken as a freshman or a sophomore. Some students would benefit by taking earlier, some may need to wait. Providing information to advisors about which students may benefit at which times would help new advisors.

Educators from other universities requested similar research beginning with passage of NCLB (Zigo, 2002). Many states, other than Missouri, use Praxis I, instead of C-BASE for entry into Schools of Education. "...we know of no research that correlates Praxis I scores with student grades in their first 60 hours prior to acceptance into teacher education programs" (Zigo, 2002, p.138). Passing the C-BASE in Missouri, or Praxis I in other states is seen as reaching the first gateway into teacher certification.

Study the First Time Praxis II Pass Rates for MAT Students. The Lindenwood University School of Education includes a graduate pathway to teacher certification. Students who already possessed an undergraduate degree can achieve teacher certification by completing the Master of Arts in Teaching (MAT) program. In Fall, 2010, approximately 400 graduate students were enrolled in the Lindenwood University MAT program. Graduates students too, are required to pass the Praxis II before student teaching. Knowledge concerning the first time passing rate Praxis II for MAT students would benefit the university in similar ways that this study benefits the undergraduate instructors and administration. A comparison of MAT first time passing rates would offer a valuable study.

Test Code	Male	Female	Black	White	Other	Concerns and Opportunities
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A look at the population of undergraduate students in the LU School of Education, both homegrown students and transfer students, indicated an opportunity for the School of Education to reach out to minority undergraduate students.

Table 38

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Elementary						<i>Population Characteristics of First Time Praxis II Test Takers Lindenwood University 2005-2010, Elementary, Physical Education and Secondary</i>
HG	5	131	1	133	2	
TR	16	222	4	232	2	
Total	21	353	5	365	4	
PE						
HG	35	23	4	51	3	
TR	46	14	4	55	1	
Total	81	37	8	106	4	
Secondary						
HG	24	59	1	80	2	
TR	24	94	3	114	1	
Total	48	163	4	194	3	

The Lindenwood University population of undergraduate students in Elementary Education is 97.6% White. A total of 374 students in reported taking Praxis II Elementary education (Test Code 11) for the first time, included 365 white students, 5 black students and 4 students classified Other. Successful recruitment of undergraduate homegrown minority students should increase enrollment in the School of Education.

Likewise, outreach to the “feeder” community colleges offers important opportunities to increase enrollment. Since transfer students perform at equivalency on Praxis II first time passing rates, the School of Education can continue to expect similar success rates by undergraduate students. Targeting a specific number of qualified minority students to become teacher candidates in the LU School of Education offers an opportunity to significantly increase enrollment.

Jobs in the metropolitan area are more frequently open in school districts containing a high number of minority student enrollment than in school districts composed of a low number of minority student enrollment. This job forecast is not only

for the St. Louis metropolitan area, the forecast encompasses the entire nation (U.S. Department of Labor, 2010). The minority population continues to grow, while the white population is not growing at a similar rate. Part of the recruitment of more minority students should include the job forecast.

The Elementary education program offers an opportunity to recruit significantly more males into the Lindenwood School of Education. Of the 353 total students who took the Praxis II in Elementary education for the first time at Lindenwood University, there were only 21 males. The percentage of females in Elementary education who took Elementary education Praxis II for the first time was 94.05%. Active recruitment of males into Elementary education offers an opportunity to significantly increase enrollment in the undergraduate education programs in the School of Education at Lindenwood University.

Even though Lindenwood graduates apply for and are hired for jobs beyond St. Charles County, an analysis of the education job market focusing on St. Charles County would benefit planning for educational programs at Lindenwood. There are approximately 11,000 teaching jobs in St. Charles County. Assuming an annual job turnover of approximately 8 percent, shows that there could be 800 – 900 new hires in education annually in St. Charles County alone (U.S. Department of Labor, 2010). Disaggregating the availability of education jobs into the separate test codes measure by Praxis II should be an issue for the University to study.

Moving From Good to Great

On the second floor of Roemer Hall, and on the main floor in Butler Library, a poster of the president of the university, Dr. James Evans, grins at the onlooker. In big

letters, a banner commands the viewer, “READ”! Leaning regally back in his chair, the president’s grin implies, “Do as I do!” not, “Do as I say!” Then, the viewer’s eyes drift toward the book cradled on his lap. Besides the banner, “READ”, the title proclaims this book is carefully chosen to send another message. Even for one who has never read the book Dr. Evans holds, the title is telling. The title speaks to the president’s vision to continue the changes and the forward momentum at Lindenwood University. The book title is, *From Good to Great*.

Moving from good to great is what Dean Bice challenged the School of Education to do, when she set a goal for the School of Education to produce new teachers who look and act like teachers at the end of the second year of teaching. By requiring that Lindenwood School of Education teacher candidates pass the Praxis II before student teaching, two and a half years before the state requirement, the School takes one small, but measurable step in meeting Dean Bice’s challenge.

Summary

First time Praxis II pass rates provide vital information for the School of Education. Similar to the information harvested as a result of NCLB, first time Praxis II pass rates serve as a sharp, concise snapshot for one measure of the teacher preparation process. So far, such information has been treated in a proprietary manner by schools of teacher certification. Even if a school of teacher education wishes to maintain confidentiality, instructors and advisors would benefit greatly from knowledge of the first time Praxis II passing rates for each test code at the university. The benchmark knowledge should serve as a valid predictor to employ when counseling students who contemplate becoming classroom teachers.

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Vitae

During Jason Holmes' service with the United States Army from 1967-1970, he served with the First Cavalry Division, (Air Mobile) in South Vietnam during 1968-69. His awards include; Vietnam Service Medal, Vietnam Campaign Medal, Vietnam Cross of Gallantry, Presidential Unit Citation, The Air Medal and two Bronze Stars.

Mr. Holmes earned a BS in Education, with a Major in English, from the University of Missouri, St. Louis in 1972, and began his public school teaching and coaching career at his high school alma mater, Normandy High School in Normandy, Missouri.

Mr. Holmes graduated from Washington University, St. Louis, in 1978 with a Master of Arts in Education, Improvement of Instruction, English Curriculum. Mr. Holmes studied as an original member of the Gateway Area Writing Project. Special interest in Mr. Holmes' graduate education included professional development for educators. He taught high school English and coached at Kirkwood High in Kirkwood, Missouri.

Mr. Holmes worked with the Procter & Gamble Distributing Company as a Professional Services Representative. He served as Regional Manager for Compumed, a medical service corporation, and as a line supervisor for Chrysler Corporation.

In 1984, Mr. Holmes returned to public education as a junior high school, later middle school, classroom teacher at Parkway Central in Chesterfield, Missouri. He taught 7th grade and 8th grade Unified Studies, a class combining communication arts, social studies and reading. Mr. Holmes' middle school classes were twice featured in the *St. Louis Post-Dispatch Everyday Magazine*.

Mr. Holmes attended graduate classes through Webster University, Northeast Missouri State University, and St. Louis University. He completed training on self-esteem with Jack Canfield. He received training on Cooperative Learning with David Johnson and Roger Johnson. Mr. Holmes studied Mark Twain as a National Endowment for the Humanities (NEH) fellow, at Elmira College in 1988.

Until retirement from public school teaching in 2005, Mr. Holmes coached three seasons each year at Parkway Central High School, where his teams amassed more than 600 wins. Mr. Holmes served as a member of the Executive Board of Parkway National Education Association, and as a representative at state and national conferences.

Along with Dr. Nancy Rathjen, and two other classroom teachers, Ches Schneider and Peggy Shores, Mr. Holmes co-founded Reading Across Disciplines (RAD), a program which integrated evidence-based, highly effective reading strategies and study skills into secondary curriculum. Mr. Holmes presented to educators at dozens of local, state, regional, and national conventions. He led teacher workshops at more than 500 schools in 25 states. He taught graduate and undergraduate courses at several colleges and universities.

Mr. Holmes' anticipated graduation date is Spring, 2011.