

Factors Influencing the Percent of Non-Certified Teachers in Texas School Districts

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Abstract

The purpose of this study is to explain which factors influence the percent of non-certified teachers in Texas school districts. Research indicates that the hiring of unqualified teachers is generally a result of distributional inequities, rather than overall shortages of qualified individuals (Darling-Hammond and Sykes 2003, Ingersoll 2001). Scholarly literature supports four factors that correlate with high percentages of non-certified teachers in schools: percentage of economically disadvantaged students, teacher salaries, population of minority students, and identification as major urban schools. To determine how these factors influence Texas school districts, a multiple regression was run with data from the Public Education Information Management System (PEIMS), State Board for Educator Certification (SBEC) Interactive Reports, and the Texas Education Agency Academic Excellence Indicator System (AEIS) for the 2009-2010 academic year. Findings indicate that percent minority and average teacher salaries influence the percent of non-certified teachers. Percent economically disadvantaged students negatively influenced the percent of non-certified teachers thereby rejecting the projected direction of the hypothesis.

About the Author

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Chapter 1: Introduction

In Texas, during the 2009-2010 academic year, the State Board for Educator Certification issued 30,685 teaching credentials to new educators. Of the total, 4,356 were issued in Bilingual Education, 2,031 in Mathematics, 1,542 in Science fields, and 953 to Special Education (SBEC ECOS)-- the highest need areas across the state (Texas Education Agency Student Loan Forgiveness for Teachers 2011). Over 12,000 certificates were issued for Elementary Education thereby adding to the surplus of teachers in Early Childhood and Elementary grades. During the 2008-2009 academic year, 30,251 teachers were certified (SBEC ECOS). By all appearances, there is an abundance of educators available to fill classrooms and to teach Texas school children. Yet, during the 2009-2010 academic year, the Texas Education Agency reported that of 400,327 teachers employed in Texas school districts, 54,445 were teaching out-of-field. (Ramsay 2010). Teachers are considered to be teaching out-of-field either because they were assigned to a subject or grade level for which they were not fully certified or because they had no standard or lifetime certificate at all (Ramsay 2010.)

The Texas Administrative Code defines a ‘certificate’ or ‘certification’ to mean any certificate, license, permit, or other credential issued by the State Board for Educator Certification under the authority of the Texas Education Code, Chapter 21, Subchapter B (Texas Administrative Code). Emergency certifications are issued to people with four-year degrees who do not hold Texas teaching certificates. An emergency permit is activated for an individual hired by a school district only when the employing district verifies that it cannot secure an appropriately certified and qualified individual to fill the vacant position. The emergency permit is valid for one year and may be renewed twice (Texas Administrative Code). To renew, the individual must complete a minimum of 6 hours of coursework toward certification. The

intention of an emergency permit is to enable the employment of a non-certified individual to teach while he or she works to complete requirements for full certification. But where reports show that almost 50 percent of teachers resign during their first three years of teaching with nearly ten percent leaving in their first year (Inman and Marlow 2004), the emergency permit process seems to serve as more of a temporary work permit than a career preparation tool.

Other permits, such as the Temporary Classroom Assignment permit, can be activated for individuals who hold a Texas teaching certificate, but are assigned in areas irrelevant to that credential. The Temporary Classroom Assignment permit is valid only if the individual is teaching outside his or her field of certification for no more than four class periods (Texas Administrative Code Title 19). Teachers with temporary or emergency certificates are not considered certified because the Highly Qualified Teacher provision of the No Child Left Behind Act does not include emergency credentials as Highly Qualified (Betts et. al. 2000, 209).

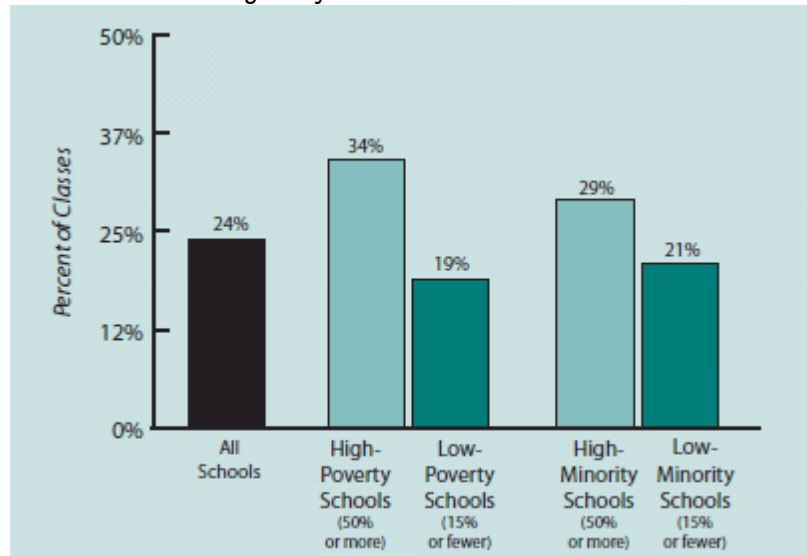
A significant percentage of school districts have allowed non-certified teachers to teach. In fact, newly hired teachers with emergency certification were found in over 20 percent of the nation's school districts in 1993-94 (National Center for Education Statistics 1998, Urban Teacher Collaborative 2000, U.S. Department of Education). Since then, the numbers have continued to rise. In Texas, a study found that 25 percent of the 38,400 teachers hired for the 2000-2001 school year were not fully certified in the areas they were hired to teach (Reaves 2001). Statewide totals during the 2004-2005 academic year report 4,365 permits were issued for teachers teaching outside their field of certification. From 2008-2009 academic year, out-of-field teaching was at 15.2 percent for all grade level and subject areas combined. In 2009, 13.6 percent of all teachers in Texas were assigned out-of-field. (Ramsay 2009).

While teacher shortages may be one reason schools hire non-certified educators, Darling-Hammond and Skyes argue that hiring of unqualified teachers is generally a result of

distributional inequities, rather than overall shortages of qualified individuals (2003, Ingersoll 2001). Research has shown that when it comes to the distribution of the best teachers, poor and minority students do not get their fair share (Peske and Haycock 2006). Studies consistently show that teachers who are better trained, more experienced, and licensed in the subjects they teach are more likely to be teaching in more affluent schools, serving more academically advantaged students (Lankford, et.al. 2002, Ingersoll 2004, and Mayer et.al. 2000).

One study found that students with the greatest risk of educational failure-- poor students and students tracked into low-ability systems—were less likely to have teachers with appropriate qualifications (Greenburg, Rhodes, Ye, and Stancavage 2004). In that study, Black and Hispanic students were largely represented among poor students eligible for the free and reduced-lunch program indicating also that minority students are less likely to have a less than qualified teacher. Figure 1.1 illustrates the findings of one study which reported that the highest percentages of out-of-field teachers in secondary schools were concentrated in high-poverty, high-minority schools (Peske and Haycock 2006).

Figure 1.1
Percent of Classes in High-Poverty, High-Minority Secondary Schools
Taught by Out-of-Field Teachers



Source: Reported in Craig 2002

Non-certified teachers in the classroom also results in unequal quality of instruction. To be eligible for a Texas Educator Standard Certificate in Texas, an individual must hold at minimum, a bachelor's degree, have completed an approved educator preparation program, and passed a content exam which corresponds with the certificate field and a Pedagogy and Professional Responsibilities Exam (PPR). The PPR exam tests ability to design instruction and assessment to promote student learning, to create a positive, productive classroom environment, and to implement effective, responsive instruction and assessment. The intricacies of teaching a child to read, to solve math problems, and to understand scientific concepts, should not be a trial and error proposition (National Council for Accreditation of Teacher Education). Ideally, every teacher has content knowledge *and* pedagogical training so that the highest quality of instruction is provided.

Good teacher education is the foundation of good teaching (Pugach 2006, 54). Subject area knowledge and pedagogy are important because research indicates that if, year after year,

children are placed in the classrooms of good teachers, their learning increases more than it does in classrooms of teachers who are not as highly skilled (Sanders and Horn 1994 and Wright, Horn, and Sanders 1997). In one study conducted in two large Tennessee school districts, researchers developed a value-added model to measure individual teacher contributions to student learning by grouping teachers into quintiles according to the size of their former students' achievement gains. With this model, the researchers could estimate how assignment to teachers of different levels of effectiveness would influence student outcomes (Prince et.al. 2006). Results found that students who have highly effective teachers for three years in a row scored 50 percentile points higher on achievement tests than students who have less effective teachers three years in a row (Sanders and Rivers, 1996).

Although one cannot unequivocally conclude that a noncertified teacher is less qualified to teach than his or her certified peer, the question of qualifications remains a specter. Where the consequences of distributional inequity include hiring under-prepared teachers, more out-of-field teaching assignments, and less experienced teaching staff, these trends are exactly opposite from elements that are necessary to improve student learning (Jimerson 2003). All students and parents, regardless of race/ethnicity and socioeconomic status, deserve teachers who have state credentials that document they have (a) taken course work in the subject areas they teach, (b) acquired knowledge of teaching methodology, and (c) passed a state teacher examinations for licensure (Valencia 2000).

Research Purpose

While there is value in acknowledging the implications of how educators without appropriate credentials affect an educational system built on accountability, this research does not seek to further explore the ramifications of non-certified teachers in Texas classrooms.

Reports indicate there is ample supply of teachers certified each year by the State Board for Educator Certification, yet distributional issues create shortages, and Texas school districts continue to employ non-certified teachers. The purpose of this explanatory research is to explain which factors influence the percent of non-certified teachers in Texas school districts.

To achieve this research purpose, this study is divided into five chapters. Chapter 2 evaluates the scholarly literature that identifies variables influencing the percent of non-certified teachers in school districts. The Literature Review helps to build the conceptual framework that guides this study. Four formal hypotheses related to the research question are also developed in this chapter. Chapter 3 introduces the Methodology used to test the hypotheses and includes a discussion of data collection, the dependent and independent variables, and statistics used. Chapter 4 shows the results of the statistical tests and analysis of data. Chapter 5 offers conclusions with a discussion of the findings and suggestions for further research.

Chapter 2: Literature Review

The purpose of this literature review is to examine the factors affecting the percent of non-certified teachers in schools. This section will review scholarly literature to present current knowledge, findings, and analyze academic contributions relevant to this research purpose. Economically disadvantaged, average teacher salaries, minority populations, and major urban schools are the four factors reviewed as possible determinants affecting the percent of non-certified teachers in Texas school districts. These four factors were selected because they are the most commonly studied factors influencing the number of non-certified teachers in schools. The variables are developed into four formal hypotheses based on the literature.

Economically Disadvantaged Schools

The U.S. Department of Education Secretary's First Annual Report on Teacher Quality reports high poverty school districts are more likely to employ teachers on waivers than more affluent school districts (Harrell 2004). A similar study reported emergency permit teachers tend to be concentrated in schools with high percentages of students with free or reduced-price lunch programs (Goe 2002). Teachers without certification are typically assigned to teach students in the most disadvantaged schools (Salinas et. al. 2006 and Betts, et.al.2000).

Several researchers argue that it is not the shortage of teachers that creates this perpetual complex of filling teacher vacancies. Instead, it is the lack of an equal pool of qualified applicants. Economically disadvantaged schools have greater teacher shortages and fewer applications for vacancies. They employ more teachers who are non-certified or who are teaching out-of-field (Prince 2002). In Maryland's Montgomery County, the wealthiest county in the state, 6109 applications were received to fill 655 vacancies. Comparatively, in Maryland's poorest county, Baltimore County, only 1,800 applications were received to fill 826 vacancies.

The National Commission on Teaching & America's Future reported that in 1994, 27 percent of teachers had no license or a substandard license in the field they were hired to teach. A disproportionate number of these individuals were assigned to teach the most vulnerable students in the lowest-income schools (Darling-Hammond 2000). One study of Chicago Public Schools found that in Region 4, which is home to Chicago's highest concentration of the highest poverty rates in the city, 29 percent of the high school teachers were non-certified. In that region, one school reported the proportion of improperly certified teachers was 57 (Prince 2002).

Another study used data from the State Board for Educator Certification to determine where non-certified teachers were concentrated among Texas School Districts. The study found that as the percentage of economically disadvantaged students increased, the percentage of certified teachers decreased. This pattern held for all three school levels (elementary, middle, and high school) and for the various core subject areas (e.g., English, Mathematics) at the middle and high school levels (Valencia 2000).

Studies consistently show that teachers who are better trained, more experienced, and licensed in the subjects they teach are more likely to be teaching in more affluent schools and service more academically advantaged students (Lankford, Loeb, and Wyckoff 2002) as opposed to schools with high percentages of economically disadvantaged students. Schools serving low-income students receive fewer resources, face greater difficulties attracting qualified teachers, face many more challenges in addressing student's needs, and receive less support from parents (Lee and Burkham 2002). Where fewer applications are made, low-income districts and schools resort to hiring under qualified, non-certified educators. Results of a study conducted among schools in the state of California provide evidence that educators with emergency permits tend to

be concentrated in school districts with high percentages of students with free or reduced-price lunch programs (Goe 2002).

Using the percentage of students eligible for free and reduced lunch as a proxy, districts with relatively high levels of low-income students found a larger share of their teaching positions filled after the start of the year compared to those with fewer low-income students (Murphy et. al. 2003). Researchers indicate that stronger is the challenge of keeping teachers employed in economically disadvantaged districts. Higher turnover teacher rate exists in school districts whose students are of high poverty status (Ingersoll 2004). When certified teachers are not available, an alternative is to employ non-certified teachers (Anderson and Waldenstrom 2007).

In 2004, one study reported that students eligible for the free and reduced-price lunch program were less likely to have a certified mathematics teacher than eighth-grade public school students who were not eligible (Greenburg, Rhodes, Ye, and Stancavage 2004). Because schools classified as economically disadvantaged are often lacking in many of the resources, tools, and technology, that improve, diversify, and compliment a prolific learning environment, credentialed educators would be more inclined to seek employment in more lucrative schools. Economically disadvantaged children start kindergarten with significantly lower cognitive skills than their more advantaged counterparts (Lee and Burkham 2002). Challenges like these are often unattractive characteristics for job seekers, thereby reducing the pool of certified applicants for positions in these schools.

H1: Schools with high percent of economically disadvantaged students are more likely to have non-certified teachers.

Average Teacher Salaries

Large salary gaps among different teachers may cause teacher deficits and teacher quality imbalances between schools and districts. The argument is that the best (most qualified teachers)

prefer to work in schools and districts that offer the highest salaries, everything else constant (Anderson and Waldenstrom 2007). The teacher labor market is national. And when the No Child Left Behind act requires highly qualified teachers in all classrooms, teacher compensation becomes important (Jimerson 2003). When salaries are not high enough to attract qualified teachers, schools face vacancies or rely on teachers who are under qualified (Ladd 2007).

The economic strength of a school district, among other indicators, is reflected in its ability to offer attractive salaries. Studies confirm that salaries are widely disparate both within and across states and that school systems serving large numbers of low-income and minority students often have lower salary levels than surrounding districts (Lankford, Loeb, and Wyckoff 2002). An ongoing problem in recruiting certified teachers to work in poor school districts is the continued inequality in funding. One study found that teachers in low-poverty schools earned over 35 percent more than those in high-poverty schools (Darling-Hammond 1997).

Higher salaries are generally linked with a lower share of under qualified teachers. (Ladd 2007). Some school districts are better equipped not only to offer high salaries, but also stipends and signing bonuses for high need subject areas. In areas of Bilingual Education and English as a Second Language, Hispanic school districts are not able to compete with the predominately white school districts equipped with stipends to attract certified teachers (Gonzalez 1999).

Pogodzinski (2000) found that large differences in teachers' wages across school districts within the same county are a significant factor in explaining the use of emergency permits and waivers (Darling-Hammond and Sykes 2003). Differences in community wealth can make enormous differences in school district ability to recruit and retain highly qualified educators because salaries are locally determined (Prince 2002). For teachers to be satisfied with their wage, they must be receiving compensation that is reasonable to the local mean. The bottom line

is that at the end of the month teachers have to make ends meet. For example, a teacher who makes \$35,000 annually can live reasonably well in an area where the mean income is around that level (Eller et.al 2000). But if a neighboring district offers a salary of \$38,000 annually, the chances of a certified educator accepting the lower salary are slim. As a corollary, greater use of emergency permits tends to be associated with paying below average salaries (Pogodzinski 2000).

School districts are employers. As employers, districts must compete for qualified educators with other industries. Teachers are more likely to leave the field when they work in districts with lower pay and when their salaries are low compared to other wage opportunities (Darling-Hammond and Sykes 2003). One finding noted that teachers are less well-paid than similarly educated workers in other industries (Darling-Hammond 1997). The mere fact that an individual is a certified teacher does not confine him/her to the classroom. One study found that the structure of teacher salary schedules, which typically pays every teacher the same regardless of grade level or subject taught, is a primary cause of districts' inability to recruit and retain qualified teachers. As a result, the lack of differentiation in pay based on field of training is less attractive to talented college graduates trained in chemistry or physics (Murnane, Singer, and Willet 1989). Teacher shortages then force school districts to lower their hiring standards by hiring non-certified teachers to fill their teacher position vacancies (Salinas and Kritsonsis 2006).

That preference is not reserved for new teachers. Educated persons with credentials and proper training will naturally look for the best paying job opportunity. In a study by professors at Texas A&M University Kingsville and Sam Houston State University, subjects interviewed reported salary as a primary factor of decision to leave the teaching profession (Gonzalez, Brown, and Slate 2008). Given its reputation of a profession which does not pay what it is worth,

if a certified teacher has an opportunity to make a few thousand dollars more somewhere else, chances are they will accept.

Interestingly however, as Lewis explains, perhaps the issue is not only in a school districts' *ability* to pay competitive salaries. Some districts refuse to hire more-experienced, better-qualified teachers because they cost more. These districts then hire less-experienced and even unqualified teachers (1998, Darling-Hammond 2000). Teacher union representatives in Chicago agree and accuse principals of trying to save money by staffing schools with less expensive full-time substitute teachers who have not passed all of their certification tests or are non-certified (Prince 2002).

The Texas Education Agency prepares an annual minimum salary schedule which school districts follow to establish local salary schedules. Districts often pay higher than the proposed salary schedule. Still, Texas teachers are earning about \$3,000 below the national average (Branch, 2000).

H2: Schools with high average teacher salaries are less likely to have non-certified teachers.

Minority Populations

Uncertified teachers tend to teach in schools that—relative to those employing certified teachers—have a higher fraction of minority students (Kane, Rockoff, and Staiger 2006). One study used data to determine where non-certified teachers held positions and found that as the percentage of white students increased, the percentage of certified teachers increased. The analysis concluded that non-certified teachers disproportionately teach in schools with high enrollment of minority students than in white schools (Valencia 2000).

There is increasing evidence, for example, that teachers are most able to understand, set appropriate expectations and provide strategic support for students who are like themselves in culture, race, and ethnicity and that it is difficult for teachers to avoid misunderstandings and effectively teach “other people’s children” (Cochran-Smith 1995, 542). To that end, teachers who are not themselves a part of the minority population are unable to identify with their students and vice versa causing discord in otherwise positive and purposeful student-teacher relationships.

Because of the racial/ethnic imbalance between the teaching force and the student population, minority districts suffer from a general chronic teacher shortage of certified teachers (Villegas and Clewell 1998). Students of color comprise over one-third of school enrollments while the teaching force has remained one-tenth minority (Clewell and Villegas 2001). Many African American and Mexican American students continue to experience—compared to their White peers—the presence of a teaching staff with a disproportionate number of non-certified teachers (Valencia 2000). Why do so few individuals from the ethnicities represented in the student population not enter teaching? One study speculates that there are cultural and systemic barriers at work. Culturally, some ethnic groups do not view teaching as a high status occupation (Grimmet and Echols 2001).

Different studies use different methods to determine a relationship between percent minority population and percent non-certified teachers. One study found that schools with more than 20 percent minority enrollment filled 29 percent of vacancies with non-certified teachers, while schools with *less* than 20 percent minority enrollment filled only 11 percent of vacancies with non-certified teachers (Henke 1996).

Emergency permit teachers also tend to be concentrated in schools with high percentages of minority students (Goe 2002, Prince 2002). In 1993-94, in districts whose minority student enrollment exceeded 50 percent, 11 percent of the newly hired teachers lacked both regular and emergency certification in their fields of assignment. An additional 14 percent of the newly hired teachers in these districts had only emergency certification, as compared with 8 percent, nationally (National Center for Education Statistics 1998).

School districts with high minority populations have a much more difficult time filling their teaching positions (Murphy et. al. 2003). Teachers are reluctant to accept the challenges of working with predominantly minority students. Researchers have found that many of the struggles expressed by educators exist around the issues of diversity and developing multicultural competency in their students (Ng 2003, 381). One study concluded that the impact is felt most greatly in the school districts which have predominately Hispanic student ethnic make-up of 70 percent where the need is great for more minority teachers in the areas of bilingual education and ESL (Gonzalez 1999).

H3: Schools with large minority population are more likely to have non-certified teachers.

Major Urban Schools

The U.S. Department of Education Institute of Education Services defines urban school districts as a school district with 70 percent or greater urban population. Urban school districts are classified as central city, suburban and outside urbanized area according to which of these has the largest population (National Center for Education Statistics). Research indicates that urban school districts are also prone to higher percentages of non-certified educators (Harrell and Jackson 2004).

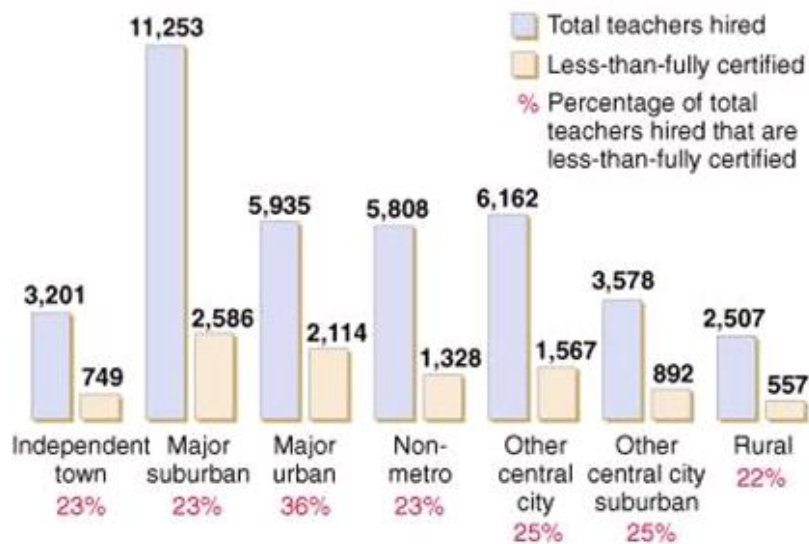
One study found 77 percent of the 39 largest urban districts hired non-certified teachers to fill their staffing gaps (Villegas and Clewell 1998). According to The Council of Great City Schools, schools in urban areas contend with the lowest levels of student achievement, the highest dropout rates, and a disproportionate percentage of students with special needs (Urban Teacher Collaborative 2000). Teachers who work in urban areas instruct students who are not prepared to learn because they are affected by poverty, teenage pregnancy, illness, and high incidences of violence and school dropout rates (Gimbert, Bol and Wallace 2007). These and other common characteristics of urban schools create additional challenges teachers are often unwilling to face. Researchers attribute the failure of urban districts to staff their schools with qualified teachers to a number of factors. New and returning teachers do not wish to teach in urban schools and the majority of teachers prefer to teach in suburban schools (Villegas and Clewell 1998).

School districts in urban areas are comprised of adolescents who are simply, often without fault of their own, products of their environment. As recruitment to fill teaching positions under these conditions proves to be challenging, urban schools are often understaffed and students are being underserved (Staropoli 2010). According to the FBI, 92 percent of violent crimes such as murder, rape, and assault committed in Texas in 2009 were reported in urban areas. The same percentage holds true for property crimes such as burglary, larceny, and motor vehicle theft. The Texas Youth Commission (TYC) reported that 13.5 percent of its juvenile commitments for the 2009 year were from Harris County (Houston, TX). The TYC saw 12.6 percent of its commitments from Dallas County covering the Dallas, TX area and 7.2 percent from Tarrant County, which covers the Fort Worth area.

Although many affluent districts have long waiting lists of extremely well-qualified teachers, in urban areas, disparities in salaries and working conditions make teacher recruitment more difficult and many schools hire individuals who are seriously underprepared for their work (Darling-Hammond 2000, Goe 2002). One study determined that approximately 77 percent of urban schools not only have teacher shortages in regular classrooms, but also experience a deficit in qualified teachers of math, science, special education, and bilingual education subjects (McCreight 2000). In these instances, urban schools are therefore more likely to fill vacancies with teachers who do not have full credentials (National Commission 1997, Salinas and Kritsonsis 2006). Through an analysis of student enrollment in California's most populous counties, researchers determined that the bulk of teacher shortages in California, for example, were concentrated in urban schools, where urban schools had on average 19 percent non-certified teachers, compared with only 9 percent in suburban and rural schools (Shields, et.al. 2001).

The U.S. Department of Education reports that 16.2 percent of urban schools with teaching vacancies chose to fill them with non-certified educators. Twenty-four percent of central city schools did the same (Henke 1996). Another study found that slightly more than 1 in 20 newly hired teachers in public school districts lacked either emergency or regular state certification for the field they were assigned to teach. The lack of certification was particularly prevalent in school districts in urban areas (National Center for Education Statistics 1998).

Figure 2.1
2008 Teacher Shortage in Texas



Source: Texas A&M University Institute for School-University Partnerships, Published in Corpus Christi Caller-Times

Figure 2.1 illustrates results of a study which sought to determine where the highest concentrations of non-certified teachers were found in Texas schools by district type. According to the results, the largest percentages of less than fully certified teachers hired in Texas during 2008 were found in major urban schools. Thirty-six percent of nearly 6,000 teachers hired were less than qualified. The results also show that 50 percent of teachers hired to work in central city schools were less than qualified.

H4: Urban area schools are more likely to have non-certified teachers.

Conceptual Framework

A review of the literature identified four factors that may influence the percent of non-certified teachers. From the literature, hypotheses are developed. The literature supports economically disadvantaged schools, average teacher salaries, minority populations, and urban area schools as factors influencing the percent of non-certified teachers in schools. The purpose

of this research is to explain which factors influence the percent of non-certified teachers in Texas school districts.

This research is explanatory and uses four formal hypotheses. From a Public Administration perspective, explanatory research is important because all impact oriented program evaluation is explanatory. All impact program evaluations use formal hypothesis (Shields 1998). A conceptual framework is illustrated below. The hypotheses are linked to the supporting literature in Figure 2.2.

Figure 2.2
Conceptual Framework Linked to Literature

| Hypothesis | Supporting Literature |
|--|---|
| H1: Schools with high percent of economically disadvantaged students are more likely to have non-certified teachers. | Prince 2002; Harrell 2004; Goe 2002; Salinas 2006; Darling-Hammond 2000; Valencia 2000; Lankford, Loeb, and Wycoff 2002; Lee and Burkham 2002; Murphy et. al. 2003; Ingersoll 2003; Anderson 2007; Greenburg, Rhodes, Ye, and Stancavage 2004 |
| H2: Schools with high average teacher salaries are less likely to have non-certified teachers. | Anderson and Waldenstrom 2007; Jimerson 2003; Ladd 2007; Lankford, Loeb, and Wycoff 2002; Darling-Hammond 1997; Gonzalez 1999; Darling-Hammond and Sykes 2003; Prince 2002; Eller et.al. 2000; Pogodzinski 2000; Murname, Singer, and Willet 1989; Salinas 2006; Gonzalez, brown, and Slate 2008; Lewis 1998, Darling-Hammond 2000; Branch 2000 |
| H3: Schools with a large minority population are more likely to have non-certified teachers | Kane, Rockoff, and Staiger 2006; Valencia 2000; Vasquez 1990; Dee and Henkin 2002; Cochran-Smith 1995; Villegas and Clewell 1998; Clewell and Villegas 2001; Grimmett and Echols 2001; Henke 1996; Goe 2002; Prince 2002; National Center for Education Services 1998; Murphy et. al. 2003; Ng 2003; Gonzalez 1999 |
| H4: Urban area schools are more likely to have non-certified teachers. | Harrell and Jackson 2004; Villegas and Clewell 1998; Urban Teacher Collaborative 2000; Gimbert, Bol and Wallace 2007; Staropoli 2010; Darling-Hammond 2000; Goe 2002; McCreight 2000; National Commission 1997; Salinas 2006; Shields et.al. 2001; Henke 1996; National Center for Education Statistics 1998 |

Chapter Summary

The literature represents four independent variables which influence the percent of non-certified teachers: economically disadvantaged schools, schools with low teacher salary averages, schools with large minority population, and urban area schools are each more likely to have non-certified teachers. These four independent variables will be tested to determine if a similar relationship exists when compared to Texas public school districts.

Chapter 3: Methodology

This chapter shows the hypotheses designed to explain the factors believed to influence the percent of non-certified teachers in schools. This chapter also discusses in detail the method used to perform an analysis of existing data.

The hypotheses were operationalized through variables found in the literature. The dependent variable for this study is the percent of non-certified teachers in Texas school districts. The independent variables are the percent of economically disadvantaged students, percent minority population, average teacher salaries, and classification as a major urban district. To find the percent of economically disadvantaged students, percent of minority population, and average teacher salaries, this study used existing data in the Public Education Information Management System. Data for identification of major urban school districts was found in existing data in the Academic Excellence Indicator System Snapshot Summary Table. Existing data for all variables were collected from each of the 1237 school districts accredited by the Texas Education Agency in the state of Texas. This is the best method of data collection because it is readily available and allows for a comprehensive analysis and accurate test of each hypothesis. The data set is available upon request from the author.

Based on the literature, this study developed four formal hypotheses. It is hypothesized that schools with a high percent of economically disadvantaged students (H1), schools with low average teacher salaries (H2), schools with a high percent of minority students (H3), and schools classified as a major urban schools (H4) are each more likely to have non-certified teachers. This chapter contains a definition of each variable and further discusses the sources of the existing data. The operationalization table in Figure 3.1 outlines the variables used in the study and their relationship to the hypotheses.

Figure 3.1
Operationalization Table

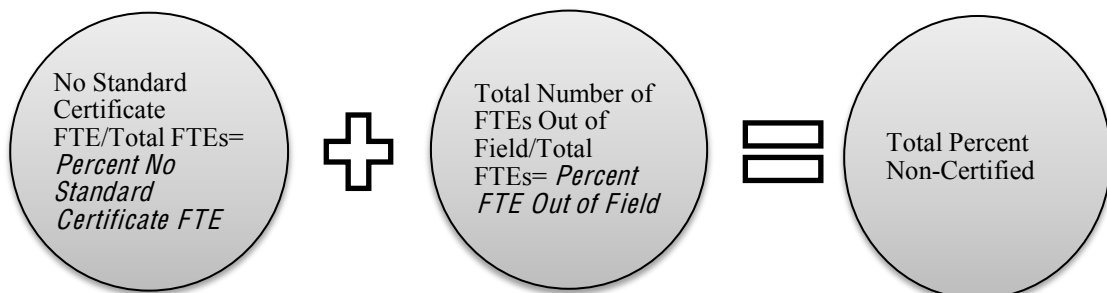
| Variables | Direction of Hypothesis | Definition/Measurement | Data Source |
|---|-------------------------|---|---|
| Dependent | | | |
| Percent of Non-Certified Teachers | | Determined by number of non-certified employed educators in Texas School Districts | Texas Education Agency Public Education Information Management System; State Board for Educator Certification |
| Independent | | | |
| Percent of Economically disadvantaged Students (H1) | + | Students are defined as being economically disadvantaged if they receive free lunches or reduced-price lunches through federally-funded school lunch program, or if they qualify for other public assistance. Students are eligible if their families have incomes less than 185% of the federal poverty level. | Texas Education Agency Public Education Information Management System |
| Teacher Salary (H2) | + | Average salary for 2009-2010 | Texas Education Agency Public Education Information Management System |
| Minority Population (H3) | + | Students are identified as minorities if African-American, Hispanic, Native American, or Asian/ Pacific Islander | Texas Education Agency Public Education Information Management System |
| Urban Area Schools (H4) | + | Major urban districts are the districts with the greatest membership in counties with populations of 735,000 or more. | Texas Education Agency Academic Excellence Indicator System Snapshot Summary Table -Community Type |

Dependent Variable

The dependent variable is the percent of non-certified teachers in Texas school districts. State Board for Educator Certification Interactive Reports maintain records developed using the Public Education Information Management System as to the number of certifications issued per academic year, the number of permits requested by and issued to school districts, and the number and/or percent of educators employed by a school district who do not have full credentials or who are assigned to teach in areas for which they are not certified (out-of-field). The report can be generated to reflect state-wide totals or individual school district totals by district number.

Each district is required to report, in the Public Education Information Management System, the total number of Full Time Equivalent (FTE) teaching positions. State Board for Educator Certification Interactive Reports detail the total number of FTEs with no Standard Certificate and the total number of FTEs teaching out-of-field. The total number of no Standard Certificate FTEs was divided by the total number of FTEs to derive the percent of no Standard Certificate FTEs. In addition, the total number of out-of-field FTEs was divided by the total number of FTEs to find the percent of out-of-field FTEs for each of 1237 school districts during the 2009-2010 academic year. Total percent of non-certified teachers, the dependent variable, was operationalized as the sum of these two percentages. Figure 3.2 illustrates these formulas.

Figure 3.2
Percent Non-Certified Calculation Method



Independent Variables

There are four independent variables identified within the literature that were used in this multiple regression analysis: economically disadvantaged, average teacher salaries, minority population, and major urban schools. These four independent variables are operationalized below.

Economically Disadvantaged

The National School Lunch Program is a federally assisted meal program operating in non-profit private schools and residential care institutions. This program provides low-cost or free lunches to children if their families have income less than 185 percent of the federal poverty level (U.S. Dept of Agriculture). Because participation in these programs is means tested, the percent of students who receive free or reduced lunch is often used as a measure of poverty (Texas Education Agency). In other words, students are known to be economically disadvantaged if they receive free lunches or reduced-price lunches through federally funded school lunch programs.

This study used data collected from the Public Education Information Management System reporting the percent of students identified as economically disadvantaged in each school district. The percent of economically disadvantaged students is based on the totals of the percent of students eligible for free lunch, percent of students eligible for reduced lunch, and percent of students otherwise classified as economically disadvantaged.

Average Teacher Salary

Each year, the Texas Education Agency creates a Minimum Salary Schedule in accordance with Texas Education Code 21.402(a). The schedule applies only to classroom teachers, full-time librarians, full-time counselors and full-time nurses. In no instance may a

school district pay less than the state base salary listed for that individual's years of experience.

The Salary Schedule for 2009-2010 is shown in Figure 3.3.

Figure 3.3
2009-2010 Minimum Salary Schedule

| Years of Experience | Monthly Salary | Annual Salary |
|---------------------|----------------|---------------|
| 0 | 2,732 | 27,320 |
| 1 | 2,791 | 27,910 |
| 2 | 2,849 | 28,490 |
| 3 | 2,908 | 29,080 |
| 4 | 3,032 | 30,320 |
| 5 | 3,156 | 31,560 |
| 6 | 3,280 | 32,800 |
| 7 | 3,395 | 33,950 |
| 8 | 3,504 | 35,040 |
| 9 | 3,607 | 36,070 |
| 10 | 3,704 | 37,040 |
| 11 | 3,796 | 37,960 |
| 12 | 3,884 | 38,840 |
| 13 | 3,965 | 39,650 |
| 14 | 4,043 | 40,430 |
| 15 | 4,116 | 41,160 |
| 16 | 4,186 | 41,860 |
| 17 | 4,251 | 42,510 |
| 18 | 4,313 | 43,130 |
| 19 | 4,372 | 43,720 |
| 20 & Over | 4,427 | 44,270 |

Source: Texas Education Agency 2009-2010 Minimum Salary Schedule <http://www.tea.state.tx.us>

As independent employers, school districts in the State of Texas establish local salary schedules using the Minimum Salary Schedule as a guide. Average salaries are reported to the Public Education Information Management System for all positions within a school district. This study used existing data from the Public Education Information Management System to extract average teacher salaries for the 2009-2010 academic year for 1237 school districts. Only teacher salary averages were collected and calculated in this study. To find this average, the system

divides the total pay for teachers within each experience group by the total teacher FTE for the group. The total actual salary amount is pay for regular duties only and does not include supplements. For teachers who also have non-teaching roles, only the portion of time and pay dedicated to classroom responsibilities is factored into the average teacher salaries calculation.

Minority Population

Students are reported as white, African American, Hispanic, Asian/Pacific Islander, and Native American. For purposes of this study, minority students are defined as all students selecting Hispanic, African American, Asian/Pacific Islander, and/or Native American as their ethnicity. This data is reported on the Public Education Information Management System as a calculated percentage for each school district for each ethnicity. This study used existing demographic data for the 2009-2010 academic year.

Urban Schools

The Texas Education Agency defines urban districts as those that serve communities with populations of 735,000 or more. The Academic Excellence Indicator System Snapshot Summary Table for District Community Type identifies ten Texas school districts as urban districts shown in Figure 3.4. Urban districts are the largest school districts in Texas that serve the six metropolitan areas of Houston, Dallas, San Antonio, Fort Worth, Austin, and El Paso. The Texas Education Agencies identifies Arlington ISD, Austin ISD, Dallas ISD, El Paso ISD, Fort Worth ISD, Houston ISD, North East ISD, North Side ISD, San Antonio ISD, and Ysleta ISD as urban school districts. For this study, a dummy variable of 1 will be used to represent a school classified under this definition as major urban. All other school districts will be assigned 0.

Figure 3.4
Major Urban School Districts

| County Name | County Population | School Districts |
|-------------|-------------------|--|
| Bexar | 1,651,448 | North East ISD Northside ISD San Antonio ISD |
| Dallas | 2,451,730 | Dallas ISD |
| El Paso | 751,296 | El Paso ISD Ysleta ISD |
| Harris | 4,070,989 | Houston ISD |
| Tarrant | 1,789,900 | Arlington ISD Fort Worth ISD |
| Travis | 1,026,158 | Austin ISD |

Source: U.S. Census Bureau State and County QuickFacts- Texas Counties 2009 Population Estimates
<http://quickfacts.census.gov/qfd/states>

Procedure

Existing data was used to test four formal hypotheses. First, this study conducted a correlation coefficient test to determine if multicollinearity exists. Multicollinearity is the condition where the independent variables are linearly related to each other. As the level of multicollinearity increases, the amount of independent information about the variables decreases. When two or more variables are found to be highly correlated with each other, they must be excluded from the multiple regression to maintain the integrity of the analysis.

For this study, multiple regression analysis was used. Multiple regression analysis is used to analyze how a given dependent variable is simultaneously affected by multiple independent variables (Babbie 2007, 455). This statistical method was used to analyze the data, and to determine whether the hypothesis were supported or rejected. Multiple regression results show how the percent of economically disadvantaged students, percent of minority students, average teacher salaries and urban schools influence the percent of non-certified teachers in Texas school

districts. The Statistical Package for Social Sciences (SPSS) was used to run the multiple regression analysis. The data used in this analysis is presented in Appendix A. Adjusted R^2 value shows how much of the variance in the percent of non-certified teachers can be explained by the regression model.

Summary of Data and Hypotheses

Figure 3.6 provides a summary table. The table outlines the dependent and independent variables in this study, the operationalization of each variable, the four formal hypotheses for this research purpose, and predicted direction of the relationship. This study used four independent variables--percent of economically disadvantaged students, average teacher salaries, percent of minority students, and major urban-- as predictors of the percent of non-certified teachers in Texas school districts. The four independent variables were developed into formal hypotheses. The hypotheses for each of the four independent variables are shown to predict a positive influence on non-certified teachers, increasing the total percent in Texas school districts.

Figure 3.6
Study Summary Table

| Variable | Operationalization | Hypotheses | Predicted Direction |
|------------------------------------|---|--|---------------------|
| Dependent | | | |
| Percent of Non-Certified Teachers | The total percent of <i>no Standard Certificate FTEs</i> plus the total percent of <i>out-of-field FTEs</i> equals <i>Total percent of non-certified teachers</i> | | |
| Independent | | | |
| Percent Economically Disadvantaged | Total percent of students eligible for free lunch, percent of students eligible for reduced lunch, and percent of students otherwise classified as economically disadvantaged | H1: Schools with high percent of economically disadvantaged students are more likely to have non-certified teachers. | Positive |
| Average Teacher Salary | Average teacher salaries for the 2009-2010 academic year | H2: Schools with high average teacher salaries are less likely to have non-certified teachers. | Positive |
| Percent of Minority Students | Percent of Students selecting Hispanic, African American, Asian/Pacific Islander, and/or Native American as their ethnicity | H3: Schools with a large minority population are more likely to have non-certified teachers | Positive |
| Major Urban | Dummy variable assigned 1= Major Urban 0= Rural, Suburban, or other designation | H4: Urban schools are more likely to have non-certified teachers | Positive |

Chapter Summary

This chapter presented the methodology for testing the four hypothesis presented. This study used a correlation coefficient test and multiple regression analysis to determine if percent of economically disadvantaged students, percent minority, average teacher salaries, and major urban district status influence the percent of non-certified teachers in Texas school districts.

Chapter 4: Results

This chapter presents the results of the multiple regression analysis used to determine the factors that influence the percent of non-certified teachers in Texas school districts.

Descriptive Statistics

For this study, the data set included existing data for 1237 accredited school districts in the state of Texas. The percent of non-certified teachers for each school district was the dependent variable. Independent variables were percent of economically disadvantaged students, average teacher salary, percent of minority students, and classification as urban district. Figure 4.1 shows the descriptive statistics for each independent variable.

Figure 4.1
Descriptive Statistics

| Variables | Mean | Range | Standard Deviation |
|------------------------------------|----------|-------------|--------------------|
| Percent Economically Disadvantaged | 54.71 | 0-100 | 23.961 |
| Salary Average | 43575.37 | 43400-78594 | 5023.369 |
| Percent Minority | 50.16 | 0-100 | 29.712 |
| Major Urban | 0.0081 | 0-1 | 8962 |

Percent economically disadvantaged and percent minority both had a range from 0 percent to 100 percent. The statistics show that school districts in Texas have an average economically disadvantaged student population of 55 percent with most districts reporting within 24 percentage points either direction--quite a significant amount considering the large number of school districts included in the calculation. The statistics also show an average minority population of 50 percent in Texas school districts with most districts reporting within 30 percentage points either direction.

The mean teacher salary for the 1237 school districts in the data set was \$43,275. While the highest salary average reported was \$78,594, most districts reported an average salary about \$5000 more or less than the calculated mean. The mean reported for major urban designation is .8 because only 10 school districts of the 1237 districts calculated were designated major urban according to the Texas Education Agency definition. A dummy variable of 1 was assigned to the 10 major urban districts and 0 assigned to all others, as indicated in the range in figure 4.1.

Correlation Coefficient Test

To determine if multiple regression is an appropriate statistical method for this study, a correlation coefficient test was run to calculate the relationship between two variables. Correlations between independent variables determine the extent to which the relationships between the independent variables are so strong they provide the same information (Neal 2002). Figure 4.2 illustrates the results of this test in matrix form. The results of the correlation test indicate that a moderate relationship exists between the percent of economically disadvantaged students and the percent of minority students at .437. All other variables have a weak correlation. The correlations are weak enough to show that multiple regression is an appropriate method of statistical analysis for this study.

Figure 4.2
Correlation Matrix

| | Percent Non-Certified | Percent Economically Disadvantaged | Percent Minority | Average Teacher Salary | Major Urban |
|------------------------------------|-----------------------|------------------------------------|------------------|------------------------|-------------|
| Percent Non-Certified | 1 | .169** | .430** | -.362** | -.015 |
| Percent Economically Disadvantaged | | 1 | .437** | -.141** | 0.056** |
| Percent Minority | | | 1 | 0.018 | .089** |
| Average Teacher Salary | | | | 1 | .106** |
| Major Urban | | | | | 1 |

**Correlation is significant at the 0.01 level (2-tailed)

Collinearity statistics are shown in Figure 4.3. The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model, providing a reasonable indication of the effects of multicollinearity on the variance of the regression coefficient (O'Brien 2007). Multicollinearity exists when the largest Variance Inflation Factor is 10 or more (Chatterjee and Price 1991). A small tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation. Researchers suggest that a tolerance value less than 0.1 is cause for concern of multicollinearity (Lin 2008). Results in Figure 4.3 show that each variable has a VIF significantly lower than 10, and all tolerance values are considerably higher than 0.1. The results therefore indicate no concern for multicollinearity.

Figure 4.3
Collinearity Statistics

| | | Percent Economically Disadvantaged | Percent Minority | Avg Teacher Salary | Urban |
|------------------------------------|------------------|------------------------------------|------------------|--------------------|---------------|
| Percent Economically Disadvantaged | Tolerance VIF | | 1.008 .992 | 1.011 .989 | 1.019 .981 |
| Percent Minority | Tolerance VIF | 1.026 .975 | | 1.034 .967 | 1.017 .984 |
| Avg Teacher Salary | Tolerance VIF | 1.236 .809 | 1.242 .805 | | 1.008 .992 |
| Urban | Tolerance VIF | 1.271 .787 | 1.246 .802 | 1.029 .972 | |

Multiple Regression Analysis

Figure 4.4 shows the results of the multiple regression analysis including the percent of economically disadvantaged students, percent of minority students, average teacher salary, and major urban status influence on the percent of non-certified teachers in Texas school districts as the independent variable.

Figure 4.4
Multiple Regression Results

| <u>Independent Variable</u> | <u>Coefficient</u> | <u>Significance</u> |
|------------------------------------|--------------------|---------------------|
| Percent Economically Disadvantaged | -.127 | .000 |
| Percent Minority | .530 | .000 |
| Average Teacher Salary | -.002 | .000 |
| Major Urban | -4.164 | .620 |

Controlling for other factors, the percent of economically disadvantaged students is statistically significant at .000. Results indicate that for every one unit increase in the percent of economically disadvantaged students there is a corresponding .13 decrease in the percentage of non-certified teachers. A school district that has 10 percent more economically disadvantaged students is therefore predicted to have 1.3 percent fewer non-certified teachers. The finding is opposite of the predicted relationship.

The percent of minority students is also statistically significant at .000. Results indicate that for every percentage point of minority students in Texas school districts, add .530 to the percent of non-certified teachers. This is a relatively strong, positive relationship and confirms the predicted direction. Teacher salary, significant at .000, shows a negative correlation to the percent of non-certified teachers at -.002. Major urban district status was not found to be statistically insignificant at .620. Figure 4.5 shows the Model Summary of the regression. The multiple correlation coefficient, which looks at the association of all the variables collectively, indicates a strong relationship at .571 where 1 is the maximum value. The adjusted R square shows that 32 percent of the variance in the percent of non-certified teachers can be predicted by the combination of these four independent variables.

Figure 4.5
Model Summary

| <u>Model</u> | <u>R</u> | <u>R Square</u> | <u>Adjusted R Square</u> | <u>Std. Error of the Estimate</u> |
|--------------|-------------------|-----------------|--------------------------|-----------------------------------|
| 1 | .571 ^a | .326 | .324 | 26.183 |

a. Predictors: (Constant), Urban, Total Percent Economically Disadvantaged, Average Base Pay (Teacher Salary Only), Percent Minority

Hypotheses Test Summary

Figure 4.6 offers a hypotheses test summary to explain whether each hypotheses supported or rejected based on the results of this study.

Figure 4.6
Hypotheses Test Summary

| Hypothesis | Test Result |
|--|-------------|
| H1: Schools with high percent of economically disadvantaged students are more likely to have non-certified teachers. | Rejected |
| H2: Schools with high average teacher salaries are less likely to have non-certified teachers. | Supported |
| H3: Schools with a large minority population are more likely to have non-certified teachers | Supported |
| H4: Urban schools are more likely to have non-certified teachers. | Rejected |

H1: Economically Disadvantaged Students

Schools with a high percentage of economically disadvantaged students (H1) were proposed to increase the percent of non-certified teachers. The results of this study do not support this hypothesis. Instead, as schools report an increase in percent of economically disadvantaged students, a corresponding decrease in the percent of non-certified teachers occurs.

The No Child Left Behind Act, which focuses on improving teacher quality, may be at the root of this result. In accordance with the act, teachers are required to be Highly Qualified if they are teacher of record providing direct instruction to students in any core academic area. To be highly qualified, a teacher must hold at least a bachelor's degree, demonstrate competency in their core academic subject area, and be fully certified to teach in Texas (Highly Qualified TEA). Highly qualified status is especially critical at Title I schools, which have a high percentage of students from low-income families. Funding is allocated based on compliance with the No Child Left Behind act to these schools with great needs. It can therefore be concluded that because of the implications of financial resources and government support, school districts in Texas are more likely to hire fully certified teachers to teach high percentages of economically disadvantaged students.

H2: Average Teacher Salary

This study postulated that schools with high average teacher salaries are less likely to have non-certified teachers (H2). Based on the results, the percent of non-certified teachers decreases by .002 as average salaries *increase*. It is important here to consider that the data used for multiple regression analysis included various salary averages at various dollar amounts. Although a weak relationship, the results inherently indicate, then, that with *lower* average teacher salaries, the percent of non-certified teachers could increase. This confirms the predicted direction.

H3: Minority Students

The study also hypothesized that schools with a large minority population (H3) were more likely to have non-certified teachers. The positive relationship (.530) indicates that percent of minority students influences percent of non-certified teachers. Based on the results, if a school

reported 100 percent minority student population, it could be estimated that over 50 percent of its teachers would be non-certified. The hypothesis is therefore supported.

The literature finds that certified teachers are resistant to teach in schools with high minority populations because of cultural differences between the student population and the teacher. The State Board for Educator Certification reports that for the 2009-2010 academic year, 68 percent of certified teachers were not of minority descent. Only 9 percent of teachers were African-American and 23 percent Hispanic (Interactive Reports). The data shows, then, an average of 50 percent minority student population in Texas school districts, matched with less than 32 percent minority teachers. In this scenario, cultural differences abound and accordingly, the percent of non-certified teacher in high minority population Texas schools grows.

H4: Urban Schools

This research also predicted that urban area schools are more likely to have non-certified teachers. The data set included only 10 school districts designated as major urban districts in Texas based on the Texas Education Agency definition of a school which serves a community of more than 735,000 people or more. Major urban district status was found to be statistically insignificant.

Chapter Summary

This chapter explained the results of the correlation test and multiple regression analysis. Results of the correlation coefficient test were weak enough to show that multiple regression is an appropriate method of statistical analysis for this study and reported no multicollinearity. Findings indicate that percent economically disadvantaged students, percent minority, and average teacher salary influence the percent of non-certified teachers. Status as an urban school district was found to be statistically insignificant as a predictor of the percent of non-certified

teachers. A Hypotheses Test Summary table was designed to explain whether each hypothesis supported or rejected based on the results of this study. The next chapter will offer conclusions as a result of this study and will make suggestions for further research.

Chapter 5: Conclusions

The purpose of this study was to determine the factors which influence the percent of non-certified teachers in Texas school districts. In Chapter 2: Literature Review, the literature represents four independent variables which influence the percent of non-certified teachers: economically disadvantaged schools, schools with low average teacher salaries, schools with large minority population, and major urban schools. Chapter 2 also presents the conceptual framework and four formal hypotheses used in this research. The hypotheses are:

H1: Schools with high percent of economically disadvantaged students are more likely to have non-certified teachers.

H2: Schools with high average teacher salaries are less likely to have non-certified teachers.

H3: Schools with a large minority population are more likely to have non-certified teachers

H4: Urban schools are more likely to have non-certified teachers

The four independent variables were operationalized in Chapter 3: Methodology. The study used a correlation coefficient test and multiple regression analysis to determine if percent of economically disadvantaged students, percent minority, average teacher salaries, and major urban district status influence the percent of non-certified teachers in Texas school districts. In Chapter 4: Results, the correlation coefficient test results were weak enough to show that multiple regression is an appropriate method of statistical analysis for this study and reported no multicollinearity. Findings indicate that percent minority and average teacher salaries influence the percent of non-certified teachers. Percent economically disadvantaged students negatively influenced the percent of non-certified teachers thereby rejecting the projected direction of the hypothesis. Status as an urban school district was found to be statistically insignificant as a predictor of the percent of non-certified teachers.

Research indicates that the hiring of unqualified teachers is generally a result of distributional inequities, rather than overall shortages of qualified individuals (Darling-Hammond and Sykes 2003, Ingersoll 2001). The results of this study help to confirm this assertion. While the percent of economically disadvantaged students does not increase the percent of non-certified teachers as projected, the percent of minority students does so in a considerable way. The issue of inequity therefore becomes relevant to Texas school districts where results show that certified teachers are not concentrated well enough in minority schools.

One study suggests this may be an issue of teacher preparation, where aspiring educators are not receiving the type of preparation they may need to feel prepared for minority classrooms. This intensifies the educational import of the disparity between the teaching force and its schoolchildren and has enormous implications for the pre-service teacher education curriculum (Cochran-Smith 2003). Teacher education tends to be reactive to a shortage *after* it has occurred instead of being proactive and planning for teacher shortages *before* they take effect, and should be designed to address shortages that arise in local education contexts by providing concrete instructional strategies for teachers to respond to the challenges they face in today's world (Grimmett and Echols 2001).

Based on the results of this analysis, the challenges for Texas then are to incorporate a stronger diversity awareness and lessons on effective instruction for all schoolchildren, regardless of their backgrounds. Marilyn Cochran-Smith, current President of the American Educational Research Association, confirms the need for “generative ways for student teachers and teacher educators to reconsider their assumptions, understand the values and practices of families and cultures different from their own, and construct pedagogy that not only takes these

into account in locally appropriate ways but also makes issues of diversity an explicit part of the curriculum” (1995, 493).

Suggested Future Research

The purpose of this study was to determine the factors which influence the percent of non-certified teachers in Texas school districts using variables including major urban districts. One suggestion for further research is to instead use rural areas as an independent variable, and/or to measure the percent of non-certified teachers in private and charter schools. Based on the results of this study, the highest concentrations of out-of-field non-certified teachers were found in *smaller* school districts and accredited charter and private schools. This may be perhaps due to the geographic nature of Texas. With 80 percent of its land rural, the state has the nation’s largest rural population (Windows on State Government).

The current economic situation threatening the future of many Texas school districts may also soon influence the percent of non-certified teachers. Shifts in district personnel and full time equivalents will change percentages, and may produce new data. Reductions in force may lead to districts filling more classrooms with out-of-field teachers thereby increasing the total percent of non-certified teachers. This may also change average teacher salaries.

This study found that the high percentages of economically disadvantaged students in Texas school districts did not therefore mean high percentages of non-certified teachers perhaps because of the No Child Left Behind Act and it’s specific requirement of highly qualified teachers in the most disadvantaged schools. The No Child Left Behind Act was reauthorized in March 2010 under the Obama Administration as the Elementary and Secondary Education Act. Still, emphasis on Title I schools and provisions to increase student academic achievement through strategies such as improving teacher quality and increasing the number of highly

qualified teachers in the classroom in schools may continue to force schools to hire certified teachers. Further research may seek to explore the implications of revised policy in connection with current economic strains on Texas School Districts.

Researchers and policy makers, as well as the general public, connect student achievement with a number of variables, including the percentages of under qualified teachers (Goe 2002). Further research may seek to find the connection between the percent of non-certified teachers in Texas and student performance on the Texas Assessment of Knowledge and Skills (TAKS) or other standardized tests implemented in the school system. Another approach may be to evaluate the differences in the performance of students whose teachers are emergency or temporarily certified versus those who are fully certified.

To address the value of teacher education, further research may seek to explore educator preparation program curriculum. An evaluation of how aspiring educators are prepared may help to understand and address the concerns of too few certified teachers in minority schools. Further research could also look at what types of recruitment or development programs are in place to address the high percentages of non-certified teachers in minority schools. Some districts have ‘grow your own’ programs in place with preparation beginning through cooperative learning opportunities for high school students interested in the teaching profession.

Weakness and Strength of Data

This study used existing data provided by the Texas Education Agency. As with all research, there are strengths and weaknesses associated with this study. A potential weakness associated with this data is human error. Each accredited school district is required to submit data to the Texas Education Agency through the Public Education Information System. During this process of data entry, there is potential for error or misrepresentation of accurate figures with regard to percentages, salaries, enrollment, etc.

The strength in the data is that it is easily accessible and open to manipulation. Therefore, this type of research is conducive to trend analysis where further research can continue to monitor for changes in factors that influence the percent of non-certified teachers in Texas school district.

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