

THE IMPACT OF TROOPS TO TEACHERS PARTICIPANTS ON STUDENT  
ACHIEVEMENT: A CAUSAL-COMPARATIVE STUDY

by

Kurt Stanley Osuch

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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**ABSTRACT**

The purpose of this causal-comparative study is to examine the impact of Troops to Teachers (TTT) participants on student achievement by comparing the mean scores of Texas students in the eighth grade during the 2011–2012 academic year taught by TTT participants with the mean scores of all other Texas eighth grade students on each of four mandatory standardized examinations. The Texas Education Agency (TEA) provided the archival data used in the evaluation, which consisted of limited teacher demographic information, as well as individual student scores on the vertically equated 2011-2012 version of the State of Texas Assessments of Academic Readiness (STAAR) tests in mathematics, reading, science, and social studies. The results of the analysis indicate that students of non-TTT participants achieved statistically significant higher mean STAAR scores in mathematics, science, and social studies when compared to students of TTT participants. Students of TTT participants achieved higher, but not statistically significant, mean scores in reading when compared to students of all other teachers. This research informs teaching practice and alerts human resources practitioners, school administrators, teachers, legislators, veterans' program officials, and recruiters, to how school systems may design learning communities to take advantage of second-career teachers to further student achievement. Suggestions for further research are included.

*Keywords:* retired military, second-career teachers, career change, alternative certification, teacher effectiveness, non-traditional teachers, sources for teachers, teacher preparation, teacher recruitment

## **Dedication**

I dedicate this work first to His greater Glory, to the one who, through the life and death of His Son, redeemed humanity. This work is a response to His Will, completed by relying on His direction, accepting His guidance, and accepting His strength. I accept that this dissertation's completion was possible only through the gift of Grace and the animation of the Spirit. His gifts of reason and intellect allow this author to reveal a tiny portion of His creation. He has always responded to my prayers, though understanding His response often required both faith and courage.

Equally instrumental, and sharing in this dedication, are my wife, Marilyn, and my daughter, Lauren. Without their love, this work would have been impossible.

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The author also wishes to acknowledge the particular assistance in the provision of aide and the *pro bono* effort provided by Dr. William McAleer, Program Director of the Troops to Teachers Program at the Naval Education and Training Center, Pensacola, Florida. Without the Navy team, reaching Troops to Teachers participants in Texas would have been a much longer and more costly endeavor. Dr. Nina Taylor at the Texas Education Agency was an invaluable contact in Texas. The staff of the Texas Education Agency constructed and provided the researcher with the archived data. Ms. Merryl Kettler at the Texas Troops to Teachers office provided the program database to help identify Troops to Teachers participants.

Finally, the author thanks Dr. William Owings currently at Old Dominion University who produced the seminal work in the area of Troops to Teachers effectiveness; his availability and willingness to offer guidance facilitated this study.

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## **List of Abbreviations**

ACT – American College Test

ARRA – American Resource and Recovery Act

CNP – Child Nutrition Program

EDIP – Explain, Demonstrate, Imitate, Practice

ELA – English Language Arts

ESEA – Elementary and Secondary Education Act

FARM – Free and Reduced-Price Meals

FCAT – Florida Comprehensive Achievement Test

GLM – Generalized Linear Model

IEP – Individualized Education Program

IRB – Institutional Review Board

JROTC – Junior Reserve Officer Training Corps

LEP – Limited English Proficiency

MKO – More Knowledgeable Other

NCATE – National Council for Accreditation of Teacher Education

NCLB – The No Child Left Behind Act

NSLP – National School Lunch Program

SAT – Scholastic Assessment Test

SNAP – Supplemental Nutrition Assistance Program

STAAR – State of Texas Assessment of Academic Readiness

STEM – Science, Technology, Engineering and Mathematics

TANF – Temporary Assistance to Needy Families

TAKS – Texas Assessment of Knowledge and Skills

TEA – Texas Education Agency

TEAC – Teacher Education Accreditation Council

TTT – Troops to Teachers

WIC – Women, Infants, and Children

ZPD – Zone of Proximal Development

## CHAPTER ONE: INTRODUCTION

The researcher drew on several themes from the contemporary debate on reform of the American public education system to shape this study: (a) accountability; (b) student achievement; (c) standardized testing; (d) teacher effectiveness and quality; (e) alternative certification; and (f) second-career teachers. Two themes, teacher effectiveness and student achievement, were entwined, producing the substrate within which the researcher built this study on Troops to Teachers (TTT), a unique group of second-career teachers, and their impact on the achievement of eighth grade public school students in Texas during the 2011–2012 school year.

Chapter one contains sections entitled (a) background, (b) problem statement, (c) purpose of the study, (d) significance of the study, (e) research questions and associated null hypotheses, (f) identification of variables, and (g) definitions. A summary completes the chapter.

### **Background**

Writing for Education.com, Thurlow (n.d.) described educational *accountability* as focusing on “processes or results,” with a goal of compliance with standards or criteria. Under this construct, teachers become the focus of compliance efforts, and the details of their activities (i.e., teaching) become equally targetable. Contemporary public secondary education is in the midst of a struggle to determine the extent of accountability (Anonymous, 2004; Ingersoll, 2012; Thurlow, n.d.), and whether the system or the individual educator can or will be held accountable for student achievement.

Teacher accountability is notable in professional development efforts and continuing certification and credentialing (e.g., National Board Certification). It is also highlighted in the contemporary struggle over teacher performance evaluation in which

student performance on standardized tests is included as part of a teacher's overall performance evaluation, thus affecting future promotion, pay, and retention (Postal, 2013). Richard Ingersoll (2012) seized on the central theme in the accountability movement when he wrote, "The quality of teachers and teaching is undoubtedly among the most important factors shaping the learning and growth of students" (Ingersoll, 2012, p. 97).

The contemporary environment in public schools increasingly demands accountability of the educator and a corresponding academic performance of the student. Consequently, teacher effectiveness and quality have become significant factors in performance. Efforts to raise teacher quality and increase student achievement have combined to form a powerful energy demanding reform in American public education. This energy has resulted in changes to state statutes, accountability programs, and streamlining and alignment of lesson plans to state standards.

*Race to the Top* (United States Department of Education, 2009) and its predecessor, *No Child Left Behind* (NCLB) (2002), are examples of federal government programs intended to reform the education system by raising teacher quality and enhancing student achievement. The case for federal or national reform is beyond the scope of this paper, as is the political controversy surrounding such reform.

Many state legislatures have also taken action by creating accountability divisions in their state education bureaucracy and instituting various forms of mandated testing, the latter often in collaboration with one of the several large education corporations. Often these collaborations have resulted in a state building its own repertoire of examinations in the process; Texas is an example of this phenomenon. Each examination may have

multiple permutations that are tailored for grade level, subject, students with disabilities, or for non-English-speaking students.

At the local and school district level, class schedules have changed as testing and test preparation consume more class time. Teachers' comprehensive performance, and thus their value, may include in the performance evaluation systems student achievement as measured by the grade- and subject-appropriate state standardized tests. The teacher is under increased pressure to perform and to demonstrate effectiveness, which is often measured by student achievement (e.g., scores on a standardized test). Students are also measured repeatedly to ascertain the extent of their learning in an attempt to ensure *college and career* readiness (United States Department of Education, 2010).

As noted above, *student achievement* is a major component of the school accountability movement (Anonymous, 2004). *High stakes* is another term integral to the contemporary debate on education reform. High stakes standardized testing programs have grown in states across the country, with children in grades 3 through 11 subjected to a barrage of assessments throughout the year, some culminating in pass–fail graduation tests. Almost all of these testing programs were created in response to federal mandate and are tied to federal financing. States have responded to the call for accountability by developing unique assessment regimes and instruments that are associated with high stakes for teachers and students. Grade- and subject-specific standardized tests, such as the *Texas Assessment of Knowledge and Skills* (TAKS), or the *State of Texas Assessment of Academic Readiness* (STARR), are current measures of student achievement. Student achievement and standardized tests are now woven together, with sophisticated testing tools allowing student progress to be measured over time. With precision, the school,



legislature, and parents can link the student to his or her teacher and measure the outcome of the relationship.

Teachers arrive in the modern American classroom, in both public and private schools, from a variety of sources. Some are traditionally prepared, emerging from degree-granting institutions with undergraduate and graduate degrees in education, while others follow a non-traditional path that may include a first career or an alternative certification involving online preparation. Many states have implemented legislation that allows for multiple paths to licensure as a public school teacher.

As the population of the country grows, the need for teachers grows in proportion. At times, this need flourishes into a real or perceived crisis or shortage (Constantine et al., 2009; Hussar, 1999; Ingersoll, 2003). The real or perceived shortages then acutely impact the quantity of teachers in public schools, given that more than 90% of American students are educated in public elementary and secondary schools. Historically, teacher shortages (real or imagined) and larger class sizes have plagued the psyche of American public education. Increases in class size may stem from many different causes; increased student population, an influx of illegal alien students, and budget austerity that forces the consolidation of students and facilities all contribute to the problem.

*Alternative certification* programs are a response to the demands for more teachers created by the crises. There are now hundreds of alternative certification programs in most states, bringing teachers into the public schools from many different sources. These alternative programs supplement and reinforce the traditional methods of teacher preparation. The literature suggests that both traditionally prepared and

alternatively certified teachers can positively affect student achievement (Darling-Hammond, 2011; Humphrey & Wechsler, 2007).

Alternatively, credentialed teachers often bring with them experiences and learning from a first career or other work experience. Second-career teachers are those who enter teaching as a profession after having had significant work experience in another job field. These teachers often use alternative routes to certification. Harms and Knobloch (2005) offered an instructive study that provided an overview to the theories and terms included in the literature surrounding second-career teachers. Most research related to this group is qualitative in nature, heavily descriptive, and uses case studies, life histories, and survey results. Qualitative research contains references to Maslow's hierarchy (1954/1987) and Bandura's theory of self-efficacy, while research that is more contemporary also includes social capital theory. Qualitative research tends to focus on the feelings and aspirations of the second-career teacher, and their perceptions on their choice.

These studies have found that the concept of self-efficacy, or the belief that one can be successful, animates many second-career teachers. Other ideas that frequently arise in the qualitative research are altruism in the form of a sense of giving back and engaging in transformational leadership. Second-career teachers often believe that they possess unique skills and experience that will help bring the "real world" to their students (Auguste, 2010; Bandow, Minsky, & Voss, 2007; Berg, 2004; Vigoda-Gadot, Yehuda, & Shmuel, 2010).

Government and non-governmental organizations have responded to the need for teachers by developing and funding individual and collaborative programs. DC Teaching

Fellows, a partnership between a non-profit and the Washington, DC public school system (DC Teaching Fellows, 2012), is a prime example of collaboration for the benefit of urban students. Teach for America (2011), a non-profit that provides teachers to high-need areas, is a thriving enterprise. The federal government created the Troops to Teachers Program (TTT, 2011) in an attempt to incentivize separating and retiring military members into the teaching profession. These programs, and many others, allow future teachers to take advantage of traditional and alternative methods to achieve certification.

Since 1994, the federal government, through the TTT program, has assisted in the placement of more than 11,500 teachers across the country. The TTT program is a prime driver of diversity for the pool of American teachers. Nationally, more than 2,000 Black men have moved into teaching as a profession through the TTT program (Glod, 2009). The TTT program has provided over 1,985 teachers to the 315 school districts in Texas. In Texas, 85% of program participants are men, compared to 25% of the national teacher workforce, and 43% are members of racial or ethnic minorities.

While the body of alternatively certified teachers has been the subject of scholarly examination, research into the impact of second-career teachers, and TTT participants in particular, has been limited. A research group from Old Dominion University, led by Dr. William Owings under a grant from the Department of Defense, conducted a series of three studies (Nunnery, Owings, Kaplan, & Pribesh, 2008; Owings & Kaplan, 2010; Owings et al., 2005), focused on the TTT program during the first decade of the new century. Highlights from the studies suggest that TTT participants perform at levels equivalent to their peers who may have years more teaching experience. The original

researchers found that TTT participants were predominantly male, with Blacks comprising a large percentage of the group, and often taught in urban settings. From this group of three studies, a single study (Nunnery et al., 2008) examined the relationship between TTT participants and student achievement, as measured by results of the Florida Comprehensive Assessment Test (FCAT). The results suggest that TTT participants had a measurable impact on students' achievement in both reading and math.

This dissertation broadens the 2008 study by using a different state (Texas), with both larger student and teacher populations. The current study also expands the original study by examining students in a particular grade (8) and in a different period (2011–2012). By expanding the body of knowledge on the positive impact of second-career teachers, and focusing on the impact of TTT participants, the researcher intends to inform recruiting and human resources efforts of schools and school systems across the country of potential ways to increase teacher effectiveness and quality, by bringing alternatively experienced, second-career educators into close contact with students, thereby contributing to higher student achievement. Although TTT draws educators from only one source, the U.S. military, this work also seeks to inform researchers, legislators, and school officials of other sources for second-career teachers such as accountants, lawyers, physicians, or tradesmen, all of whom have their own unique and transferable sets of standards, skills, and professional ethics.

This study examines circumstances as they existed during the 2011–2012 school year involving the teacher and the corresponding student test scores (by subject). This study does not pass judgment on the correctness of the circumstances; indeed, there is

much to be gained for the student, and for the teacher(s), from common and longitudinal measurement.

### **Problem Statement**

The particular problem this research addresses is: “Do second-career teachers, particularly TTT participants, have an effect on eighth grade student achievement as measured by mean subject-specific STAAR test scores?” Two challenges intersect in this research: (a) bringing effective teachers into secondary schools, and (b) maximizing student achievement. Research by Boyd, Grossman, Lankford, Loeb, and Wyckoff has suggested that teacher experience affects student achievement (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2005), while Rice (2012) noted that teacher quality may be the most important school-related factor in student achievement.

The TTT program is one pipeline that brings individuals with leadership experience, a successful first career, and technical expertise into the teaching profession. This second-career preparatory program allows participants to utilize many regional alternative teacher certification methods, as opposed to traditionally certifying teachers who attain a bachelor’s degree in an educational field after completing high school. TTT participants respond not only to the demand for teachers in public school classrooms across the country, but also to their own motivation for a second career. TTT participants utilize alternative means to gain credentials, and are a sub-set of alternatively credentialed teachers. The literature is mixed on the effectiveness of alternatively certified teachers. Boyd, Goldhaber, Lankfor, & Wyckoff (2007) find insufficient evidence to draw conclusions concerning alternative certification programs. Brannan & Reichart (2001) suggest a “mixed bag of results and implication (p. 26) concerning

alternatively certified teachers. Buddin & Zamarro (2009) report little relationship between teacher quality and student results.

Maximizing student achievement, currently measured nationally by batteries of standardized tests, is the heart of an educational program. Student achievement is highly scrutinized. Parents, school administrators, state and federal legislators, and government and private executives watch for and consume the publicized reports on educational efforts and outcomes, many of which relate to standardized testing. Annually, the state of Texas assesses its students using the STAAR. Students in grade 8 are tested in reading, mathematics, science, and social studies. Although standardized testing instruments and regimes vary between states, public schools arguably operate under a uniform method in terms of adherence to the requirements for standardized testing (i.e., grades tested, student requirements, time limits, and security rules).

### **Purpose of the Study**

The purpose of this causal-comparative study is to determine the impact of TTT participants on the achievement of eighth grade Texas public school students as measured by scores on the four STAAR subject matter examinations conducted during the 2011–2012 school year. The research draws on evaluative data as measured by the subject-appropriate 2011–2012 STAAR. Teacher type (i.e., TTT participant or non-participant) is the independent variable. The dependent variable is student achievement, measured by results on the STAAR examinations in the areas of mathematics, reading, social studies, and science.

## Significance of the Study

Three studies were conducted by a team of researchers at Old Dominion University (Owings et al., 2005; Nunnery, Owings, Kaplan, & Prebish, 2008; Owings & Kaplan, 2010). The studies were conducted for the TTT program with funding provided by the program. The researchers first examined perceptions of the subject group, and followed with a quantitative analysis of TTT effectiveness. Topics for the studies were perceptions of the teachers' supervisors, effectiveness of teachers, and perception of supervisors of those teachers who went on to administration.

The current study is similar to, and partially replicates and updates, the original research, described above. Specifically, this research draws upon the work of the group published in 2008 entitled, *The Effects of Troops-to-Teachers on Student Achievement: A Meta-analytic Approach* (Nunnery et al., 2008). Table 1 displays significant differences between the current study and the aforementioned work.

Table 1

*Differences between Current Work and 2008 Study by Nunnery et al.*

Characteristic	Original Work (2008)	Current Study
Academic Year	2004–2005	2011–2012
Achievement Test	Florida Comprehensive Achievement Test	State of Texas Assessment of Academic Readiness
Region	Southeast	Southwest
State	Florida	Texas
Student Sample	~2,600	312,117
Teacher Sample	266	40,587

Additionally, the TTT population in Texas is the highest in the country.

Teaching as a second career is an option for many adults who have amassed substantial experience during a primary career. There are alternative routes to teacher certification available in many states, with an accompanying body of literature citing successes and failures of alternative credentialing routes. The varied nature of a military career, together with ideals of selfless service and dedication to the preparation of young people, make transition from the military to a career in education a desirable option for many separating from the American military (Defense Activity for Non-Traditional Education Support, 2012).

Knowing the classroom effectiveness of this unique TTT cohort has critical implications for policy, funding, and hiring as a means to promote high student achievement. This is especially important because more than half of TTT work in high-poverty schools (Owings et al., 2005). Moreover, the report updates research findings on how well alternatively certified TTT teachers impact measured student achievement, as described previously (Owings et al., 2005; Nunnery et. al., 2008). Identifying additional sources for effective teachers will affect hiring, human resources, professional development, and teacher preparation programs as well as personal decisions for institutions and adults ending a first career and assessing whether teaching is a viable option.

There is a gap in the research concerning retired members of the U.S. military and how their career military experience translates into helping students further their academic achievement as measured by standard assessment instruments. This study will add to that body of knowledge which, according to Dr. Owing (personal communication,



8 November, 2011), is currently assisting the British government in creating policies and programs to incorporate more retired military members into the teaching community. Results of this study may provide knowledge that aids school districts, federal and state policy-makers, and principals in maximizing the experience of second-career teachers, as well as inform adults transitioning to a second career of the possibilities of success. Potential areas for implementation of gained knowledge include teacher recruitment, program design, class assignment for students, and other faculty assignments at the local level. Research for this study evidenced scant affiliation between any one organization (e.g., Chamber of Commerce for retired business people, American Medical Association for retired physicians) and second-career teachers, the one set of studies by Owings et al. notwithstanding. This study focuses on expanding the body of knowledge on the effectiveness of second-career teachers.

Many professional organizations have career transition services that may benefit from research in the area of second-career teacher effectiveness, especially large corporations and governmental agencies whose retirees may desire a second career. School systems may also benefit from research in the area as they design learning communities to take advantage of second-career teachers with novel assignments, or in partnerships with younger teachers.<sup>1</sup>

### **Research Questions and Null Hypotheses**

In this study, the researcher examined the impact of Troops to Teachers participants on Texas eighth grade students' achievement as measured by the raw score

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<sup>1</sup> The author is a member of the Troops to Teachers program, but has not used program funding to pursue a credential. A potential "conflict of interest" is thus avoided.

on the 2011–2012 subject-specific State of Texas Assessment of Academic Readiness. Four questions steered the research.

**Research question one.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis one.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question two.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis two.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question three.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform

relative to those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis three.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question four.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis four.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program TTT and those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

### **Identification of Variables**

The study used techniques appropriate for one categorical independent variable, and a single dependent variable (for each of the four research questions).

**Teacher type.** The independent variable is the teacher type, identified as either participant or other (non-participant). TTT program participants were identified using the Department of Defense TTT database, accessed through the TTT program office, with the assistance of the Texas TTT office. Participation in the program may, but does not

require, acceptance of offsetting financial resources used for teacher preparation. All program participants must be honorably separated (i.e., discharged or retired) from the U.S. Armed Forces.

Characteristics of TTT participants were gathered via two methods, (a) an online eight-question background questionnaire that focused on background information, such as number of years teaching and grade taught during the 2011–2012 school year, and (b) the data file provided by the Texas Education Agency (TEA) that provided demographic information including sex, race, and ethnicity.

**Student achievement.** The dependent variable, student achievement, was measured as the raw score obtained by the student on each of the four subject-specific STAAR examinations taken while in the eighth grade in Texas public schools during the 2011–2012 school year. STAAR examinations were graded on numerical scales as follows: STAAR reading, 0–52; STAAR mathematics, 0–56; STAAR science, 0–54; and STAAR social studies, 0–52.

### **Definitions**

**Accountability.** School’s or teacher’s responsibility for student achievement; the burden for performance in teaching rests with the school and the teacher (Accountability, 2004; Thurlow, n.d.).

**Alternative credential or alternate certification.** Credentials, or the process of credentialing, derived from attendance at accredited university programs, resident or online, whereby a person with a minimum of an undergraduate degree can obtain credentialing as an educator (Constantine et al., 2009; Urban Institute, 2000).

**Domain of learning.** Context and usage of a concept or part of language specific to a field of study, as used by E. D. Hirsch; separate from basic skills such as decoding (Hirsch, 2013).

**Elementary and Secondary Education Act.** A 1965 federal statute, part of the “War on Poverty” that expanded the role of the federal government into elementary and secondary schools (Elementary and Secondary Education Act of 1965, 2 U. S. C. A § 2301–2307).

**Formalism.** Idea that processes and procedures (critical thinking) occupy a superior position to fact; a half-truth as posited by E. D. Hirsch (Coppola, 2011).

**Highly Qualified Teacher.** A teacher, as defined in NCLB, that holds a bachelor’s degree, is fully state-certified, and has demonstrated subject area competence in each area in which he or she teaches (United States Department of Education, 2004).

**High-stakes or high-states testing.** Testing, usually standardized proctored examinations, mandated by NCLB with important consequences for students (e.g., promotion to the next grade or graduation from high school) and teacher(s) (e.g., negative consequences for retention or a negative entry on a performance evaluation) (Johnson, 2009).

**In loco parentis.** Operational legal doctrine under which an individual assumes parental rights, duties, and obligations without being a parent, or going through the formalities of adoption (Anonymous, 2012).

**Intellectual capital.** Theory of knowledge advanced by E. D. Hirsch that posits that knowledge and skills are cumulative; that knowledge and skills are similar to money as capital; in other words, the more of each one possesses, the more of each the individual can then acquire (Coppola, 2011).

**More knowledgeable other (MKO).** Vygotskian concept that implicates two people in a relationship: a learner and some person more capable or knowledgeable with the subject matter (e.g., task, concept, idea, practice, or process) at-hand than the learner (Billet, 2010; Blaschke, 2012; Kungu & Machtmes, 2009).

**Naturalism.** Concept that education is a natural process that will progress on its own and should be facilitated; a half-truth as posited by E. D. Hirsch (Coppola, 2011).

**No Child Left Behind (NCLB).** A 2002 reauthorization of the Elementary and Secondary Education Act (United States Department of Education, 2004).

**Peer tutoring.** Instruction during which learners assist each other, and themselves, by teaching (Dabkowski, 2000).

**Race to the Top.** A 2009 reauthorization of the Elementary and Secondary Education Act, built upon by NCLB (United States Department of Education, 2009).

**Scaffolding.** Instructional technique in which the teacher models the desired learning strategy or task, and then gradually shifts responsibility to the student (“Scaffolding,” 2013).

**Second-career teacher.** Those persons who enter teaching as a profession after having had significant work experience in another job field, one in which the individual receives specialized education and applies that education in substantive work experience (Feistritzer, 1998; Feistritzer, 2005).

**State of Texas Assessment of Academic Readiness (STAAR).** State-wide, standardized, vertically scaled, annually delivered, subject matter-specific achievement tests required of Texas students in grades 3 through 11. STAAR is a follow-on to TAKS; and both tests are designed to measure the extent to which a student has learned and is able to apply knowledge and skills (Texas Education Agency, 2011a; Texas Education Agency, 2011b).

**Social determinism.** Concept that allows for the wider society, or inherent genetic characteristics, to be blamed if a student cannot read or answer math problems; concept that posits a causal link between social disadvantage and poor academic performance (Hirsch, Podgursky, & Finn, 2004).

**Student achievement.** A student's mastery of information, procedures, and skills; it is usually measured by grade- and subject-specific standardized tests (Riccards, n.d.).

**Texas Assessment of Knowledge and Skills (TAKS).** State-wide, standardized, vertically scaled, annually delivered, subject matter-specific achievement tests required of Texas students in grades 3 through 11; the TAKS was replaced by the STAAR in all grades as of the 2012–2013 school year (Texas Education Agency, 2011a; Texas Education Agency, 2011b).

**Traditional path to teaching credential.** Credentialing path of first-time teachers who enter the profession straight from college usually, but not necessarily, after high school, and after obtaining an undergraduate degree in education (Clewell, Darke, Davis-Googe, Laurie, & Manes, 2000).

**Troops to Teachers program participant (TTT).** Person enrolled in the Troops to Teachers program regardless of whether or not the individual accepted financial assistance from the program (Troops to Teachers Program, 2011).

**Zone of Proximal Development (ZPD).** Vygotskian term, related to a level of capability demonstrated by the learner; essentially, what a learner can accomplish independently versus what that learner can accomplish with the assistance of a teacher (Freeman, 2010; Freund, 1990).

Additionally, several definitions are related to the covariates controlled for in the study. As defined in the Texas Education Code (<http://www.statutes.legis.state.tx.us>, October 10, 2013), and as operationalized by the TEA and used in this work, they are:

**At-risk status.** Value assignment based on the local assessment of student circumstances, e.g., homelessness; changeable during the school year.

**Ethnicity.** Student-selected ethnic identity. Self-selected by students could choose more than one from the following list: American Indian or Alaska Native, Asian, Black or African-American, Native Hawaiian/Other Pacific Islander, White, or multiple.

**Gifted and talented status.** Based on the local assessment, a child or youth that shows potential for performance at higher levels than their peers.

**Limited English proficiency (LEP).** Based on local assessment, a student whose primary language is other than English, and whose English language skills are such that the student has difficulty when performing ordinary classwork; including assignment to classes for English as a second language.

**Race.** Federal categorizations, often self-selected by students and staff, in terms of race; either Hispanic/Latino or Non-Hispanic/Latino.



**Socioeconomic status.** Determined by eligibility for Free and Reduced-Price Meals (FARM) under the National School Lunch Program (NSLP) and Child Nutrition Program (CNP) or other public assistance (e.g., TANF, SNAP, WIC, or other state programs).

**Special education needs.** Based on students' utilization of special education services, whether or not such services are provided in the general education classroom. Enrollment in an individualized education program (IEP) qualified a student as having special education needs.

### **Summary**

The compelling societal need for a volume of teachers who are able to influence student achievement drives the inclusion of second-career persons in the pool of potential teachers. Schools and school systems must look to many sources for potential teachers, including the TTT program. This research builds on previous work that suggests that this particular group of second-career teachers has a measurable positive impact on student achievement.

The following chapter contains the conceptual and operational foundations for the follow-on analysis, and describes what the researcher found upon examination of the literature on the subject of accountability, student achievement, standardized testing, teacher effectiveness, alternative paths to certification, second-career teachers, and the TTT program and its participants.

## CHAPTER TWO: REVIEW OF THE LITERATURE

The review of the literature allowed the researcher to present distilled information, gleaned from the corpus of literature, on the topics of accountability, student achievement and standardized testing, teacher effectiveness, alternative certification, second-career teachers, and TTT participants in order to develop a context for the analysis that followed. Additionally, this chapter presents the theories that underpin the analysis; works of three important theorists regarding the relationships required for human learning, together with the environment in which humans learn. The separate theories were captured and are molded into a conceptual and operational framework for the study.

Accountability has become synonymous with procedural correctness, and an almost mechanical “factory production model of education” (Au, 2011, p. 26). Citing influences from the turn of the 20th century, such as John F. Bobbitt, Au created the link between Taylor’s scientific management and modern educational “production.” He stated that contemporary public school are “striving for factory-like efficiency in education ... driven by objectives ... [where] students are the raw materials produced like commodities according to specified standards and objectives” (Au, 2011, p. 27).

Riccards (n.d.) echoed Au’s sentiments, stating, “In today’s education reform era, student achievement is king. We want to see our kids succeeding. We want to see test scores rise.” The myriad factors that culminate in a student’s ability to achieve academically include family support, help from peers and friends, community interaction, teacher(s)’ ability, school climate and culture, and the individual student’s ability and effort. The permutations of individual experience are limitless. There are several general

areas of agreement regarding student achievement. The cumulative stresses of impoverishment have been shown to have detrimental effects on student achievement (Jensen, 2009; Lacour & Tissington, 2011). Additionally, several studies have shown that trauma and exposure to violence (Children's Bureau, 2009; Wong, n.d.) negatively affect cognitive development, school attendance, and academic performance.

A dramatic rise in the frequency of use of standardized testing accompanies the national focus on student achievement. Standardized tests have been used for decades. As the federal government assumes a larger role, in terms of both oversight and financial support, in K–12 education, the connotation of *standardized* has morphed into *high-stakes*. Often a pejorative, high-stakes tests are ubiquitous in contemporary K–12 schools as they are a cost-effective and easy method to administer assessments on a large scale.

Teacher quality is an area of intense interest, current scholarly focus, and significant controversy. Teacher quality and student achievement are contemporary issues in national, state, and local political debates across the country (Buddin & Zamarro, 2009; Rockoff, 2004). Rothman and Barth (2009), writing for “The Center for Public Education” ([centerforpubliceducation.org](http://centerforpubliceducation.org)), offered the following thoughts on teacher quality:

What we do not know is exactly what makes that teacher effective. Any one single indicator of teacher quality, for instance, something like years of experience, rarely yields a strong correlation. With *Race to The Top* creating a stronger emphasis on teacher effectiveness, the question of teacher effectiveness is becoming more acute. (Rothman & Barth, 2009)

The search for quality teachers, not simply *highly qualified teachers*, as defined by the United States Department of Education (Education Commission of the States, 2002; Maryland State Department of Education, 2003; United States Department of Education, 2004), has broadened the opportunities for teaching in the nation's public and private schools. Second-career teachers, teachers certified through non-traditional programs, provisional teachers, and emergency teachers are all now part of the teaching workforce.

Traditional routes to certification are commonly defined as preparation programs that require candidates to complete all coursework and a student teaching assignment before beginning full-time teaching. Alternative routes to teacher certification allow the teacher to enter the classroom before completing all coursework or student teaching (National Center for Education Evaluation & Regional Assistance, 2009). Teachers certified by both traditional and alternative routes can gain highly qualified status. Goodwin (2011) and the United States Department of Education (2009) find that both routes produce effective teachers; as a result, the research is inconclusive in establishing a preferred route for teacher preparation.

The TTT program (Defense Activity for Non-Traditional Education Support, 2012a), established by the federal government, and Teach for America (Teach for America, 2011) as two of the several organizations, foundations, and pathways for the provision of teachers to the public schools. TTT participants are involved in and affected by the current scramble for teacher quality. TTT participants occupy a space at the intersection of four broad areas of research: (a) teacher effectiveness; (b) alternative certification; (c) second-career teachers' and (d) retired American military members.

## Theoretical Framework

The theories that bolster this work contain several common threads. The themes of human learning through intimate contact, imitating and modeling from knowledgeable adults, learning in a social setting, and learning with a purpose for the individual to succeed in the larger society echo in the concepts of each of the three theorists drawn from for this work.

This research is conceived and constructed upon concepts advanced by Alfred Bandura, Lev Vygotsky, and Eric D. Hirsch, resulting in a tripartite theoretical skeleton. Bandura's social learning theory offers insight into learning as an integral part of social activity. Social learning theory draws-in the concept of teacher effectiveness with the themes of measuring teacher effectiveness, specifically student achievement and standardized testing. Vygotsky's social development theory combined with social learning theory draws in the subjects of alternative certification, second-career teachers, and TTT participants. The unified concepts form a conceptual foundation for the work.

The ideas of E. D. Hirsch fulfill the operational role, the action taken from theory. Hirsch indicates the appropriate subject matter for American students. Subject matter can be described as, what the student *learns*, — therefore what the teacher *teaches*. Though not the focus of this effort, subject matter/curriculum is nonetheless critical to a complete framework. The concept of student achievement swirls around the issues of, what should a student *know* and, to what *depth* should they know it.

The task of preparing future generations to live in our civil society is “thrown-down” by Hirsch when he correctly states, “Our schools must supply students with broad, content-rich knowledge of history, geography, science, literature, and the arts ... there is

no way around the need for children to gain broad general knowledge” (Hirsch, 2006). In precisely identifying the school as the societal organ responsible for housing the activity of transmitting knowledge, Hirsch implicitly identified teachers, who are in direct contact with students, as the most important functional units of each school.

The triune nature of the foundation does not take the shape of three independent pillars, but rather succeeding layers that form a continuous medium through which the concept of teacher effectiveness flows. Using this model, the researcher was able to place the independent variable, teacher type (i.e., TTT participant or other) and the dependent variable (i.e., STAAR test scores) into the context of the contemporary debate on education reform.

**Conceptual foundations.** The concepts forwarded by Alfred Bandura and Lev Vygotsky were drawn upon by the author to provide a conceptual foundation for the work; a foundation built upon with the addition of the “how to” vision of E. D. Hirsch. In this section, the researcher introduces and discusses concepts of human learning through intimate contact, imitating and modeling from knowledgeable adults, and the societal/social setting implicit in human learning. In the section on operational foundation for the work the author ties theory to action.

The two theorists from which the author drew Bandura’s social learning theory shares a key characteristic with Vygotsky’s social development theory, namely that learning occurs within a social context (Abbott, 2007).

***Social learning theory.*** Educated early in his career in the behaviorist tradition (Boeree, 2006), Albert Bandura parted ways with the strict behaviorist line and developed one of the most influential theories on personality and learning. Bandura’s social learning theory was pivotal in creating a movement that stretched the operant conditioning (direct

reinforcement) focus of behaviorism to include individual cognition and a person's reciprocal relationship with his or her environment. Social learning theory has many facets, encompassing elements of memory, attention, and individual motivation. In this sense, it is both a competitor of and companion with other theories of personality and learning.

Wrapped in a social context, the theory involves three elements: (a) that people can learn through observation; (b) that intrinsic factors and cognition impact behavior and learning; and (c) that learning does not necessarily lead to a change in behavior (Cherry, 2012a).

Bandura conducted a series of experiments (Bandura, 2009) known as the Bobo Doll experiments, in which kindergarten students imitated behavior after watching a film of an adult physically striking an inflatable punching bag (Bobo doll). The kindergarten students not only imitated the physical behaviors, but also used the same words as the adult depicted in the film. That students *learned by example* from observing an adult on a film suggested that they also learned from what they observed from their teachers, parents, and others in their experiences.

In terms of this study, the teachers under study (i.e., TTT participants) offer students a different type of example than that offered by traditionally prepared teachers—namely, the life experience, learning, and behaviors developed during a first career that created a unique personality. TTT participants are not the sole benefactors of their first-career experiences. The only inference made by the researcher to this point is that TTT participants were formed under similar conditions, that being the organizations in the American military. The researcher posits that this formation is distinct and different from that of the traditionally prepared teacher. This characteristic of unique preparation may be shared with other second-career teachers who arrive in education from different fields.

Modeling, essentially imitation, comprises another feature of Bandura's work. Though not all TTT participants are exposed to identical circumstances, they have all completed careers in organizations that have similar goals; thus, the organizations use similar methods, techniques, training organizations. There are also many opportunities for members of one organization, e.g., U.S. Army, to attend schools and technical training programs of other organizations, e.g., U.S. Marine Corps.

Many of the physical arts, task-specific training, techniques of military instruction, and various martial arts and sports use similar a process, known by various names; one is the acronym EDIP (explain, demonstrate, imitate, and practice). EDIP emphasizes the human trait of imitative learning and mates it with a cognitive component. EDIP draws on Bandura's work in both the cognitive and modeling aspects. The explanation of the task or procedure stimulates the cognitive function, while the demonstration portion allows for imitation. Sequentially, the students then imitate (under supervision) the behavior demonstrated followed by supervised practice.

Another departure from behaviorism present in Bandura's thinking relates to motivation, not in the traditional sense of the word that means a *cause* for a particular behavior, but the word used as a reason for an individual to demonstrate such behavior. Motives have three constituent parts: (a) past action (memory), (b) future action (promises, reward, or punishment), and (c) vicarious learning (watching others). Past action (memory) is a shared theme with the behaviorist tradition, suggesting that experiences, with reward or punishment, motivate or influence behavior.

Cognition and intrinsic factors also may inspire behaviors. Promises of future reward (incentives) or punishment (threats) are processed by the individual with a



resulting outcome behavior. Because humans can learn by observing and imitating the behaviors of others, vicarious learning completes the formation of the theory. Vicarious learning suggests that individuals demonstrate behavior because they expect a reward similar to one received by another, or that they detour around the punishment received by another (Bandura, 1977; Abbott, 2007).

Social learning theory provides half of the conceptual foundation for this work. The theory connects the teacher to the learner in both the cognitive and physical domains, and supports the necessary relationship between teacher and scholar that exists in the school environment. The second half of the conceptual framework rests on Vygotsky's theory of social development.

***Social development theory.*** Vygotsky's conceptualization of social development theory (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978) preceded Bandura's development of social learning theory. The researcher presents these concepts in this sequence in order to highlight the intimate human relationship necessary in learning. In short, that humans learn by modeling, and that the model, the teacher in the teacher-scholar relationship, the adult—whatsoever be the chosen term, is crucial in achieving the desired outcome, for the purposes of this study academic achievement.

Social development theory is both companion and antecedent to Bandura's work. The social context is the teacher–scholar relationship, a relationship that exists without formal officiating from the teacher, and without formal acceptance by the scholar. In other words, it is inherent in the human condition. Vygotsky's influence can be seen in the current practices of *scaffolding* and *peer tutoring*.

The teacher, along with the student's parents, is a major influencer on the student. An important legal concept also supports this view of the teacher-scholar relationship; that the teacher is elevated to a position of almost the highest importance in the life of a child. This notion is the concept of *in loco parentis*, an operational legal doctrine under which an individual assumes parental rights, duties, and obligations without being a parent, or going through the formalities of adoption (Anonymous, 2012). In effect, the individual is acting in all aspects of care for the child as a parent would act.

Thusly, the parent and teacher operate within a larger social context (Hammes, 1982), drawing on a history with links to other areas, such as religion. Proverbs (22:6, NAB) reminds us to, "Train the young in the way they should go; even when old, they will not swerve from it."

Vygotsky asserted, "Much important learning by the child occurs through social interaction with a skillful tutor" (Mcleod, 2007). The tutor, in the context of the school, is the teacher. Though focused on children, Vygotsky's theory has larger implications for all educators and extends to adults. Two important elements of such an extension are the ideas of the *more knowledgeable other* (MKO) and the *zone of proximal development* (ZPD). Usually associated with the constructivist tradition (Fosnot, 1996/2005), the two elements have applications for the traditional transmittal school of thought as well as impact on the role, requirements, and function of the teacher.

The concept of the MKO implicates two people in a relationship: a learner and some person more capable or knowledgeable with the subject matter (i.e., task, concept, idea, practice, or process) at-hand than the learner. The MKO may be

someone other than a teacher. Technological advances have allowed computers and an unending quantity of dubiously qualified adults to transcend distance and time through live video or recorded content to function in the role of the MKO. However, in this examination, the teacher–scholar relationship bounds the discussion; therefore, the teacher is the MKO. The MKO must possess the knowledge, skills, and abilities sufficient to accomplish the task-at-hand independently; in other words, the teacher must possess expertise. Sharing of such expertise occurs inside the teacher–scholar relationship. The MKO makes an intentional and purposeful act in offering such expertise. As such, the child does not discover knowledge, but develops the ability to accept the model or thought presented.

Connected to the concept of the MKO is the element of the ZPD (Freeman, 2010; Freund, 1990). The ZPD relates to a level of capability demonstrated by the learner; essentially, what a learner can accomplish independently versus what that learner can accomplish with the assistance of a teacher. The MKO operates inside the ZPD, which is itself contained in the larger social construct of the teacher–scholar relationship.

The conceptual foundation, based on Bandura and Vygotsky, is one of direct, human, intimate, intentional, and purposeful interaction between teacher and scholar. Modeling occurs in a social context, based on the behaviors demonstrated by the MKO. The ZPD creates the theoretical conditions for modeling to occur. The teacher is the model, and the student, the observer. Taken together, social learning theory and social development theory form the conceptual foundation for this work and offer insight into the necessary relationships and environment that humans must have to learn.

**Operational foundation.** Eric Donald Hirsch, Junior, a contemporary theorist and active educator at the time of this writing, informs this study by providing its operational foundation. The operational foundation joins the teacher, student, school, and larger community by providing what is appropriate and necessary subject matter transmitted inside the teacher–scholar relationship. The operational foundation allows the work to draw on themes of student achievement and standardized testing, making it relevant to the contemporary discussion on school reform. Hirsch has argued for a content-rich, factually based common curriculum, with the intention of producing in the student a heightened general knowledge (Hirsch, 1983; Hirsch, 1999; Hirsch, 2006; Hirsch, 2009). This study applies Hirsch’s work more generally than the study of reading and literacy, but it accepts the premise (Stern, 2009) that knowledge is *intellectual capital* (Hirsch, 1996, p. 19).

Hirsch came upon his theory and educational viewpoint not in a purposeful search, but by accident. A professor of literature, he identified a dissonance between students with respect to comprehension of a text on aspects of American history, leading him to posit that lack of sufficient background knowledge of the subject of the text may lead to comprehension problems. This realization led him to develop a view of education that requires not only the mechanics of reading, but also a broad general knowledge, extending deep into the culture of the society. By extension, his ideas and theories on curriculum assume the same theme.

In *Beyond Comprehension* (2010), Hirsch focused on reading comprehension and its misconceptualization as a mechanical aptitude, claiming instead that reading

comprehension requires an ample general knowledge of the subject matter. As explained by the author:

Current reading programs talk about ‘activating’ the reader’s background knowledge ... in practice, they are only paying lip service to the finding that background knowledge is essential to reading comprehension. Little attempt is made to enlarge children’s background knowledge—and, as a direct result, little is accomplished in terms of expanding children’s ability to comprehend more complex and varied texts. (Hirsch, 2010, p. 31)

This portion of the theory applies to many *domains of learning*; a domain is synonymous with a subject area, such as geography, history, or astronomy.

Deviating from conventional progressive thought and practice, Hirsch countered the effects of Dewey and the progressive educators of the 20th century. Very much like the classical schools movement adherents, Hirsch has stressed the need for a fact-based, cumulative curriculum. He has challenged the notions of “critical thinking” and the “construction of one’s own education,” forwarding in their place the idea that “reading and critical thinking are always based on concrete, relevant knowledge and cannot be exercised apart from ‘domain-specific’ knowledge” (Hirsch, 2010, p. 31). Simply put, in order to think critically, the learner must possess a well of sufficient facts from which to draw.

Hirsch has also taken aim in opposition to several ideas incorporated into the progressive educational tradition. Among them are *naturalism*, *formalism*, and *social determinism*. Naturalism is the concept that education is a natural process that will progress on its own. Under this view, the realm of the teacher is to offer assistance and

facilitation. Naturalism is opposed to drills and the transmission of subject matter because it interferes with the learner's self-interest. Formalism presents the idea that processes (e.g., critical thinking) occupy a superior position to fact. Formalism is opposed to memorization and the retention of useless facts. Social determinism blames the wider society, or inherent genetic characteristics, if a student cannot read or answer math problems. Social determinists see a causal link between social disadvantage and poor academic performance, one that must be corrected in order for an individual student to succeed (Hirsch, Podgursky, & Finn, 2004). The aforementioned concepts all contain elements suggesting that the student, scholar in the teacher-scholar relationship, has needs that must be met in order to succeed academically. The logic follows that the teacher or school must then endeavor to meet all the students' needs, and upon reaching sufficiency students will be optimally envired to achieve.

The researcher examined a group of teachers engaged in a second career. In the process, the researcher recognized that second-career teachers brought the entirety of the first experience (not in education) with them to the new career. Accepting that knowledge is indeed intellectual capital, the possessor of more generalized knowledge would also then be able to function well in the role of the MKO. The researcher has not attempted to construct a causal relationship between teachers certified through traditional or alternative methods; the researcher highlights that the group under study shared a common experience and has gained significant general knowledge based on that experience. Second-career teachers from other disciplines may also be possessors of broad general knowledge.

The conceptual and operational foundations (i.e., the social environment with a distinct and intimate relationship between a broadly educated, purposeful teacher and the student(s)) have allowed the researcher to ground the follow-on analysis in accepted theory. Within the context, the researcher further narrowed the focus to a particular aspect of the larger teacher–scholar relationship: the teacher. The researcher examined the type of teacher in detail; with regard to this study, the type of teacher considered is the second-career teacher who chose teaching as a career after service in the American military.

The researcher recognizes that any teacher is part of a larger organization, namely the school in which he or she teaches. The teacher does not exist separate from the environment. Both experience and education mold the teacher. Student achievement and standardized testing are aspects in the contemporary debate that influence the teacher’s environment. Several topical and important facets related to teachers were examined for this study. These topics were: (a) teacher effectiveness, (b) alternative teacher certification, and (c) characteristics of second-career teachers. A fourth aspect, peculiar and intimate to the population under study, was the TTT program itself.

Before delving into teacher-related topics, a brief review of the literature on accountability, student achievement, and standardized testing is in order. The definitions and structures have been described previously. A brief review of the literature on the three topics provided a fuller examination of the literature related to the topic under study and afforded the researcher the opportunity to complete the contextual basis for the study.

## **Review of the Literature**

In the following review of the literature relative to this study, the researcher briefly examined issues of accountability, specifically student achievement and standardized testing, as they were major topics in the contemporary reform debate. Moreover, the researcher examined, and reports on the topics of teacher effectiveness, alternative certification, and second careers in education. The section ends with a review of the literature on a subset of second-career teachers, TTT participants.

**Accountability, student achievement, and standardized testing.** From inception through the progressive era, American education and American educators have tried to adapt to the changes caused by technology, society, and time (Fullan, 2009, p. 102). Contemporary headlines, such as “Accountability Program Must Be Rigorous” (Anonymous, 2013), reflect the tenor of the debate on accountability. McLaughlin and Rhim (2007) wrote that holding educators accountable for outcomes is an underlying assumption in boosting student achievement. Buzzwords such as *student achievement* and *accountability* capture the attention of the public in the debate surrounding reform of public education in America.

The debate on reform and accountability has spurred academic discussion on definitions and categorizations; however, a complete recounting of the myriad definitions and the history of the debate is beyond the scope of the current study. The operational effect, or how the underlying concepts are enacted, is what is relevant. It may be useful to define and describe the accountability structures, as they exist at this point in their evolution.



Finn (2002) categorized accountability structures in education into four types: (a) compliance, (b) professional norms and expertise, (c) standards-based reform, or (d) marketplace. Marketplace type reforms, as operationalized in charter schools, are a part of the reform push. Standards-based reforms are ubiquitous and form the basis of many state legislative programs; they are also the base for programs at the federal level, and are critical to the advancement of common core based schools. Standards-based reforms necessitate the intervention of a convening or governing authority to impose or define the standard. The federal government and many state governments have taken active, and controversial, roles in imposing standards and accountability structures as part of education reform. NCLB and Race to the Top are two of the leading federal reform efforts driving states to accountability systems that rely on large-scale standardized testing.

This type of accountability, which Thurlow (n.d.) defined as “system accountability,” has come to dominate the K–12 public school environment. The scores achieved on standardized tests, therefore have become synonymous with student achievement. Believers in this line of thought hold that accountability and student achievement go hand-in-hand; “Well defined standards and testing, like those in the recent NCLB legislation, are the best way to create and teach a quality curriculum” (FOCUS Saint Louis, 2005). Permutations of this construct notwithstanding, the label given to a particular structure is less important than the component parts. Standardized, high-stakes testing is a necessary component of many accountability systems.

Izumi and Evers (2002) highlighted three states—California, Texas, and Florida—and their efforts to construct accountability structures. Texas used the results of

a single standardized test to help quantify and compare results in all areas, and across all school districts. The standardized test also served as an exit examination in particular subjects. The Texas structure included:

- student accountability;
- school accountability;
- a performance database;
- an accountability rating system; and
- a rewards and sanctions program (Izumi & Evers, 2002).

The Texas model has been replicated across the nation, with states making minor modifications based on their needs. This study examines a component part of an educational accountability system in Texas, using the outcomes of standardized tests.

The 43rd American President, speaking at an elementary school in Tennessee in 2004, advanced the rationale for using standardized testing in a national effort to enhance student achievement. President Bush (2007) stated, “You don’t know unless you measure. Listen, I’ve heard every excuse in the book about measurement. . . . If you don’t test, you have a system that just shuffles the kids through, and that’s unacceptable.” The issue of standardized testing, often elevated using the term *high-stakes testing*, elicits raw emotion from those in favor of its use, as well as from those opposed. Guskey suggested that the attractions of standardized testing are that the tests and testing systems “provide a quick, relatively inexpensive, and highly efficient means of gathering information on student learning by offering a ‘snapshot in time’ of what students know and are able to do” (p. 25).

Standardized testing has a historical link with the federal government (Longo, 2010; Wiliam, 2010) in the modern era as part of the stipulations coupled with Title I funding (ESEA 1965). Reaching back into the 19th century, standardized testing “became associated with a concern for fairness and educational opportunities” (Moses & Nanna, 2007, pg. 59), and this is still a major argument for proponents. Not all contemporary scholars would agree, though. Thompson and Allen (2012) lamented that NCLB has created “an image-based narcissistic school system that has actually been harmful to teachers and countless African American students” (p. 224). NCLB, by connecting continued federal funding to progressively higher test scores, is the proximate cause for a majority of the contemporary rancor (Franklin-Guy, 2010; Shepard, 2010; Au, 2011). Though some of the punitive actions (e.g., loss of funding for not making adequate progress) under NCLB have been waived, the general threat of sequester of federal education funding remains present.

Several common observations regarding the advantages and disadvantages of standardized, high-stakes testing appear throughout the literature. Common observations include:

- testing is widely utilized, inexpensive, and effective;
- high-stakes assessments cause changes in administrators’ behavior and teachers’ practices;
- changes to school/teacher practices tend to be adjustments in time allotted to content, with non-tested content de-emphasized;
- test preparation is emphasized; and

- many educators believe that high-stakes testing, in and of itself, is not reform (Opfer, Henry & Mashburn, 2008; Supovitz, 2009; Longo, 2010; Wiliam, 2010 ).

Additionally, Wilkins and Jones (2009) noted a lack of clarity in the evidence on the systematic alteration of teaching practices; however, it is clear that the issue of the alteration of teaching practices is a topic for research and opinion. Eacott and Holmes (2010) found that “the most significant influence [of standardized testing] has been the reduction of teaching and learning to what can be measured and the numerous, often uncritical, uses of comparative data on school and student performance” (p. 85).

Additionally, they asserted that “if school leadership is being evaluated on performance in standardised tests and value added data, it is only to be expected that school based practitioners ... will begin to make decisions which will reflect positively on those results” (p. 85).

Both Au (2010) and Shepard (2010) identified *de-skilling*, the process by which standardized testing systematically degrades what were once necessary elements of teacher-craft (e.g., planning, employing unique and differential strategies, and discernment in terms of content) as a negative effect of standardized testing. Berliner (2011) found that high-stakes testing has had negative effects on students’ learning. Significantly, Berliner (2011) noted, “In Texas, it was found that schooling changed in ways that emphasized rote learning” (p. 295). Texas began employing large-scale standardized testing in the 1990s (Hurley, 2007), changing the structure and materials several times before arriving at the STAAR, which was the instrument used to test eighth grade students during the year under examination by the researcher (2011–2012).

**Teacher effectiveness.** An effective teacher is one of the most critical components of student achievement. RAND released a report in 2003 that concluded that teachers play a distinctive role in student achievement (McCaffrey, Lockwood, Koretz, & Hamilton, 2003). Teacher quality, though a controversial topic (Huang & Moon, 2009; Darling-Hammond, 2009), is not the same as teaching effectiveness, nor is it synonymous with quality teaching. Teacher quality, often conceived of as a set of credentials, experience, and certification, was originally thought of as most amenable to improvement. Adherents of this line of thinking believed that in the linear movement from increased teacher credentials (obtaining a graduate degree) to increased student achievement. Then the debate changed. Teaching quality, and the strategies and techniques employed in the classroom, e.g., team-teaching, became the focus for improvement of student performance (Owings et al., 2005). The discussion in contemporary thought is on teaching effectiveness, often defined as student performance, especially on standardized tests.

A significant voice in the field of teaching effectiveness is Linda Darling-Hammond, a professor of education at Stanford University. She is credited with an often-cited study, “Teacher Quality and Student Achievement: A Review of State Policy Evidence,” in which she offers two ideas supported by her research. First, she noted that teacher effectiveness far outweighs the effects of class size as a determinant of student learning. Second, she revealed that teachers’ effects on student learning are cumulative, with the admonition that poor teacher effectiveness cannot be compensated for at later stages in students’ K–12 schooling (Darling-Hammond, 2000). According to Darling-Hammond (2009), teaching effectiveness requires high levels of:

- general intelligence,
- content knowledge,
- familiarity with content pedagogy,
- understanding of learners and learning, and
- adaptive expertise.

Additionally, Darling-Hammond cited a 1991 study by Ferguson, in which he suggested that three factors—namely, teachers’ scores on the state licensing examinations, advanced education, and years teaching at grade level—accounted for almost all of the achievement difference between Black and White students.

Similar to Darling-Hammond, Goodwin (2010) used a global perspective to categorize teacher effectiveness into her own five categories:

- personal knowledge,
- contextual knowledge,
- pedagogical knowledge,
- sociological knowledge, and
- social knowledge.

The researcher presents the above as contemporary attempts at categorizing components of an effective teacher; though the linkages with teacher preparatory programs and hiring qualifications are beyond the scope of this work.

In contrast to the above lists, many researchers have argued that an effective teacher is more than the composite of characteristics and accumulation of credentials and experiences. A dominant theme in the literature, even by those outside the field of

education, relates to a teacher's effect on a student, in terms of the academic achievement of the student.

Among non-educators that have examined the issue of teacher effectiveness, Eric Hanushek (Hanushek, 1992; Hanushek, 2007, Hanushek, 2011; Haycock & Hanushek, 2010), an economist, wrote with conviction and with an eye toward the student's future. He concluded that teacher effectiveness may produce effects of more than one grade-level equivalent in test performance. Analyses by Hanushek and others have also revealed that an effective teacher can have powerful positive effects on the academic performance of the average student (Darling-Hammond & Berry, 2006; Gordon, Kane, & Staiger, 2006; Hanushek, 2011a; Huang & Moon, 2009; Rockoff, 2004); in contrast, less effective teachers actually dampen the student's academic achievement.

The ramifications of an ineffective teacher do not end with the school year. An economic analysis (Hanushek, 2011a) revealed that there exists a positive correlation between teacher effectiveness and lifetime earnings; that is, the more effective the teacher, the more the student, once matured, can expect to earn. Less effective teachers (Hanushek, 2011a; Sanders & Rivers, 1996) not only produced lower academic achievement in their students, but the teachers also suffered serious negative effects on their own earning potential. In terms of the larger question of competitiveness, Hanushek (2011a) offered that American student achievement could reach levels attained in Canada and Finland if we replaced the least effective 5% to 7% of teachers with average teachers.

Taken as a whole, the positive effects may not be easily discernible from observable characteristics, such as graduate education or teaching philosophy. The literature has suggested that teacher effectiveness is a cumulative effervescence of rich

content, depth of experience, natural intellect, continuous learning, intentionality, and human adaptability. The synergy between the efforts to increase teacher effectiveness and enhance student achievement could not be clearer. Current scholarship forwards a view of teacher effectiveness separate from teacher qualifications and credentials. This view is based on teacher experience, gained through education and life experience. Other important concepts include teachers' pedagogical expertise, gained through formal schooling and continuing development, their craftiness with their own culture, gained through taking an active part in that culture, and their ability to adapt, gained through actually living through situations that required adapting to different and challenging circumstances.

This vision of teacher quality is not a novel, or contemporary concept. William Brickman (2010), originally presented in 1955, presented his case for teachers of quality, arguing that teacher preparation

...must take into account several additional factors, such as personality development, mental hygiene, human relations, physical ability, recreational resources, and affinity for crafts, to mention some of the more outstanding. This is not to insist that all of these activities be taught in formal courses; rather, we should emphasize that many skills can be developed in out-of-college situations, especially when individuals make use of a strong will. (p. 71)

The effective teacher is a product of education, varied experience, physical skills, and mental abilities. Experiences and careers that train men and women in these aspects may be breeding grounds for effective teachers.



**Alternative certification.** Alternative paths to teaching licensure and certification began in the 1980s in response to the warnings of impending teacher shortages. The National Center for Education Statistics released a report that claimed the need for public school teachers in the 1998–2009 period would range from 1.7 million to over 2.7 million. Teachers unions and academics wrote extensively on these projections (Hussar, 1999; Nebraska State Education Association, 2012).

To the contrary (National Commission on Teaching & America’s Future & NCTAF State Partners, 2002; Ingersoll, 2003), researchers found that the “teacher shortage” did not derive from a dearth of new teacher production, but rather from a high turnover rate with new teachers moving to other schools or leaving the profession. A closer look at the data “shows that the conventional wisdom concerning teacher shortages is largely a case of a wrong diagnosis and a wrong prescription” (Ingersoll, 2003, p. 6).

In support of this viewpoint, both the National Commission on Teaching and the National Education Association have provided public comment, with the former finding, that, “In general, the demand for teachers can be easily met by current sources of supply” (National Commission on Teaching & America’s Future & NCTAF State Partners, 2002, p. 4). The National Education Association, in their *Issues & Action* section (nea.org) did not identify a potential teacher shortage as an important issue (National Education Association, 2013).

While the supposed and agonized over teacher shortage did not occur for the reasons believed, the threat of shortages did lead to a blossoming in alternative routes to teacher certification. Writing on the subject of alternative certification, Feistritz noted, “Now the movement has become a respectable, prime source for recruiting highly

qualified individuals who wouldn't have entered teaching otherwise" (Feistritzer, 2005). TTT program participants, like many other second-career teachers, activate alternative routes to certification and licensure.

Alternative certification programs are paths to a teaching credential distinct from the traditional teacher preparation programs that require full-time attendance at a "brick and mortar" institution. In short, the traditional undergraduate path with coursework in an education major, teaching residency (student teaching), and standardized examinations leading to state licensure is paralleled by programs that accept students from disciplines outside education, many programs, though not all programs, adding student teaching and other pre-requisites onto the curriculum in an attempt to parallel the traditional pipeline. obtaining a teaching credential. The National Council for Accreditation of Teacher Education (NCATE) defines alternate route (or *non-traditional*, as described by the National Center for Alternative Certification) programs as

Post baccalaureate programs designed for individuals who did not prepare as educators during their undergraduate studies...which usually lead to a unit's recommendation for a state license, accommodate the schedules of adults and recognize their earlier academic preparation and life experiences (National Council for Accreditation of Teacher Education, 2012).

Alternative programs appear in a wide variety; they typically consist of academic courses plus a segment of supervised training, similar to a teaching residency (Madkins, 2011; Peterson & Nadler, 2009; Robertson & Singleton, 2010; Shaw, 2008; Stanley & Martin, 2009). Hiring rules have developed around the fact that students enrolled in alternative programs already possess an undergraduate degree. Therefore, the students

may work as teachers in a school concurrently with completing their requirements for certification. The requirement of passing the requisite standardized state certification test(s), required for licensure, is applicable to teachers who gain a credential through an alternate route. Although many of the requirements are similar to traditional certification routes, there remains some ambiguity concerning alternative certification. Humphrey and Wechsler (2007) noted, “Ironically, although alternative certification has become part of the educational lexicon, agreement about what constitutes alternative certification has yet to be reached” (p. 484).

Many alternative programs are designed to support, reinforce, or assist a specific group (Carter & Keiler, 2009; New York State, 2006; Urban Institute, 2000); this is particularly true for the TTT program, and the group examined in this study. Teach for America, the DC Teaching Fellows, and many more organizations have grown during the last decade in response either to the perceived social need (as in a specific demographic group or locale) or, more generally, to the need for more and better teachers in the classroom.

Alternate programs are generally successful in enrolling sufficient numbers and types of participants, in terms of the particular characteristics they desire (e.g., male, military, or urban) to sustain their program. Brannan and Reichart (2001) described the blossoming of alternative programs by noting that these “programs are aimed at post-baccalaureate candidates ... [while other] programs place university-educated teacher candidates on a ‘fast track’ ... [and still] others attempt to draw experienced individuals from other professions” (p. 4).

Alternatively certified teachers have been in American public school classrooms since such programs began in the 1990s, yet there is continuing controversy over the effectiveness of alternatively certified teachers (Boyd et al., 2007; Boyd et al., 2005; Kane, Rockoff, & Staiger, 2008; Linek et al., 2009). Boyd et al. (2007) concluded that “the research evidence is simply too thin to have serious implications for policy since the research does not yet clearly affirm that students are gaining as much or more from these teaching professionals as from traditionally prepared teachers“ (p. 45). Carter and Keiler (2009) found that “alternatively certified new teachers ... may be unprepared for their work in small schools” (p. 455).

With respect to student achievement and teacher practices the literature is replete with studies that show no difference, or do not show negatively upon alternatively certified teachers. Brannan and Reichart (2001) noted, “Alternate paths to certification do not lead to inferior practice” (p. 23). Similarly, Constantine et al. (2009) stated, “There was no statistically significant difference in performance between students of AC [alternate certification] teachers and those of TC [traditional certification] teachers” (p. xviii).

Feistritzer (1998) found that alternate route teachers, compared to traditionally prepared teachers, tend to be more mature, express higher satisfaction with teaching, are more confident in their own abilities, and are more likely to remain in teaching. This observation is a counterpart to early findings by Owings et al. (2005) that program participants “teach in high poverty schools, teach high-demand subjects (special education, math, science), plan to remain in teaching as a career, and increase the teaching pool’s diversity” (Owings et al., 2005, p. 4).

**Second-career teachers.** The threat, or perceived threat, of teacher shortages is a recurring refrain in the literature (Chase & Tennant, 1986; Lee, 2010). Second-career teachers, including retired and former members of the U.S. military, have also been episodic subjects of scholarly research (Freidus, 1990; Runnalls & others, 1970). Opinions and thoughts in the literature on second-career teachers have been maturing over time. It is the opinion of the researcher that alternative methods to certification are now view as an acceptable and prevalent phenomenon; though one that is viewed askew by the educational bureaucracy. The subject of second-career teachers and the avenue of alternative teacher certification remain intertwined, but the researcher believes that future researchers should work to separate the two areas.

Public schools across America educate the mass of the country's children. This work does not focus on teachers in public schools, nor does it differentiate between public school teachers and those teaching at private or charter schools, given that the literature is not sufficiently deep enough to allow such categorization with respect to second-career teachers. The term *second-career teacher*, then, for the purposes of this review, does not differentiate in terms of place of employment, public or private. Based on where the mass of the students are, it is the sense of this researcher that public school educators form the largest part of the scholarly base on the topic.

***Characteristics of second-career teachers.*** Second-career teachers are a unique division of teachers, bringing to the school and to the students their experiences and expertise gained during a first career (Haselkorn & Hammerness, 2008; Vigoda-Gadot et al., 2010). Research related to second-career teachers aims to inform teaching practice, human resources practitioners, school administrators, teachers, legislators, veterans'

program officials, and recruiters on how school systems can design learning communities to take advantage of second-career teachers to further student achievement. Human resources professionals, administrators, legislators, and bureaucrats may apply this research to their unique schools and programs to optimally utilize second-career teachers, particularly since these teachers may not be interested in the entirety of the requirements and compensations normally associated with traditionally prepared public school career teachers.

Second-career teachers are those people pursuing entry into teaching as a profession or major employment who have already gained experience in another job field. Significant and long-standing previous work experience differentiates second-career teachers from the larger group of teachers seeking alternative certification. As previously mentioned, the threat of a teacher shortage, or poor retention rates for teachers have generated a need for personnel, and second-career professionals partially meet this need.

Second-career teachers, broadly defined, are teachers who enter teaching as a profession after having had significant work experience in another job field. Second-career teachers may use, and often do use, alternative routes to certification, though using alternative certification is not a qualifier. The literature makes little distinction between public, private, and charter schools. It is the sense of this researcher that the overwhelming mass of the literature uses the term *second-career teacher* to mean second-career teacher in a public school setting.

The literature contains a large body of qualitative work delving into the motivations, personal aspirations, and problems encountered by those seeking teaching as

a second career (Berg, 2004; Carr, 2009; Castro & Bauml, 2009; Feiman-Nemser, Schwille, Carver, & Yusko, 1999; Grier & Johnston, 2009; Haggard, Slostad, & Winterton, 2006; Jenne, 1996; Wilcox & Samaras, 2009). The literature is also rich with descriptive and qualitative studies, mostly of the motivators behind the choice of teaching as a second career, as well as professional papers and dissertations (Bandow et al., 2007; Chambers, 2002; Freidus & Krasnow, 1991; Smith & Pantana, 2010). Studies comparing the effectiveness of second-career teachers to their traditionally prepared counterparts are not well represented in the literature, and are an area of current research.

***Motivations and opportunities.*** Several themes arose during the review of the literature related to motivation and opportunities of second-career teachers. Significantly, the motivations for TTT program participants were similar to those for all second-career teachers. Therefore, to include this group as a subset of second-career teachers is proper.

Second-career teachers frequently described individual values and experiences of a successful first career as motivations to move to teaching as a second career. Making a difference, a compelling desire for fulfilling work, and supporting children were also topics that appeared throughout the literature. Motivations describe only part of the decision-making for those changing careers to teaching. Opportunities to make the change into a full second career composed the other part of the decision. Second-career teachers expressed pragmatic reasons for their career change. Second-career teachers expressed several notions that motivated them to change careers to teaching. The researcher has grouped them into the general areas of

- positive experience of a first career,
- belief in self,

- altruism,
- life satisfaction,
- a desire to give back, and
- the ability to bring “real world” experience to their students.

*Positive experience in first career.* Freidus (1992) and Harms & Knobloch (2005) discussed positive experiences of people in first careers, as potential influences for a second career in education. Freidus recounted several stories of men: one was successful in a first career, having “owned and operated a successful retail business,” while the other was “a man whose career in the world of communications was satisfying, financially rewarding, and often glamorous” (Freidus, 1992, p. 3). In their study, Harms and Knobloch (2005) concluded that interest in a given career and beliefs in self are positively related. McNay (2001) discussed “George,” a research participant who, in his forties, gave up a position as the pastor of a church to take on a teaching career.

*Belief in self.* Smith & Pantana (2010) attributed self-efficacy, or a belief in one’s own ability, as a significant factor in seeking teaching as a second career, as did several other authors (LaRocco & Bruns, 2006a; LaRocco & Bruns, 2006b). Reinforcing the findings of Smith & Pantana, Risacher (1998) cited a 1995 study in which 45% of the respondents indicated that teaching would be a challenge. In a study published in 1993, McCree credited veterans with “having an outlook on academic success that transcends previous accomplishments” (p. 7).

*Altruism, life satisfaction, and desire to give back.* Several researchers have focused on altruism and a desire to give back as reasons to enter education as a second career. “Second-career teachers come with a sense of mission..., they believe they have



something to give back” (Freidus & Krasnow, 1991, p. 11). A love of children and the desire to give back were reasons identified by Freidus,(1990), Newman (2010), and Novak & Knowles (1992). Many second-career teachers describe their desire to teach as a “calling” (McNay, 2001; Novak & Knowles, 1992).

*Real-world experience.* “I know that my experience lets me bridge the gap” (Trent & Gao, 2009, p. 260) is a common theme among second-career teachers. Novak & Knowles (1992) studied a group of second-career teachers and claimed that second-career teachers handled the demands of their new jobs by drawing on skills honed during a first career, while Chambers (2002) highlighted age, experience, and the skills gained in life experience as notable factors for second-career teachers.

Researchers have also identified negatives associated with moving into education as a second career. Trent and Gao (2009) determined that second-career teachers might suffer penalties from peers and administrators for their first careers. Similarly, Newman (2010) found that second-career teachers may be viewed as threats or unwelcome influences in the teaching profession by the profession’s ensconced, career members.

*Secondary themes.* Also well-represented in the literature were the themes of opportunity for alternative credentialing and availability of financial and family support. The opportunity to take part in an alternative credentialing program, especially those with online delivery that allow one to prepare for a career change while still working, motivated many to switch careers. In one study, nearly half the study participants would not have considered teaching without an alternative option, in particular, an online option in the case of Smith & Pantana (2010). Castro and Bauml (2009) found, “Program accessibility weighs in heavily on a person’s decision to enter teaching” (p. 11).

Financial and family support includes emotional support offered to the individual changing careers. This support reduces the chance and risk to family financial security associated with a change in career. Having the financial resources and emotional support of one's family and friends was an important factor in the decision to change careers and become a teacher. Obtaining resources to attend a credentialing program and replacing lost family income figured prominently in the descriptions (Castro & Bauml, 2009; Haggard et al., 2006).

*Effectiveness of second-career teachers.* Several doctoral dissertations form the corpus of quantitative research on the effectiveness of second-career teachers. As previously noted, the co-mingling of the terms *second-career* and *alternative certification* creates the impression that there is a homogeneous group; however, this author believes that the groups are separate.

Barna, in a 2008 dissertation, found that students held a more positive view of traditionally prepared teachers in the areas of appeal, choice, and meaningfulness (Barna, 2008). Examining mathematics teachers in his dissertation at the University of Delaware, Bowen noted that the results of his analysis suggested that, although second-career teachers exhibited knowledge of mathematical connections, they were hesitant to use their knowledge based on their reservations about pupils' abilities (Bowen, 2010). Mixed results were revealed in a 2008 dissertation by McDonald (2008), while Morris (2002) noted that second-career teachers remained teaching at higher rates than their more youthful colleagues did.

Few sources were discovered that described the effectiveness of second-career teachers, with only one that compared second-career teachers to their traditionally

prepared peers. While further exploration is called for, initial signals indicate a potential gap in the knowledge and literary base concerning the performance of second-career teachers, especially with respect to their effect on student achievement.

**Troops to Teachers.** In 1994, the Department of Defense established the Troops to program with an objective “to recruit eligible military personnel to become highly qualified teachers in schools that serve students from low-income families” (Defense Activity for Non-Traditional Education Support, 2012a). The TTT program is a military version of other Department of Education programs whose purpose was to recruit and train teachers for high-need schools, (e.g., the Transition to Teaching program). The TTT program has produced over 13,000 participants who have gained employment as teachers across the country (Picha, 2012). TTT helps to “relieve teacher shortages, especially in math, science, special education and other critical subject areas, and assists military personnel in making successful transitions to second careers in teaching” (Defense Activity for Non-Traditional Education Support, 2012b).

***Program overview.*** Congress reauthorized and expanded the program in 1999 and transferred supervision of the program from the Department of Defense to the Department of Education, beginning in 2000 (U.S. Government Accountability Office, 2006). A Government Accountability Office report published in 2006 concluded that the program had grown to such an extent that it no longer focused on simply placing retired and honorably separated military members into jobs, but that it had become a pipeline for providing teachers to meet the expected shortages. Reauthorized again in 2002 with NCLB, itself a reauthorization of a Johnson-era Great Society Program (Elementary and Secondary Education Act of 1965, P. L. 89-10) (Association for Educational

Communications & Technology, 2001), the program is currently continuing. The American Recovery and Reinvestment Act of 2009 (ARRA) did not detrimentally affect the program.

Through a network of state offices that provide counseling, referral, and assistance (not job placement), eligible participants transition to a career in the nation's public schools. Honorable retirement from active duty or a reserve component, extended active duty service for a reserve member, or a combination of active duty and reserve service is a requirement for participant eligibility in the program. Participants agree to pursue highly qualified status and obtain licensure or certification at the elementary or secondary levels, or as a vocational or technical teacher. Participation entails a three-year obligation with priority services offered to those willing to teach in sciences, mathematics, and special education, or in vocational and technical subjects. Participants who meet specific criteria and conditions may also be eligible to receive financial assistance in the form of a \$5,000 stipend or a \$10,000 bonus. Obligations for receipt of financial assistance entail teaching in districts or schools in which large portions of the students are from low-income families (Troops to Teachers Program, 2011).

The program advertises offices in all 50 states and in several territories, with regional coordinating offices and a national office in Pensacola, FL. The majority of the program's teachers are now working in the states of Arizona, California, Colorado, Florida, Georgia, Texas, and Virginia. The presence of large military bases and the accompanying personnel in these states account for a portion of this phenomenon.

Participants in the program bring unique characteristics to the public schools. The majority of teachers sourced through the program are prior enlisted members, with 100% of them holding at least an undergraduate degree. The overwhelming majority (>80%) are males, with Blacks comprising roughly one-third of participants (Owings, et al., 2005). Program participants tend to remain in place (no high turnover). A 2007 program performance report found that the program exceeded or made progress toward its own goals of placing math teachers and science teachers in classrooms across the country.

***Impact of the Troops to Teachers program.*** TTT is not the sole pipeline for second-career professionals to transition into the public education realm. Teach for America draws from a different talent pool and provides assistance for individuals seeking employment in public education, as do various fellows programs. Other governmental programs have not been as fortunate as Troops to Teachers; for example, Troops to Nurses and Troops to Police never really got off the ground.

Several major reports and studies have focused on Troops to Teachers (Bank, 2007a; Feistritzer, Hill, & Willett, 1998; Nunnery et al., 2008; Owings & Kaplan, 2010; Owings et al., 2005; U.S. Government Accountability Office, 2006). Early program studies were descriptive and examined demographics, military experience, satisfaction, and reasons for transitioning to a teaching career (Feistritzer et al., 1998). Variations on this theme were echoed in several doctoral dissertations (Ballard, 2005; Chaparro-Ramirez, 2008) as program participants “climbed the educational ladder” and rose to positions at the doctoral level.

In a series of studies conducted during the first decade of the 21st century, researchers from Old Dominion University subjected the TTT program to scrutiny using both qualitative and quantitative methods. Two of the three studies were immediately relevant to program participants as teachers. The third study addressed the perceptions of superintendents with respect to the effectiveness of program participants as administrators. With only two empirical studies discoverable that addressed the effectiveness of this unique group of second-career teachers, it is difficult to generalize the findings with regard to the larger group effects of the program. Generalizability, through addition to the body of research on the subject, is the goal of this causal-comparative study. The seam between program participants and traditionally prepared teachers and, when mature, other groups of second-career teachers is suitable for further research.

The two studies that have immediate impact on the effectiveness of the population under study represent an evolution in approach to the study of second-career teachers, and serve as programmatic reviews for the TTT program. The initial study in part entitled “Supervisor Perceptions” (Owings, et al., 2005) lays the foundation for the follow-on study entitled “The Effects of Troops to Teachers on Student Achievement.” The results of these inquiries extended the descriptive research on second-career teachers and added a quantitative dimension to the study of teacher effectiveness and student achievement.

Owings et al. (2005) surveyed 875 supervisors and over 1,200 TTT program participants from across the country. The researchers asked two questions, the first of which surrounded classroom practices that influence student achievement. The second

elicited supervisors' opinions of the effectiveness of the subject group in three areas: teacher instructional practices, discipline and classroom management, and overall teaching quality.

Respondents ( $N = 1,282$ , of which 945 were then employed as teachers) to the teacher portion of the survey reported specialties in special education (25.6 %), math and computer science (15.6 %), and the social sciences (12.4%), with smaller groups in other disciplines (Owings et al., 2005). More than 80% of the respondents indicated they were likely to remain in the teaching profession at least until retirement eligibility, and similar percentages reported that they were well prepared to tackle issues of classroom management.

School supervisors reported that former teachers whose first career was the U.S. military performed better in all areas than their peers with comparable experience in areas of instructional practice. Supervisors rated teachers who were former American military members as extremely effective in the area of classroom management, and as very high in overall effectiveness relative to their peers (Owings et al., 2005). Administrators also indicated that program participants exhibited research-based practices, a trait in consonance with the accountability movement in contemporary educational thought.

Furthering the initial work of 2005, and moving from perceptions to empirically based methods, Nunnery et al. (2008) completed a meta-analysis that concluded that there was robust evidence to suggest that second-career former military teachers "had more positive effects on student achievement in reading and mathematics" (Nunnery et al., 2008, p. 26) than did traditionally prepared teachers with equal teaching experience. The

researchers went on to state that the findings confirmed previous studies on performance perceptions of program participants.

*Perceptions of the program and participants.* The TTT program participants experience problems similar to other teachers, including reductions in force and mobility for job openings (Cogshall & Sexton, 2008; National Comprehensive Center for Teacher Quality & Public Agenda, 2007f). Program participants are also subject to the opinions of the public, the media, their peers, and the scholarly community. Favorable reports are often human-interest stories in newspapers (Glod, 2009; Perez, 2006; Roose, 2012). Banks, writing for the public policy think-tank Civic Ventures, highlighted the contributions of program participants, especially with respect to participation in urban schools (Bank, 2007a; Bank, 2007b). Several other scholars have written favorably in terms of the program and participants (McMurray, 2008; Rogers, 2005; Schneider & Burton, 2005).

Not all the literature is complimentary to the program and its participants. Jenne discussed the possible misperceptions about the transferability of experience from a first career to teaching, and also both lamented and argued against what he perceived as a conservative influence that former military personnel may bring to social studies education (Jenne, 1996, 1997). Viewed as traditional in both experience and preparation, Jenne feared that former military members might not gravitate to contemporary pedagogical practices and progressive themes. Though not referring to an American experience, Gerard Kelly (2011) made the case that moving former military personnel into teaching in Great Britain is bad policy. Problems with having a “military philosophy



harmonizing with democratic ideals” occupied Marlow Ediger, who argued that the goals of the military and of a civilian education system are different (Ediger, 2008, p.19).

Despite the appearance of controversy, or maybe because of it, further research and a quantitative effort into the effectiveness of second-career teachers is desirable; this study poignantly takes up that task. The perceptions study (Owings, et al., 2005) deserves further consideration. The aforementioned study revealed that there were trends in the positive and negative perceptions of second-career former military teachers. With results categorized by state, Maryland, Illinois, New York, Michigan, and Washington appeared to hold negative perceptions of program participants, while New Mexico and Tennessee held positive perceptions. Scant evidence exists in the literature to explain the differences. Examination of the individual states is an area for further research, especially in terms of the bias of, and potential influence exercised by, the teachers’ unions in those states.

With limited research, it is difficult to generalize about the effectiveness of program participants, although initial indications suggest that participants have a positive effect on student achievement. Expanding the assessment instrument to include more areas than reading and mathematics, such as science, writing, and social studies, may show additional benefits, depending on the construct of standardized testing used in a state.

### **Summary of Findings**

Student achievement and accountability, combined with standardized, high-stakes testing have become the “new normal” in contemporary public schools across America.

The introduction and nation-wide acceptance of Common Core Standards promises only another round of alignment in the *standard-test-curriculum-presentation* continuum.

The body of research on alternative program types and peculiarities, as well as of participants, lacks quantitative rigor in terms of the effectiveness of program graduates. The literature is replete with descriptive studies on second-career and alternatively certified teaches. The motivations, circumstances, and opportunities that drive the personal decision to become a teacher in a second career are well covered in the research literature.

Several themes emerged from the collected literature, many of which reveal motivations to teaching as a second career. Motivations to teaching as a second career appear to be value-based, with monetary compensation rating low in almost every instance. Strong desires for fulfilling work and a sense of “giving back” were woven throughout the literature. Career switchers were extremely motivated by the opportunity for alternative credentialing programs, especially those with online delivery. Career-switchers also expressed a preference for hands-on experiences as they adapted to teaching.

Additionally, the experience of a first career, not simply moving into teaching from a non-teaching bachelor’s degree experience, appeared to provide intangible benefits to the second-career teacher, some of which were expressed as effectiveness that may be comparable with teachers of established seniority. Additional research is needed into if, how, and why such an intangible effect exists. Further research to quantify the techniques employed by second-career teachers is also desirable.

Notable in the literature is the positive effect that former U.S. military members have on student achievement. This finding is tempered by the wariness of school systems to accept former military members due to perceptions that former military members may have conservative leanings. Jenne (1996, 1997) discussed how former military teachers might seek to preserve the “status quo,” opposing the supposed “progressive” inclination of contemporary schools and schooling.

Descriptive studies that follow second-career teachers from their training to their places of employment and that assess their motivations and attitudes after assimilation into the school culture would broaden and deepen the knowledge on second-career teachers. The effectiveness of second-career teachers, relative to their peers or to an established standard, is less well represented. The sense of this researcher is that the majority of the research completed to date addresses inputs to the teaching system and observes that, once assimilated, the second-career teacher takes on the general characteristics of the larger body of teachers. Evidence of TTT participant performance and assimilation over time is scant; consequently, this may be a major area for exploration and further research.

The paucity of quantitative studies evaluating the effectiveness of second-career teachers, and specifically particular groups of second-career teachers specifically, prompts suggestions for further research, from which this work takes its impetus. Inquiry into the motivations and opportunities for second-career teachers can take several directions. The first or feeder career of second-career teachers could be explored in order to establish if a particular field is a provider. Tangents on this theme include: (a) age, (b) years of work experience in the primary field, and (c) the primary field itself (e.g.,

accounting) in order to reveal when and under what circumstances a choice for a second career is made. Moreover, investigation into the different attitudes and choices related to choice of school to work in (i.e., public, private, or charter) could be useful to teacher preparation programs.

The desire for research studies that empirically examine the effectiveness of second-career teachers leads to a direct demand for replication studies, academically cloning the initial effectiveness study that examined Florida teachers. Issues such as the passage of time, different regions of the country, differing populations, and shallowness or depth of the pool of program participants all offer avenues and reasons for exploration. With the passage of time, additional teachers would have joined schools across the nation, offering a larger sample for study. Immediately, researchers could embark upon more than 50 additional supporting studies that would immeasurably grow the body of knowledge in this small area.

Research designs that examine states other than Texas represent opportunities to apply different standardized tests as a partial measure of student achievement; this line of thought, however, is dependent on the United States Department of Education's waiver policy that may decrease the prevalence of standardized tests in the classroom. Finally, examining second-career teachers in private and religious schools, and comparing them with their colleagues in public schools (matched pair comparison), may offer insight into the effects of school culture or other components of student development.

This study does not present an argument that one preparatory method is superior, nor does it attempt to draw a causal relationship between teachers certified through traditional methods versus alternative methods. The group under study originated from a

common experience, and gained significant general knowledge based on that experience. Second-career teachers from other disciplines may also be possessors of broad general knowledge.

The unique characteristics of the American military, including the “up or out promotion system,” retirement eligibility with 20 years of active service, and the focus on continuing and professional education, all help create a distinctive cohort of people. Former military members may also have gained instructional experience during a military career. This cohort has sufficiently large and sustainable numbers to provide substantial personnel to the teaching profession.

In chapter three, the researcher provides the methodological structure of the work and describes the participants, setting, procedures, data management, and data analysis aspects of the study.

### **CHAPTER THREE: METHODOLOGY**

This chapter begins with a return to the original nature and purpose of the study, followed by a description of the research design. The chapter also includes a reiteration of the research questions and their associated null hypotheses before describing the participants, the setting, and the instruments utilized in detail. Following these segments, the chapter concludes with a description of research procedures, including data gathering, data analysis, and data organization.

The purpose of this study was to examine the impact of TTT participants on student achievement. Teacher type was the independent variable (categorical), while the dependent variables were the student raw scores on the four subject-specific STAAR examinations taken during the 2011–2012 school year. More precisely described, the work focuses on the achievement of Texas eighth grade students, as measured by the subject-appropriate 2011–2012 STAAR. Statistical analysis controlled for student race, sex, socioeconomic status, limited English proficiency, special education needs, gifted and talented status, and at-risk status.

The TTT program (Troops to Teachers Program, 2011) is a Department of Defense sponsored program aimed at helping military personnel transition into teaching as a second career. These experienced adults often teach in high-poverty schools and specialize in “high demand subjects” (Nunnery et al., 2008, p. 7). Currently only one study on the impact of TTT participants on student achievement exists in the body of literature. Findings of the 2008 study by Nunnery et al., suggest that TTT participants had an overall positive impact on student achievement in both reading and math.

The corpus of the research, scant though it may be, suggests that students taught by TTT participants perform at levels equal to their peers in reading, but display a small advantage over their peers in mathematics. Additionally, when matched to teachers in the same school, teaching the same subject with equivalent numbers of years of teaching experience, students served by TTT participants demonstrated statistically significant positive achievement in both reading and mathematics. Inclusively, this finding suggests that, despite having fewer years of teaching experience, TTT participants were as effective as experienced teachers with respect to reading and mathematics achievement (Nunnery et al., 2008).

Texas eighth grade students enrolled during the 2011–2012 academic year were administered the STAAR. This standardized, vertically scaled (mathematics grades 3 through 8 only) instrument was heavily researched and deemed reliable and valid by both the federal government and the state of Texas (Texas Education Agency, 2008, 2010). The STAAR was, and remains, the accepted and lawfully authorized standardized test used in the State of Texas. The ubiquitous use of the STAAR, along with its established reliability and validity makes it an acceptable choice for measuring student achievement.

The following sections of this chapter contain description and detail on construction of the study, with enough detail such that other researchers would be able to duplicate the study, or to create better projects in the future.

### **Design**

The researcher employed a causal-comparative design to examine the impact of TTT participants on Texas eighth grade student achievement as measured by the raw score students achieved on each of the 2011–2012 STAAR assessments taken. The

researcher deemed a causal-comparative design to be appropriate for several reasons. Generally, the research effort, as informed by the literature, sought to expound upon a possible cause and effect relationship between teacher type (i.e., TTT and other) and student achievement (i.e., STAAR scores). The non-experimental nature of a causal-comparative design was well suited to the data because the researcher could not manipulate the two groups under study. Archived data was available for analysis. Moreover, the independent variable, teacher type, was categorical (i.e., TTT or other) and measured on a nominal scale. Additionally, random assignment to treatment and control groups was not possible for many reasons, including the size of the sample (over 360,000 students), the nature of the public schools, the equality of educational opportunity, and the organizational nature of the public schools themselves. The groups were analyzed in their naturally occurring form; that is, the study examines TTT impact on student achievement as it was during the 2011–2012 school year (Gall, Gall, & Borg, 1999/2010a, 1963/2010b).

The researcher also employed an anonymous on-line survey. The survey focused exclusively on TTT participants living in Texas, and was employed to gather additional information related to teaching experience and to where participants taught during the 2011–2012 school year.

### **Research Questions and Null Hypotheses**

In this study, the researcher examined the impact of TTT participants on Texas eighth grade students' achievement as measured by the raw score on the 2011–2012 subject-specific STAAR. Four questions steered the research.



**Research question one.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis one.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question two.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis two.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question three.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis three.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in science, as measured by their scores on the -2011–2012 State of Texas Assessment of Academic Readiness.

**Research question four.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis four.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program TTT and those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

## **Participants**

The researcher combined two separate efforts into this study: (a) an eight-item questionnaire placed online on SurveyMonkey, and (b) an analysis of archived data—teacher and student demographics, and STAAR scores. The separate efforts required different sets of participants.

Active participants were required to respond to the questionnaire; as such, this group will be addressed first. The questionnaire (Appendices B, C and D), which was distributed to the Texas TTT population, was an ancillary and supplementary effort to the larger analysis. The questionnaire was designed to gain additional insight into the

experience levels of Texas TTT participants. As such, it gathered information that could not be obtained from the TEA, the source of the archived data. The TEA limited their teacher information to teacher race, ethnicity, and sex.

The questionnaire was sent to an accessible, convenient sample of TTT teachers, those residing in Texas. Texas TTT participants were chosen because Texas has the largest population of TTT participants in the nation. The researcher was able to send a postcard mailer (Appendix D) to all known TTT participants with an address in Texas. TTT participants responded to the online background questionnaire posted on SurveyMonkey by using their own computer and internet access.

Respondents accessed the questionnaire remotely from the location of their choice. The researcher sent a postcard invitation to participate in the survey to the address that the TTT participant provided to the national TTT program office. The researcher did not have direct contact with any respondent.

This work also used an accessible and convenient sample in terms of the archived data. At its core, the study examined the impact of TTT participants on the academic achievement of Texas eighth grade students during the 2011–2012 school year. The archived data is suited to that purpose by providing access to conditions as they existed during the 2011–2012 school year in the eighth grade in Texas public schools. Because this section was based on archived data, no active participants were required for this portion of the analysis. Teaching assignments and class construction were according to the procedures and rules of the several school districts across Texas. Teacher and student demographic information was included in the file archives; no contact was made, nor was

any contact required between the researcher and the teachers or students. The academic year runs generally from August of one year to June of the succeeding year.

The archived data, transmitted as separate data files (for security purposes) by the TEA, contained information on Texas eighth grade teachers who taught in the state's public schools during the 2011–2012 academic year and their students. Teacher information (a separate file) contained fields indicating unique identifier, sex, race, ethnicity, courses and classes taught, campus location, and TTT program participation. Over 3,000 teachers worked at the eighth grade level during the 2011–2012 school year.

Table 2 displays select characteristics of teachers in Texas public schools during the 2011–2012 school year. These teachers are a mix of traditionally prepared and certified, alternatively certified, and teachers from other sources such as Teach for America.

Table 2

*Select Teacher Characteristics, Texas 2011–2012*

Teachers	Ethnicity	Sex	Degree
Percentage African American	9.2		
Percentage Hispanic	24.4		
Percentage White	63.4		
Percentage Other	3.0		
Percentage Male		23.2	
Percentage Female		76.8	
Percentage No Degree			0.8
Percentage Bachelor's Degree			75.9
Percentage Master's Degree			22.8
Percentage Doctoral Degree			0.5

*Note:* Adapted from 2011 AEIS Reports, State Staff Totals, Texas Education Agency, available online at <http://ritter.tea.state.tx.us/perfreport/aeis/2012/state.html>

Additionally, the average assignment was 15.4 students per teacher. In terms of years of experience, 4.6% of teachers were beginners, 51% had between 1 and 10 years of experience, while 44.5% possessed more than 11 years of teaching experience. The average number of years of experience for a charter school teacher was 4.5, while other public school teachers had 11.6 years of experience.

Texas has the largest population of active TTT alumni in the country and has the best record of placing veterans from the TTT program into the state's public schools.

Since November 1995, TTT has referred over 2,000 veterans for teaching jobs in Texas, and counseled over 21,000 veterans who moved into jobs in education across the country (Texas Troops to Teachers, 2012).

The 2011–2012 student population in the state of Texas was over 4.9 million, and eighth graders accounted for over 360,000 students, or 7.2% of all students enrolled. The study examined the conditions as they existed in Texas public schools, in terms of class assignment (for both teachers and students) and results achieved and recorded by the TEA. The sample, eighth grade students, may not be representative of the entire population of Texas students due to demographic shifts and trends in immigration and native birthrate. The sample encompasses a substantial portion of the eighth grade, a significant slice of the entire public school population (~7% of all students).

Approximately 50,000 student records were not included in the archived file sent to the researcher. This reduction was executed by the TEA prior to the researcher receiving any information. The TEA decided in an abundance of caution to redact records for students who were at risk of personal identification, as campus-level information (specific campus) was required to properly mate student records with teacher records in the separate electronic files.

More than 4.9 million children were enrolled in Texas public schools during 2011–2012, of which more than 360,000 students were eighth graders. Table 3 displays a brief overview of key demographic components of the Texas public school student body, as it existed during the 2011–2012 academic year.

Table 3

*Limited Student Demographics, Texas 2011–2012*

Students	Charter Schools	Public Schools	All Public Schools
Percentage African American	24	14	13
Percentage Hispanic	53	50	50
Percentage White	17	32	31
Percentage Other	6	6	6
Percentage Economically Disadvantaged	71	59	59
Percentage LEP	17	17	17
Percentage Special Education	7	9	9

*Note:* Adapted from 2011 Snapshot 2011 Summary Tables State Totals, Texas Education Agency, available online at <http://ritter.tea.state.tx.us/perfreport/snapshot/2011/state.html>

In addition, at-risk students compromised 45.4% of all students.

The researcher selected eighth grade students from the larger student population due to the large size of the sample (over 360,000), their experience with standardized testing (during grades 3 through 7), their relative maturity (highest non-high school grade), and the expectation that TTT participants would be well-represented in the teacher population in the grade. The archival data used in the study was malleable to proportioning based on any grade level. The large sample size contributes to the establishment of population validity, as advocated by Gall et al. (1963/2010b).

## Setting

The state of Texas was the backdrop for the work, especially the Texas public schools. Although Texas allows public charter schools, public school students were the subject of this inquiry. Teacher and student participants lived throughout Texas and attended school in one of 1,228 public institutions, collected into school districts of various sizes and populations. Overall management of public education was the purview of the Texas Education Agency, operating in concert with the governor and state legislature.

Texas credentials both traditional and alternatively certified teachers in their public and charter schools. Alternative credentialing in Texas (like many other states) is through state-recognized alternative programs. Several of the programs are coordinated through the independent school districts (State Board for Educator Certification, n.d.). Several bodies accredit alternative programs, including the National Council for Accreditation of Teacher Education (NCATE, 2012a; NCATE, 2012b) and the Teacher Education Accreditation Council (TEAC). Texas also allows other avenues to accreditation, including for-profit schools and programs administered through the school districts.

The State of Texas, in grades 6–8 during the 2011–2012 school year, employed 3,840.48 full-time equivalent employees as teachers. Reported in the *2011 Snapshot* (Texas Education Agency, n.d.b), there were 8,526 public and public charter schools operating in the state which employed over 334,000 full-time equivalent teachers.

The study also relied on archived data; as such, the researcher was physically disconnected from the school setting. No intrusions into classrooms were required. The



setting for each STAAR administration (testing) was the individual classroom located in schools collected into districts across Texas, as organized by local administrators and by the state of Texas for school year 2011–2012.

### **Instrumentation**

Three separate instruments were used to collect data for this study, only one of which was employed by the researcher. Two of the three instruments were employed by the administrators of the TEA or by school administrators and teachers across Texas. The instrument employed by the researcher was an eight-question questionnaire (Appendix C) directed to obtain background characteristics of TTT participants. The second instrument, the STAAR, is a standardized test administered by the state of Texas. It is the current state standard testing instrument. STAAR scores were reported via an electronic data file sent via email from the TEA to the researcher. Student achievement was measured using the raw scores from a standardized test administered to Texas eighth-grade students for the first time in spring 2012.

The STAAR was administered to students in grades 3 through 8 in reading and math; it was also used to assess science for students in grade 5, and science and social studies for students in grade 8. Students in grade 8 were the sample used in the comparison. STAAR is a standardized, vertical scaled (since 2009), criterion referenced test “designed to measure the extent to which a student has learned and is able to apply the defined knowledge and skills at each tested grade level” (Fairtest, 2007; Texas Education Agency, 2011a; Texas Education Agency, 2011b; Texas Education Agency, n.d.c; Texas Education Agency, n.d.e). STAAR examinations were graded on numerical

scales as follows: STAAR reading, 0–52; STAAR mathematics, 0–56; STAAR science, 0–54; and STAAR social studies, 0–52.

The last instrument is a demographic data collection tool, part of the teacher onboarding process, used by the TEA to collect demographic information their employees. The items of information used in the study that was collected via this tool were a teacher's sex, race, and ethnicity.

**TTT teacher background questionnaire.** Background characteristics of the TTT participants not available in the demographic information (i.e., sex, race, and ethnicity) provided by the TEA were collected using an online survey developed by the researcher. The teacher background questionnaire (See Appendix C) was a self-reporting instrument, similar to that used by the TEA and school districts to record demographic information on employees. In the questionnaire, respondents were offered contained choices on characteristics related to their teaching experience.

The questionnaire served as a collection tool for demographic information not available to the researcher without the informed consent of the participant. Demographic data collected included: employment status (i.e., currently employed as teacher or not), total years of public school teaching experience, total years of teaching experience, years teaching at grade-level or subject, grade taught during the 2011–2012 school year, school taught at during the 2011–2012 school year, and type of school system (i.e., urban, suburban, rural).

The eight-question instrument created for the study was designed solely to collect demographic and background information from TTT participants in Texas. As a self-

reporting instrument the survey is valid on its face. Results of the survey were not applied to the analysis of the archived data.

Each member of the TTT population in Texas was sent a postcard mailer (Appendix D) via the TTT program office in Orlando, FL. It is an inherent responsibility of the TTT program office to record the contact information for all program participants and to update such information annually. As a result, the aid of the TTT program office ensured that participation requests were sent to a current address for each program participant.

Each postcard contained directions to a secure website. By using this functionality, the TTT program office was able to guarantee individual confidentiality, as the researcher had access only to the email addresses of TTT participants who responded to the invitation to participate in the research study. The teacher background questionnaire (Appendix C) was loaded online to SurveyMonkey.

No identifying information was required or desired for students. Participating teachers were entered into a random drawing for a \$250 Visa gift card.

**STAAR.** Student achievement was measured using the raw scores from a standardized, grade- and subject-specific assessment test, the STAAR. The STAAR has several varieties, each specialized for use with students who have special needs or who have limited proficiency in the English language. The STAAR and STAAR modified examinations are used for comparison in this study. STARR includes tests for grades 3 through 12 in reading, writing, mathematics, science, and social studies. The number of tests that a student will take each year varies from two to four based on grade (Student Assessment Division, 2012) during an academic year. STAAR assessments cover the

same grades and subject areas as the TAKS tests given previously, although utilization of the STAAR has been expanded into the 12th grade. The STAAR was developed to be more demanding than previous assessments and includes time limits, which is a parameter not previously employed in the assessment program (Student Assessment Division, 2012).

Summary reports are in the public domain. There are several constraints, however, to generally obtaining information detailed enough for strenuous analysis. The necessary individual student outcomes, and outcomes categorized by class and therefore connected to a specific teacher, are not in the public domain. Cooperation of the Division of Student Assessment, Texas Education Authority was essential to the successful completion of this research.

***TAKS to STAAR reliability and validity.*** The STAAR, first administered during the 2011–2012 academic year, is the instrument used to measure achievement in the four areas tested in grade 8. STAAR is aligned with the Texas Essential Knowledge and Skills, the state standards for what Texas students are to know and be able to accomplish.

Because STAAR was developed as a TAKS replacement, it is appropriate to discuss the reliability and validity issues surrounding this baseline assessment. The state of Texas used the Kuder Richardson Formula 20 (KR20) for tests using only multiple choice questions (dichotomously scored items) and the stratified coefficient alpha for TAKS assessments involving a combination of multiple choice and narrative responses (polytomous items) (Texas Education Agency, 2009a; Texas Education Agency, n.d.e) to determine reliability and internal consistency for TAKS.

Chapter 16 of *Technical Digest (Reliability)* reported, “Most internal consistency reliabilities are in the high .80s to low .90s range (1.0 being perfectly reliable), with reliabilities for TAKS assessments ranging from .87 to .90” (Texas Education Agency, 2009a, p. 151). Texas offered reliability and validity information to the United States Department of Education, which replied via letter in October 2006, acknowledging that the TAKS meets the requirements for grades 3–8 and high school, under the Elementary and Secondary Education Act (ESEA, amended as No Child Left Behind) (Texas Education Agency, 2009a).

TAKS was rigorously developed and subjected to numerous studies during and after development. In a 2006 contrasting groups study (data collected in 2003–2004), Pearson Educational Measurement helped determine the optimal cutting scores for grade 11 English language arts and math (Pearson Educational, 2006; Texas Education Agency, 2009b). TAKS scores for Texas public high school juniors were compared to American College Test (ACT) and Scholastic Assessment Test I (SAT I) scores of Texas public high school juniors who took the tests during the spring of 2004. The methodology utilized TAKS “Met Performance” scores in language and mathematics to predict ACT or SAT I scores. TAKS math scores predicted an average ACT math score of 20 and an English score of 18; nationally, 50% and 67% of students attained such scores. On the SAT, TAKS scores predicted a 470 mathematics score and a 460 language score; nationally, 50% of students attained such scores. Texas also conducted a grade correlation reference study and found “that a high percentage of students who pass the TAKS tests also pass their related courses. Small percentages of students passed the TAKS tests but did not pass their related courses, passed their related courses but did not

pass the TAKS tests, or failed to pass the TAKS test or their related courses” (Texas Education Agency, 2009b, p. 165). The correlational studies suggest that TAKS is a reliable instrument, and that “Met Performance” criteria compare to at least the average student performance in language and math on the ACT and SAT.

STAAR to TAKS correlation studies, under low-stakes conditions, were completed for subjects tested in grades 9 through 11. Correlations ranged from a low of .58 (Algebra II to Grade 11 mathematics) to a high of .71 (Biology to Grade 10 science) (Student Assessment Division, 2010). Only a single study correlates STARR scores to high school course grades; as such, it is too early in the transition from TAKS to STAAR to determine if STAAR scores have a positive correlation with high school grades.

### **Procedures**

The researcher did not require specialized training, outside of knowledge of how to employ SPSS, or intimate contacts with agency personnel in order to conduct this study. Routine, civil requests and discussion were carried out between the researcher and the TEA via email or telephone. Securing approval of the IRB was routine, and carried out via email in a methodical and structured fashion.

**Permissions.** Several permissions were necessary in the execution of this study. Permissions were required from the TEA, the national TTT program office, and the Texas TTT program office. The TEA provided access to student STAAR scores, student demographic information, and select teacher demographic information after provision of a written request. The written request, provided in response to suggestions made by TEA (to ensure clarity in a response) consisted of an email with accompanying slides describing the data fields requested. Preparatory information and points of contact at

TEA were provided to the researcher by Dr. Owings, who was contacted via telephone. Informal coordination was effected via telephone and email. Before releasing any information to the researcher, the TEA conducted an internal ethics review and found no hindrance to release. The data obtained from the TEA was originally projected to cost the researcher ~\$1,000. The TEA did not subsequently bill the researcher for the data, despite the fact that a second set of data files had to be created to ensure inclusion of enough specific student-level information to allow a unique teacher to be joined with each student case.

**TTT teacher background questionnaire.** The TTT background questionnaire was employed to gather information on the teaching experience of Texas TTT participants, the subjects they taught during the 2011–2012 school year, and the type and category of school system they taught at during that period.

The national TTT program office provided work hours *pro bono* to the researcher. Work included printing address labels from their participant database, affixing labels to the postcards, and placing the cards in the mail.

The Texas TTT program office was instrumental in the research effort through their provision to the TEA of the TTT participants contained in their program database. This procedure served as the primary method of identifying TTT participants who taught in Texas during 2011–2012, and was critical in selecting the TTT participants who taught at the eighth grade level. The Texas TTT program office was also pivotal in the safeguarding of teacher identities through their provision of program participants directly to the TEA; because of this arrangement, the researcher did not have access to teacher or student identifying information.

The only item of personally identifiable information collected via the online survey was an email address that provided the only link between the researcher and survey respondents. Email addresses were used solely to notify the winner of the random drawing for the \$250 Visa gift card.

**STAAR.** Students throughout Texas take the STARR and TAKS assessments during the school year depending on their grade and the test subject area (Student Assessment Division, 2012). STAAR assessments were administered by trained school personnel, according to the standards practiced in each school district. Tests were graded, and summary reports were posted online. By mid-July 2012 following the June completion of the academic year many of the grade/subject area STAAR summary reports were posted for the 2011 – 2012 school year. As the study used archival data, the administration, security and scoring of each iteration of the assessment relied on the procedures and practices of the various schools in Texas, within the oversight of the TEA.

Upon approval of the proposal by the chairperson of the dissertation committee, the researcher requested permission to access the 2011–2012 STAAR/TAKS dataset, while simultaneously applying for Institutional Review Board (IRB) approval. Accompanying the application to the IRB was a copy of the TTT teacher background questionnaire and the postcard mailer. Concurrent planning was necessary to ensure that the study was properly funded, acted within the limits of the study budget, and accounted for the lag-time at TEA in developing the data file for transmission.

The archival data submitted by the TEA provided student-specific scores in each subject area, as well as student indicators in terms of the covariates. In order to ensure no



private identifiable information was available that could link a unique student to an information item, the dataset did not contain student names or identification numbers.

**Data gathering.** Data were gathered from two sources, the online TTT teacher background questionnaire and archival data provided to the researcher through a cooperative effort between the TEA and the national and Texas TTT program offices. Teachers were selected from Texas based on the concentration of TTT participants in the state. TTT participants were identified with the assistance of the national and Texas state TTT program offices. The TTT program offices provided program participant information directly to the TEA, thus safeguarding TTT program participant identity. Through a secure data link, the Texas TTT program office provided a spreadsheet containing TTT program participant information. The spreadsheet, a subset of the national TTT database, contained the following columns (fields): last name, first name, middle initial, and date of birth. The TEA then used the Texas TTT input to segregate their teacher data, identifying the TTT program participants subject to the criteria of the study. The researcher had no access to this file.

The TEA paused on processing the request for data, subject to IRB approval. After the researcher received IRB approval, and forwarded a copy of the approval letter to the TEA, the TEA returned to the researcher two data files. One file contained teacher information and student identifiers, and the other file contained student identifiers, STAAR raw scores, and demographic information. The researcher joined the files using procedures in SPSS.

Coordinating emails and phone calls notwithstanding, the researcher had to make a formal request for the 2011–2012 data. The formal request email to the public relations

section at the TEA triggered a host of bureaucratic mechanisms, including time limits for the TEA to react, a cost analysis, and an invoice. The TEA estimated a turnaround time of about two weeks to run the data, at a cost of between \$750 and \$1,000.

The Assessment Division of the TEA initiated and transmitted the archival data file to the researcher via email. Agency members were cooperative, and arrangements and coordination was effected as required via telephone and email.

The researcher activated the online survey in early July 2013, timed to synchronize with the mailing of the postcards from the TTT program office in Orlando, FL. The survey was active for 61 days, and deactivated in September 2013. The researcher's only contact with respondents was via email; communication initiated by individual respondents who chose to notify the researcher of their desire to be included in the drawing for the gift card.

**Data organization.** Responses obtained via the online survey were downloaded in Microsoft Excel workbook form for archival and historical purposes only. The analytics inherent in the SurveyMonkey application were sufficiently strong for the purposes of the analysis.

The STAAR/TAKS dataset likewise arrived as a Microsoft Excel workbook. The dual files were retained in their original forms, to ensure an original file was on-hand in the case of researcher error. The files were converted to an SPSS v22.0 dataset for analysis using SPSS v22.0 software. The TEA ensured that privacy, confidentiality, anonymity, and safety of both the student and the teacher were maintained by removing any personally identifying information before the dataset was sent to the researcher.

**Data storage and destruction.** All data elements and any derived products were kept on electronic media. All files were retained in a locked filing cabinet in the researcher's home office, with the key separately stored. No raw material was uploaded to the internet. All data obtained and derived from the study will be kept for three years, and will be thereafter destroyed.

### **Data Analysis**

This study examined the impact of TTT participants on Texas eighth grade students' achievement as measured by the raw score on the 2011–2012 subject-specific STAAR. The researcher used archival data concerning individual student 2011–2012 STAAR results and their associated teachers to conduct the analysis using SPSS v22.0. Additionally, results from the online questionnaire were calculated when the survey was deactivated in September 2013.

**TTT background questionnaire.** Responses to the questionnaire were analyzed using SurveyMonkey onboard analytics. Descriptive statistics and distributions were calculated. Responses had no impact on the research questions posed for the study; they did, however, add depth and context concerning Texas TTT participants.

**STAAR.** The archived data file was analyzed using SPSS v22.0. The researcher analyzed the differences in means between the two groups (students of TTT participants and students of all other teachers) using the independent sample *t* test (once for each research question).

The independent samples *t* test was the statistical technique of choice for each of the four research questions. The independent samples *t* test is the most appropriate inferential test to use for two reasons. First, the research hypotheses called for an

evaluation of the difference between the means of two independent groups—in this case students of TTT participants, and students of all other teachers. Second, cases had a score on two variables. Teacher type, the independent variable (categorical) allowed cases to be separated into two mutually exclusive groups. Subject-specific STAAR test scores, the dependent variable (interval), provided the quantitative dimension. The researcher utilized archival data for the analysis and could not control student or teacher assignments in the Texas public schools. There was, therefore, a lack of randomization in assignment to groups under study. Students and teachers were assigned to courses/classes based on state and district policy.

For the results to be generalizable to a population, the independent samples  $t$  test relies on three assumptions: (a) that the dependent variable is normally distributed in each of the two populations, (b) that the two groups have approximately equal variance on the dependent variable, and (c) that the scores on the dependent variable are independent of each other. Appropriate statistical techniques verified each of the assumptions.

Effect size, represented by  $\eta^2$ , was calculated for the results of all four iterations of the  $t$  test using the formula below:

$$\eta^2 = \frac{t^2}{t^2 + (N_1 + N_2 - 2)}$$

Effect sizes were interpreted based on “conventional cutoffs” enunciated by Green and Salkind (2011, p. 213) as .01 for small effect size, .06 for medium effect size, and .14 for large effect size.

**Teachers.** The independent variable, teacher type, was analyzed as part of the study. Three items of information were available: teacher race, ethnicity, and sex. Descriptive statistics were derived for the demographic data.

***Student achievement.*** The dependent variable, student achievement, was also analyzed. Student achievement was measured by the raw score obtained by the student on one or several subject-specific STAAR examinations taken while in the eighth grade in Texas public schools during the 2011–2012 school year.

### **Summary**

This research examined conditions as they existed in Texas public schools during the 2011–2012 school year. Students were assigned classroom teachers according to local school district procedures, and TTT participants were part of the teaching cohort. Eighth grade students were administered each of four STAAR examinations. The independent samples *t* test was employed to compare achievement of the students taught by TTT teachers with those of all other teachers on each of the four STAAR assessments. Additionally, the study used responses to a questionnaire posted online to Texas TTT participants. The questionnaire results were obtained in the spring of 2013 using analytics available via SurveyMonkey. The results of the study are presented in the following chapter.

## CHAPTER FOUR: FINDINGS

The purpose of this study was to examine the impact of TTT participants on student achievement. The analysis consisted of two parts. The first part is a compilation and reporting of the TTT characteristics collected from the 2013 online survey of TTT participants in Texas. The second part involves multiple iterations of the independent samples *t* test, which compared the mean subject-specific STAAR scores of Texas public school students taught by TTT participants with the mean subject-specific STAAR scores of all other Texas eighth grade students during academic year 2011–2012.

This chapter is organized into four sections: (a) demographic information on the participants, (b) results of the TTT background survey, (c) results of the independent samples *t* test for each of the four null research hypotheses, including testing of the assumptions, and (d) a summary of the results.

### **Demographics**

Participants for this study included Texas public school teachers and their eighth grade students. The circumstances for the teacher–student interactions studied occurred during the 2011–2012 school year. Texas was selected as the research site based on the concentration of TTT participants in the state.

**Teachers.** The teacher sample included 40,587 unique records, one for each individual teacher who was employed by, and taught at least one class in, a Texas public school during the period of the study. As with student data, a teacher may have taught courses that span a single semester, thereby increasing the number of records in the dataset. Demographic information for teachers included their race, ethnicity, and sex. Overall, the teacher group sampled was overwhelmingly non-Hispanic/non-Latino

(78.78%,  $n = 31,975$ ), female (64.02%,  $n = 25,984$ ), and White (65.44%,  $n = 26,560$ ).

Distribution by race for TTT participants was similar to the distribution by race for all teachers with 20.33% ( $n = 25$ ) Hispanic or Latino. The TTT sample evidenced 103 males (83.74%), which was over double the percentage of males in the non-TTT sample (35.83%,  $n = 14,500$ ). In terms of ethnicity, Black or African-American teachers accounted for 31.71% of the TTT group ( $n = 39$ ), tripling their representation over non-TTT teachers (10.16%,  $n = 4,111$ ). The TTT sample contained no teachers of Native American, Asian, or Native Hawaiian/other Pacific Islander lineage. Small percentages of teachers claiming Native American (0.46%,  $n = 188$ ), Asian (1.24%  $n = 501$ ), or Native Hawaiian/other Pacific Islander (0.06%,  $n = 26$ ) lineage were evidenced in the non-TTT group.

As a percentage of their respective groups (TTT and non-TTT participants), TTT teachers are represented at higher percentages than their non-TTT colleagues in the subject areas of mathematics, science, social studies, and technology. Non-TTT teachers dominate in the fine arts, physical education, and health. Table 4 displays the distribution of educators by subject area.

Table 4

*Subject Area Taught by Teacher Type*

Subject Area	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Career & Technology	6	4.88	2,194	5.42	2,200	5.42
English Language Arts	15	12.20	6,966	17.22	6,981	17.20
Fine Arts	8	6.50	6,440	15.92	6,448	15.89
Foreign Language	2	1.63	1,757	4.34	1,759	4.33
Mathematics	31	25.20	5,398	13.34	5,429	13.38
Other	0	0.00	20	0.05	20	0.05
Physical Education and Health	13	10.57	8,476	20.95	8,489	20.92
Science	17	13.82	3,847	9.51	3,864	9.52
Self-Contained	0	0.00	70	0.17	70	0.17
Social Studies	21	17.07	4,142	10.24	4,163	10.26
Special Education	1	0.81	356	0.88	357	0.88
Technology Applications	9	7.32	798	1.97	807	1.99
Total	123	100.00	40,464	100.00	40,587	100.00

For the in-depth description of the teacher population under study, see Tables E1 through E3 (Appendix E).

**TTT background questionnaire.** The TTT national program office, with the cooperation of the Texas TTT staff, aided the researcher in identifying TTT participants.



The remaining teachers in the sample were identified to the researcher by the national TTT program office as part of their oversight and management functions of public education in the state.

On July 7, 2013, the national TTT office mailed 2,813 postcard invitations to TTT participants across Texas (Appendix D). The researcher placed the TTT background questionnaire online at SurveyMonkey on July 12, 2013. Responses were downloaded and the background questionnaire closed 61 days later on September 12, 2013. The return rate for the background questionnaire was 6.86% ( $N = 193$ ).

Most TTT respondents reported that they were currently employed (2013 school year) as teachers (79.8%,  $n = 146$ ) or administrators (3.8%,  $n = 7$ ); in contrast, 16.4% ( $n = 30$ ) were unemployed.

The majority of respondents reported that they possessed 1–15 years of public or private school teaching experience (72.82%,  $n = 134$ ). When queried on their total years of teaching experience 75.54% of respondents ( $n = 139$ ) reported 1–15 years of teaching experience. The data suggests that TTT participants do not generally bring years of what they self-describe as teaching experience with them to the public school classroom.

Most TTT participants identified themselves as having taught in grades 9–12 (61.60%) during the 2011–2012 school year. Elementary educators (grades 1–5) accounted for 20.88% of the respondents. Middle school educators comprised the remaining 17.52% ( $n = 83$ ) of respondents. TTT participants were likely to teach in urban (51.2%) public (98.8%) schools.

In terms of subject area specialty, questionnaire responses generally mirror the distribution by subject area specialty depicted in Table 4, with 19.4% ( $n = 33$ ) of

respondents claiming specialty in English Language Arts/Reading, while 34.7% of respondents ( $n = 59$ ) identified themselves as teachers of mathematics. Respondents indicated that they were teachers in the sciences (29.4%,  $n = 50$ ) and social studies (30.6%,  $n = 52$ ), with 32.9% ( $n = 56$ ) reporting an area of specialty as Other (e.g., music, art, JROTC). For details on question-by-question responses to the TTT background questionnaire, see Tables E25 thru E32 (Appendix E).

**Students.** More than 360,000 students attended grade 8 in Texas during the 2011–2012 school year. Due to concerns related to student privacy stemming from the inclusion of campus-level elements in the data provided to the researcher, TEA withheld approximately 50,000 records out of *an abundance of caution*. The resulting dataset contained 312,117 unique scrambled student identifiers with over 3.2 million student cases. Student records contained specific student/course/class combinations (e.g., Texas public school eighth grade student *X* may have taken 7 classes at his or her school during 2011–2012). Student *X* may also have taken courses whose duration was a single semester/period in length, thereby increasing the number of records in the dataset.

Hispanic or Latino students accounted for 52.0% ( $n = 162,284$ ) of the student sample. TTT participants taught a student population that was 58.02% ( $n = 568$ ) Hispanic/Latino, while non-TTT teachers taught the remaining 52.04% ( $n = 161,117$ ). Over 50% of students claimed Hispanic or Latino lineage (52.0%,  $n = 162,284$ ); when combined with students self-describing as White (32.7%,  $n = 102,157$ ) or Black or African-American (12.5%,  $n = 39,101$ ), this group accounted for over 97% of the sample. TTT participants taught larger percentages of Black or African-American students

(20.43%,  $n = 200$ ) and Hispanic or Latino students (58.02%,  $n = 568$ ) than their non-TTT peers (12.48%,  $n = 386,645$  and 32.7%,  $n = 101,366$ , respectively).

Non-TTT teachers taught a slightly higher percentage (48.77%,  $n = 151,450$ ) of female students than TTT participants (44.54%,  $n = 436$ ); females accounted for 48.8% ( $n = 152,191$ ) of the student sample.

A surprisingly large percentage (59.9%,  $n = 187,091$ ) of the student sample indicated economic disadvantage. Students who claimed Hispanic or Latino (80.30%,  $n = 130,315$ ), Black or African-American (75.55%,  $n = 29,541$ ), Native Hawaiian (100.0%,  $n = 21$ ), or Native American (88.88%,  $n = 96$ ) ancestry had high rates of economic disadvantage when compared to students who claimed Asian (24.03%,  $n = 1740$ ), White (24.54%,  $n = 25,070$ ), or two or more races (25.49%,  $n = 308$ ) as their ancestry. TTT participants taught a higher percentage of economically disadvantaged students (67.31%,  $n = 659$ ) than their non-TTT coworkers (59.91%,  $n = 186,145$ ).

The majority of students identified as having limited English proficiency identified as having Hispanic or Latino heritage (97.9%,  $n = 21,135$ ). However, identifying ethnicity as the single determinant was misleading. Only 23,479 (7.52%) of the student sample were identified as having limited English proficiency. Students with limited English proficiency were present at double the rate in non-TTT classrooms (7.57%,  $n = 23,442$ ) when compared to TTT participant classrooms (3.78%,  $n = 37$ ).

Males (74.41%,  $n = 13,819$ ) comprised nearly three-fourths of the students with special needs. The likelihood of a TTT participant (9.70%,  $n = 95$ ) teaching a student with special needs was nearly double that of a non-TTT teacher (5.92%,  $n = 291,287$ ).

Students identified as gifted and talented represented 7.67% ( $n = 23,949$ ) of the students taught by non-TTT participants, while TTT participants evidenced teaching 4.70% ( $n = 46$ ) gifted and talented students.

Students who were at-risk of not graduating high school comprised 38.5% of the student sample. TTT teachers (48.28%,  $n = 450$ ) were more likely than non-TTT participants (40.0%,  $n = 119,040$ ) to teach a student at-risk.

For a complete and comprehensive description of the student population under study, see Tables E4 through E24 (Appendix E).

### **Research Questions and Null Hypotheses**

For this study, the researcher examined the impact of TTT participants on Texas eighth grade students' achievement as measured by the raw score on the 2011–2012 subject-specific STAAR. Four questions guided the research.

**Research question one.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis one.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question two.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis two.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question three.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis three.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in science, as measured by their scores on the -2011–2012 State of Texas Assessment of Academic Readiness.

**Research question four.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis four.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program TTT and those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

### **Data Analysis and Results**

Traditionally, for the independent samples  $t$  test to be appropriate, three assumptions must be realized: (a) that the dependent variable is normally distributed in each of the two populations, (b) that the two groups have approximately equal variance on the dependent variable, and (c) that the scores on the dependent variable are independent of each other. Assumptions were tested for each research question.

In order for the independent  $t$  test to be an appropriate technique, data must meet the assumption that the scores on the dependent variable are independent of each other. Of the three assumptions, independence was assumed in the analysis for all four research questions. Individual student test achievement is not tied to the achievement of other students in the same group, nor is it influenced by the achievement of individual students in another group. As part of generally accepted protocol, proctors supervised at the classroom level to ensure students' individual and honest efforts were applied to the examination. Each of the two remaining assumptions was evaluated using statistical techniques, with a report as part of the analysis responding to each research question.

**Research question one.** An independent samples  $t$  test was conducted using SPSS v22.0 to test the null hypothesis that there was no statistically significant difference in the mean STAAR reading scores between Texas eighth grade students taught by TTT

participants and those eighth grade students taught by all other teachers. The independent  $t$  test was the most appropriate inferential test to use with the sample under study containing one categorical independent variable (teacher type) and one dependent variable, 2011-2012 STAAR reading raw score. The independent variable was coded 1, for TTT participant, and 0 to indicate a non-TTT participant. As previously noted, the dependent variable was measured on an interval scale, that ranged from 0 to 52, with higher numbers indicating greater achievement.

Courses categorized as English Language Arts (ELA) by the state of Texas were used for this portion of the analysis; course titles included English Language Arts/Reading Grade 8, English Language Arts Grade 8, English I, English II, English III, Reading I, Reading II, Reading Elective Grade 8, Reading Grade 8, and Humanities. Students may have taken more than one reading or English language class during their eighth grade year. Courses designated as career and technical education were not included.

Figure 1 displays the distribution of STAAR reading raw scores. Note that the distribution is bimodal and slightly negatively skewed. The negative skew indicates that students tended to achieve scores nearer the high limit of the test. Cases were excluded list-wise resulting in 10,660 cases with missing scores being excluded from the analysis.

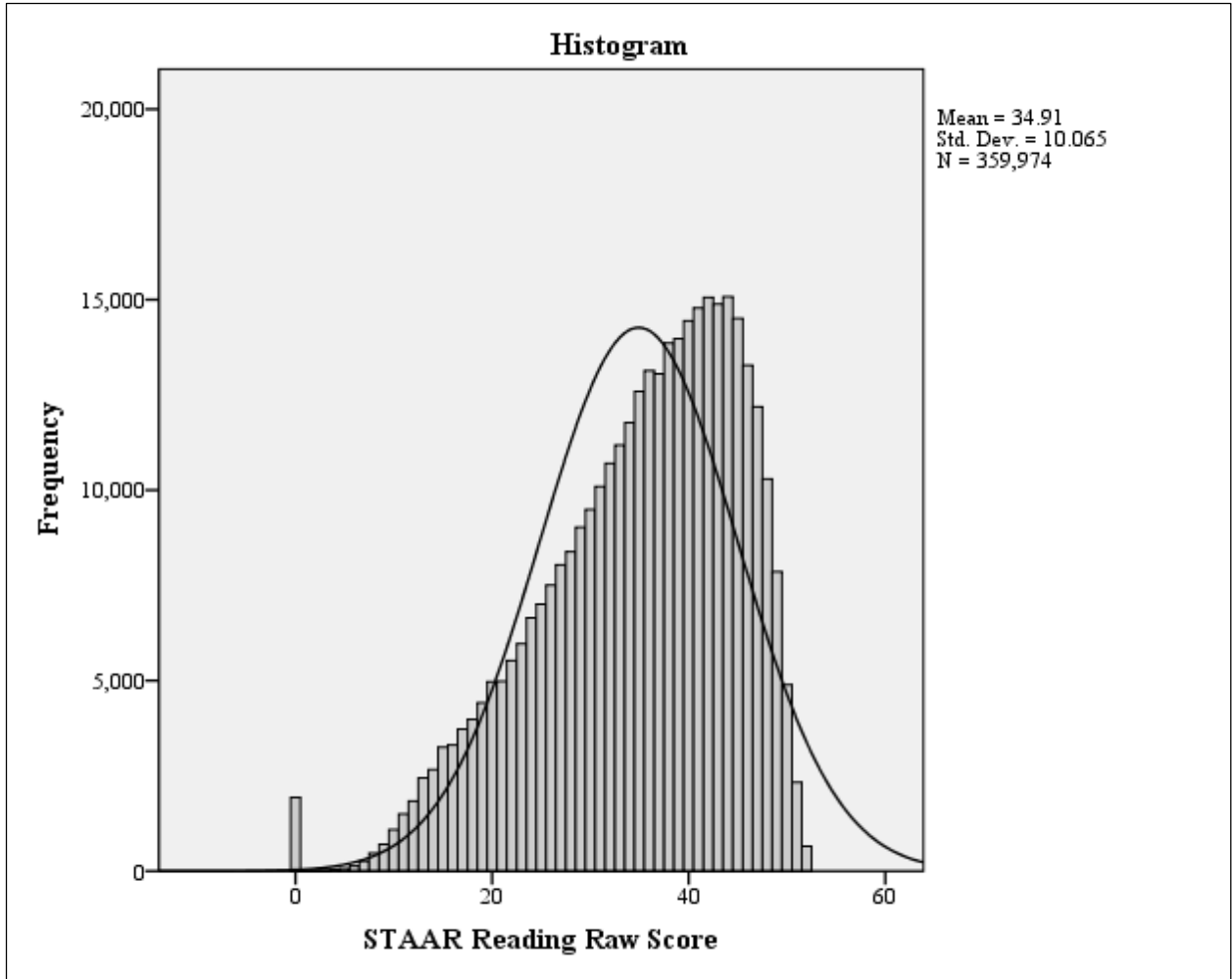


Figure 1. Distribution of STAAR reading raw scores 2011-2012.

Sample sizes, means, and standard deviations of the participants are listed in Table 5 and grouped by teacher type for those who either taught (teachers) or had valid STAAR scores (students) in English language arts courses during the 2011–2012 school year.



Table 5

*STAAR Reading Scores by Teacher Type*

Teacher type	Teachers		Students		STAAR Scores	
	<i>n</i>	%	<i>n</i>	%	<i>M</i>	<i>SD</i>
TTT participants	15	0.21	452	0.13	35.43	9.13
Other teachers	6,966	99.79	348,862	99.87	34.97	10.04
Total	6,981	100.00	349,314	100.00	34.91	10.07

The participants under study for this research question were 349,314 eighth grade students who had STAAR reading test scores and attended Texas public schools during 2011-2012. Students of TTT participants had higher mean test scores and a smaller standard deviation than their peers taught by all other teachers. Figure 2 is a graphic representation of the comparison of mean STAAR reading test scores; the plot contains 95% of the scores of each group.

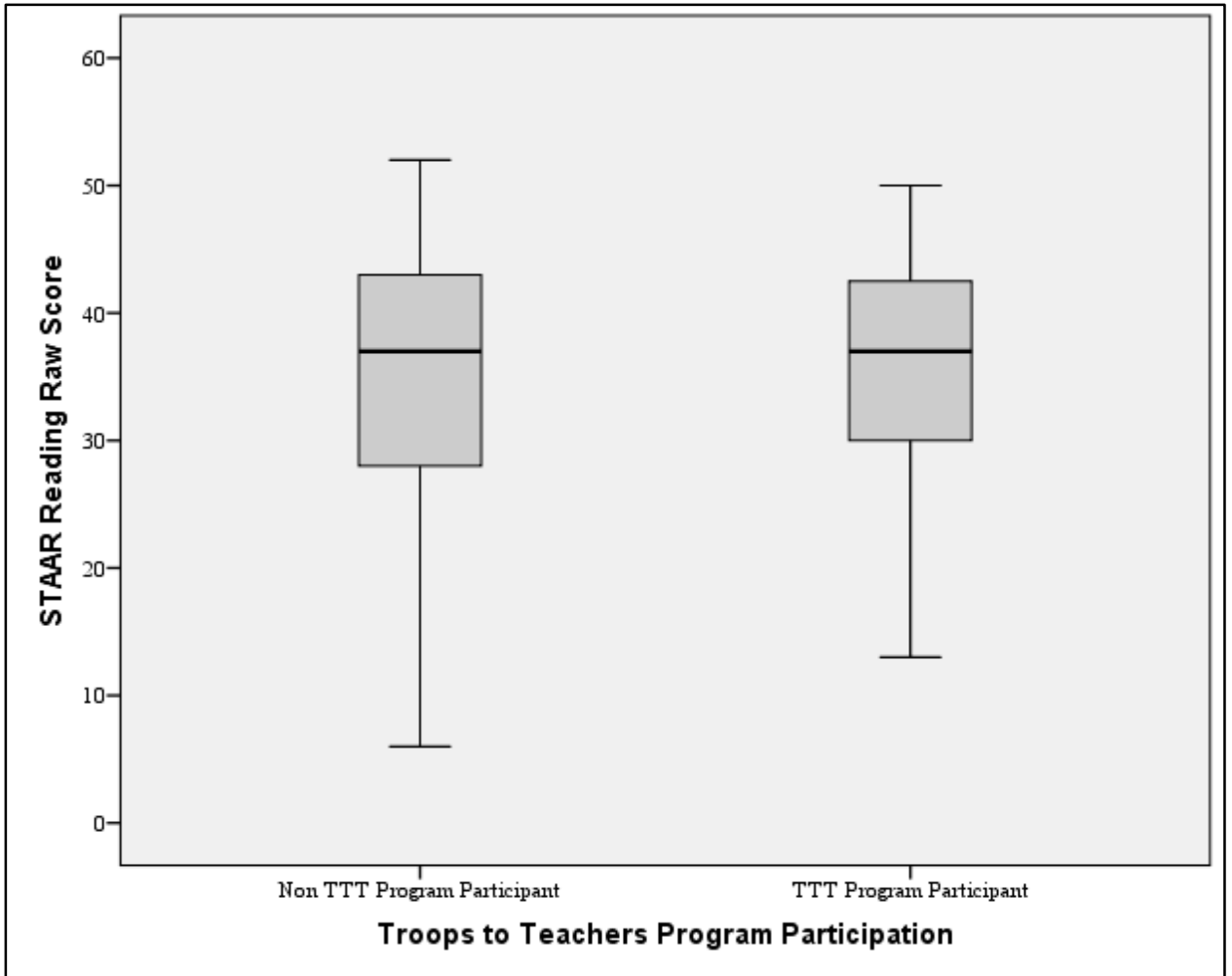


Figure 2. Simple boxplot STAAR reading raw score by teacher type.

*Assumptions.* In terms of the assumption of normality of the distribution of the variances, the results of Levene's test,  $F(349,312) = 7.815, p < 0.05$ , indicated that the assumption of equal variance was violated. That being the case, the researcher chose to not assume the variances were equal and selected the lower value of the  $t$ -statistic. The researcher continued with the analysis. Independence of the samples is satisfied because each student who took the test exercised an independent effort; proctors monitored the students while they took the test. Despite the slight negative skew of the test scores, based on the results of the Levene's test, and with satisfaction of the assumption of

independence of the samples, the researcher chose to proceed with the independent samples *t* test.

***T test results.*** The *t* test did not reveal a significant difference between groups,  $t(452.417) = 1.085, p = .28, \eta^2 < 0.01$ . On average students of TTT participants scored higher than those of non-TTT participants (TTT:  $M = 35.43, SD = 9.13, n = 452$ ; non-TTT:  $M = 34.97, SD = 10.05, n = 348,862$ ). Thus, the null hypothesis of no statistically significant difference in the mean STAAR reading scores between students taught by TTT program participants and those taught by all other teachers could not be rejected. The 95% confidence interval for the difference between the means was -0.38 to 1.31. In accordance with the results, the finding of no statistically significant difference in the means tells us to expect that the confidence interval contains the value of zero; and it does.

Follow-up nonparametric tests using SPSS functionality confirmed the researcher’s decision not to reject the null hypothesis. Mann-Whitney *U* analysis did not reveal significant differences between the groups;  $p = .644$  with  $\alpha = .05$ .

Table 6 displays the SPSS output for group statistics, while table 7 displays the SPSS test results.

Table 6

*Group Statistics STAAR Reading scores by Teacher Type*

		Troops to Teachers Program Participation			
		N	Mean	Std. Deviation	Std. Error Mean
STAAR Reading Raw Score	TTT Program Participant	452	35.43	9.126	.429
	Non TTT Program Participant	348862	34.97	10.043	.017

Table 7

*Independent Samples Test Results STAAR Reading by Teacher Type*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
STAAR Reading Raw Score	Equal variances assumed	7.815	.005	.986	349312	.324	.466	.473	-.460	1.393
	Equal variances not assumed			1.085	452.417	.278	.466	.430	-.378	1.310

**Research question two.** An independent samples *t* test was conducted using SPSS v22.0 to test the null hypothesis that there was no statistically significant difference in the mean STAAR mathematics scores between Texas eighth grade students taught by TTT participants and those eighth grade students taught by all other teachers. The independent *t* test was the most appropriate inferential test to use with the sample under study containing one categorical independent variable (teacher type) and one dependent variable, 2011-2012 STAAR mathematics raw score. The independent variable was coded 1, for TTT participant, and 0 to indicate a non-TTT participant. As previously noted, the dependent variable was measured on an interval scale, that ranged from 0 to 56, with higher numbers indicating greater achievement.

Courses categorized as mathematics by the state of Texas were used for this portion of the analysis; course titles included Algebra I, Algebra II, Geometry, Pre-calculus, Mathematical Models, and Mathematics Grade 8. Students may have taken more than one mathematics class during their eighth grade year. Courses designated as career and technical education were not included.

Figure 3 displays the distribution of STAAR mathematics raw scores. Note that the distribution is bimodal and slightly positively skewed. The skew indicates that

students tended to score nearer the lower limit, with a significant number of students choosing not to attempt the test, thus scoring a 0. Cases were excluded list-wise resulting in 7,335 cases with missing scores being excluded from the analysis.

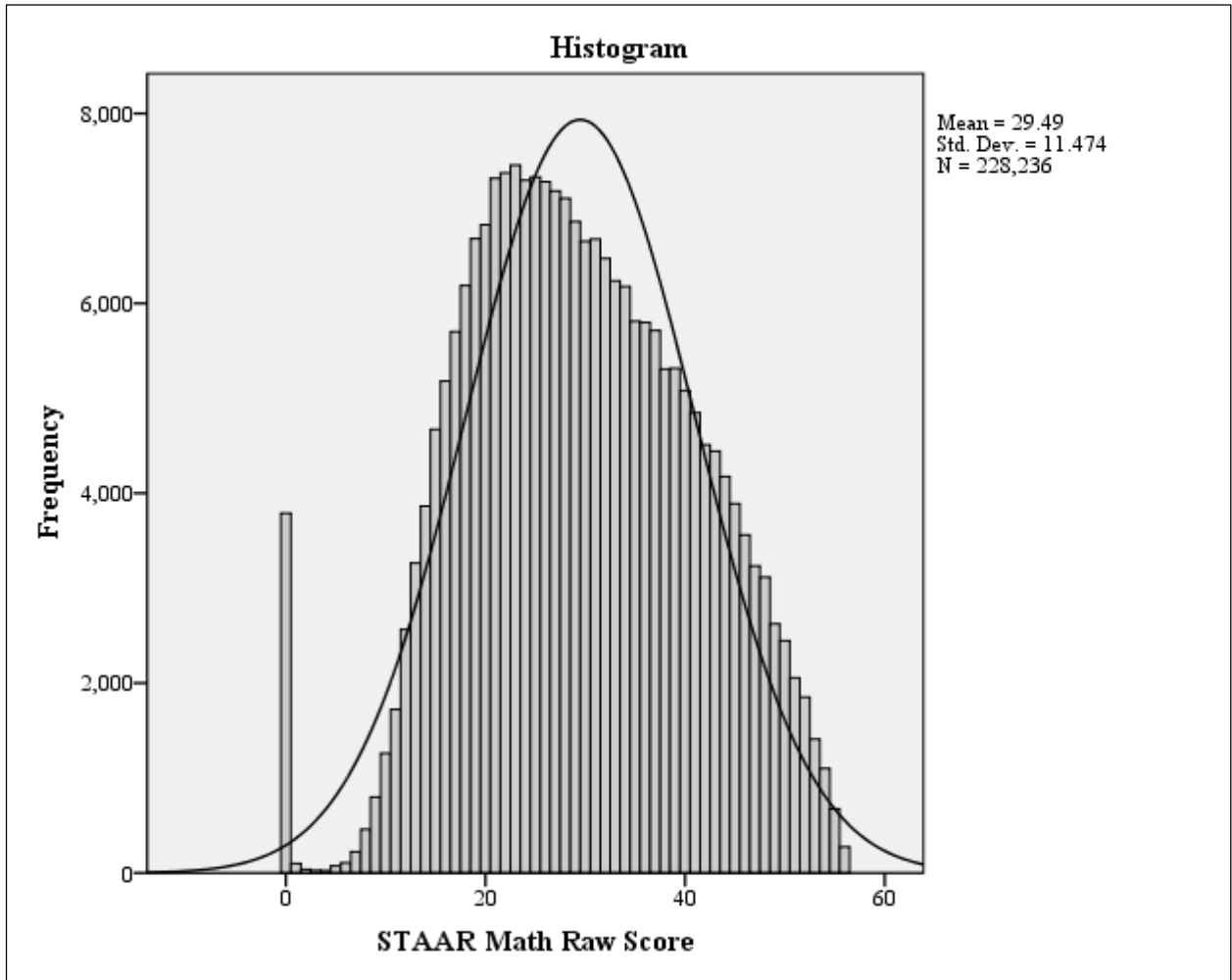


Figure 3. Distribution of STAAR mathematics raw scores 2011-2012.

Sample sizes, means, and standard deviations of the participants are listed in Table 8 and grouped by teacher type for those who either taught (teachers) or had valid STAAR scores (students) in mathematics courses during the 2011–2012 school year.

Table 8

*STAAR Mathematics Scores by Teacher Type*

Teacher type	Teachers		Students		STAAR Scores	
	<i>n</i>	%	<i>n</i>	%	<i>M</i>	<i>SD</i>
TTT participants	31	0.57	1,073	0.49	26.21	9.60
Other teachers	5,398	99.43	219,828	99.51	29.59	11.49
Total	5,429	100.00	220,901	100.00	29.49	11.47

The participants under study for this research question were 220,901 eighth grade students who had STAAR mathematics test scores and attended Texas public schools during 2011-2012. Students of non-TTT participants had higher mean test scores but a larger standard deviation than their peers taught by TTT participants. Figure 4 is a graphic representation of the comparison of mean STAAR mathematics test scores; the plot contains 95% of the scores of each group.

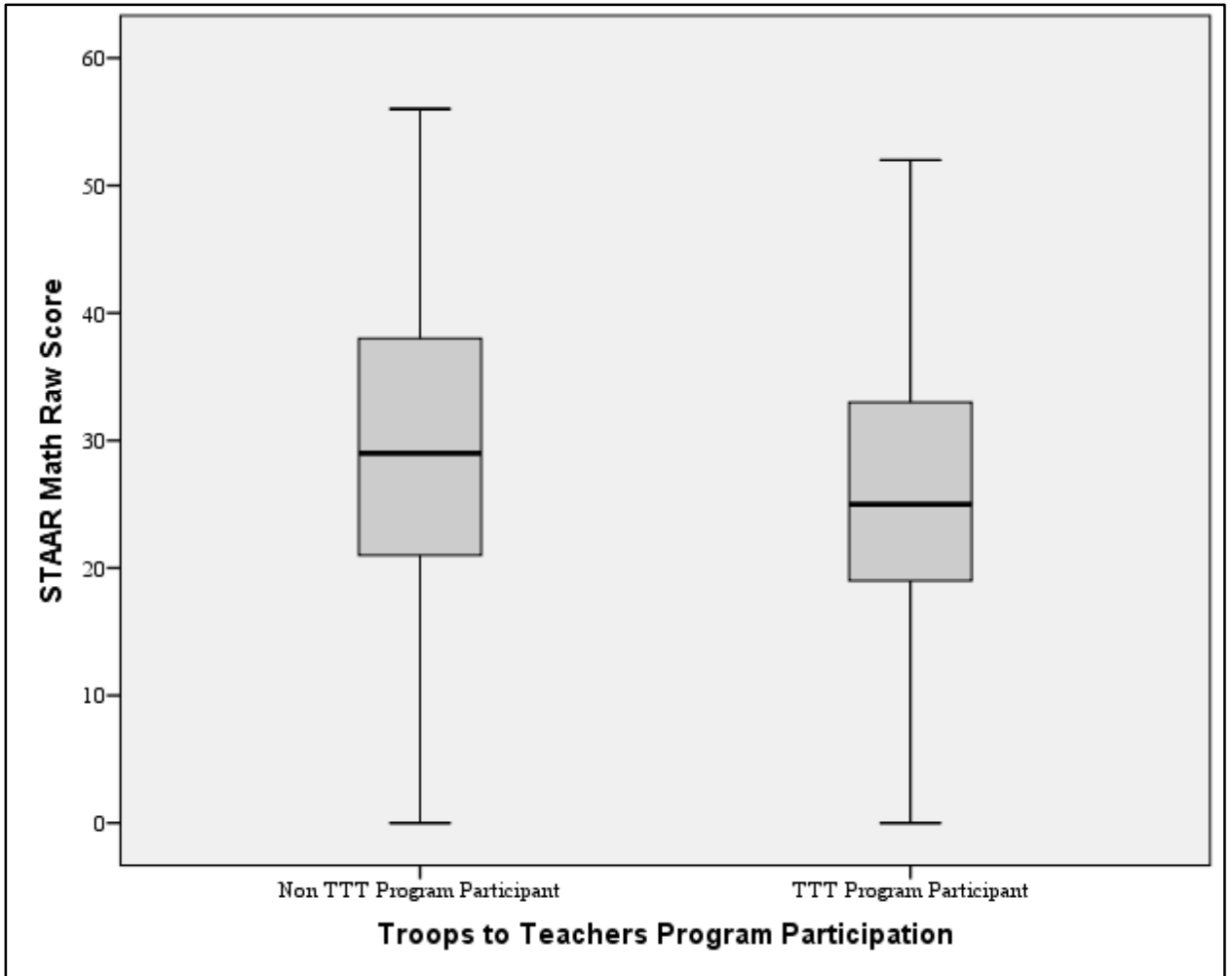


Figure 4. Simple boxplot STAAR mathematics raw score by teacher type.

*Assumptions.* In terms of the assumption of normality of the distribution of the variances, the results of Levene's test,  $F(220,899) = 65.199, p < 0.05$ , indicated that the variances of the two populations are not assumed to be equal; the assumption of equal variance was violated. That being the case, the researcher chose to not assume the variances were equal and selected the lower value of the  $t$ -statistic. Independence of the samples is satisfied because each student who took the test exercised an independent effort; proctors monitored the students while they took the test. Despite the slight positive skew of the test scores, based on the results of the Levene's test, and with

satisfaction of the assumption of independence of the samples, the researcher chose to proceed with the independent samples *t* test.

***T test results.*** The *t* test revealed a significant difference between groups,  $t(1087.051) = -11.485, p < .01, \eta^2 < 0.01$ . On average students of non-TTT participants scored higher than those of TTT participants (non-TTT:  $M = 29.59, SD = 11.49, n = 219,828$ ; TTT:  $M = 26.21, SD = 9.60, n = 1,073$ ). Thus, the null hypothesis of no statistically significant difference in the mean STAAR mathematics scores between students taught by TTT program participants and those taught by all other teachers was rejected. The 95% confidence interval for the difference between the means was -3.95 to -2.80. In accordance with the results, the finding of a statistically significant difference in the means tells us to expect that the confidence interval will not contain the value of zero; and it does not.

Follow-up nonparametric tests using SPSS functionality confirmed the researcher’s decision to reject the null hypothesis. Mann-Whitney *U* analysis revealed significant differences between the groups;  $p > .01$  with  $\alpha = .05$ .

Table 9 displays the SPSS output for group statistics, while table 10 displays the SPSS test results.

Table 9

*Group Statistics STAAR Mathematics by Teacher Type*

		Troops to Teachers Program Participation	N	Mean	Std. Deviation	Std. Error Mean
STAAR Math Raw Score	TTT Program Participant		1073	26.21	9.596	.293
	Non TTT Program Participant		219828	29.59	11.488	.025



Table 10

*Independent Samples Test Results STAAR Mathematics by Teacher Type*

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STAAR Math Raw Score	Equal variances assumed	65.199	.000	-9.611	220899	.000	-3.376	.351	-4.065	-2.688
	Equal variances not assumed			-11.485	1087.051	.000	-3.376	.294	-3.953	-2.799

**Research question three.** An independent samples *t* test was conducted using SPSS v22.0 to test the null hypothesis that there was no statistically significant difference in the mean STAAR science scores between Texas eighth grade students taught by TTT participants and those eighth grade students taught by all other teachers. The independent *t* test was the most appropriate inferential test to use with the sample under study containing one categorical independent variable (teacher type) and one dependent variable, 2011-2012 STAAR mathematics raw score. The independent variable was coded 1, for TTT participant, and 0 to indicate a non-TTT participant. As previously noted, the dependent variable was measured on an interval scale, that ranged from 0 to 54, with higher numbers indicating greater achievement.

Courses categorized as sciences by the state of Texas were used for this portion of the analysis; course titles included Chemistry, Physics, Astronomy, Integrated Physics/Chemistry, and Science Grade 8. Students may have taken more than one science class during their eighth grade year. Courses designated as career and technical education were not included.

Figure 5 displays the distribution of STAAR science raw scores. Note that the distribution is bimodal and slightly negative skewed. The skew indicates that students tended to score nearer the upper limit. Cases were excluded list-wise resulting in 6,468 cases with missing scores being excluded from the analysis.

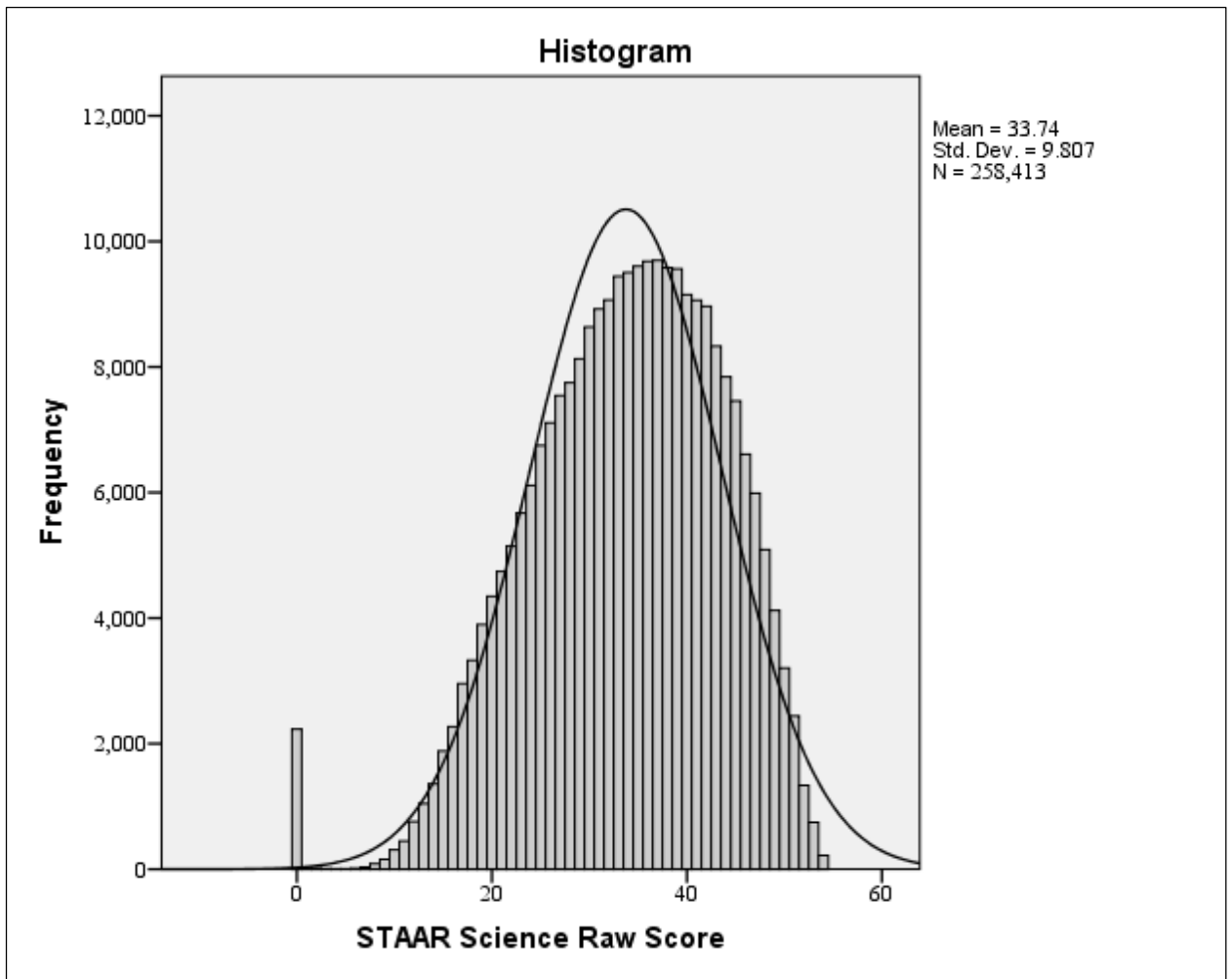


Figure 5. Distribution of STAAR science raw scores 2011-2012.

Sample sizes, means, and standard deviations of the participants are listed in Table 11 and grouped by teacher type for those who either taught (teachers) or had valid STAAR scores (students) in science courses during the 2011–2012 school year.

Table 11

*STAAR Science Scores by Teacher Type*

Teacher type	Teachers		Students		STAAR Scores	
	<i>n</i>	%	<i>n</i>	%	<i>M</i>	<i>SD</i>
TTT participants	17	0.44	970	0.39	32.82	10.32
Other teachers	3,847	99.56	250,975	99.61	33.83	9.79
Total	3,864	100.00	251,945	100.00	33.73	9.96

The participants under study for this research question were 251,945 eighth grade students who had STAAR science test scores and attended Texas public schools during 2011-2012. Students of non-TTT participants had higher mean test scores and a smaller standard deviation than their peers taught by TTT participants. Figure 6 is a graphic representation of the comparison of mean STAAR science test scores; the plot contains 95% of the scores of each group.

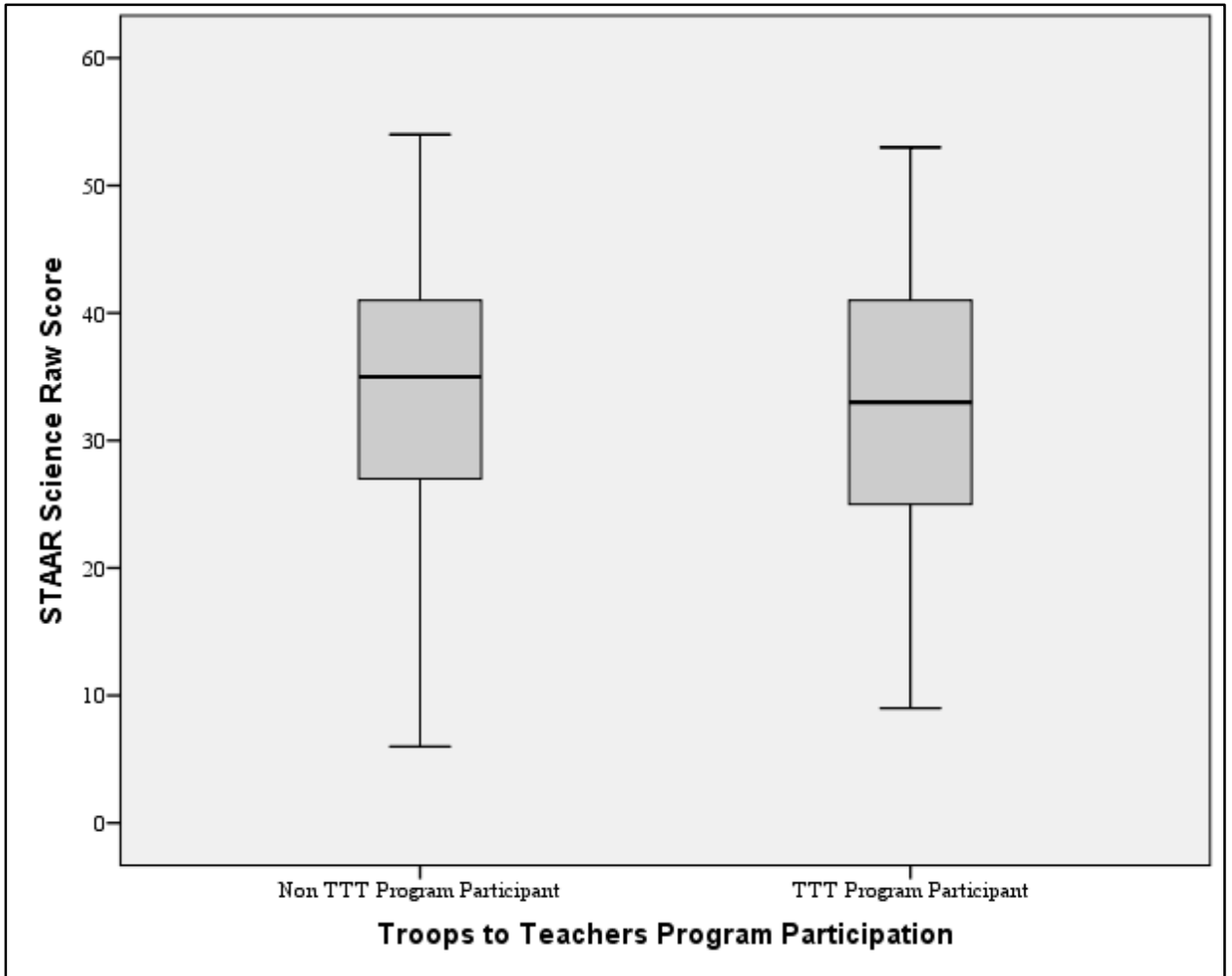


Figure 6. Simple boxplot STAAR science raw score by teacher type.

*Assumptions.* In terms of the assumption of normality of the distribution of the variances, the results of Levene's test,  $F(251,943) = 85.985$ ,  $p = 0.01$ , indicated that the variances of the two populations are not assumed to be equal; the assumption of equal variance was violated. That being the case, the researcher chose to not assume the variances were equal and selected the lower value of the  $t$ -statistic. Independence of the samples is satisfied because each student who took the test exercised an independent effort; proctors monitored the students while they took the test. Despite the slight negative skew of the test scores, based on the results of the Levene's test, and with

satisfaction of the assumption of independence of the samples, the researcher chose to proceed with the independent samples *t* test.

***T test results.*** The *t* test revealed a significant difference between groups,  $t(975.755) = -3.021, p = .003, \eta^2 < 0.01$ . On average students of non-TTT participants scored higher than those of TTT participants (non-TTT:  $M = 33.83, SD = 9.79, n = 250,975$ ; TTT:  $M = 32.82, SD = 10.32, n = 970$ ). Thus, the null hypothesis of no statistically significant difference in the mean STAAR science scores between students taught by TTT program participants and those taught by all other teachers was rejected. The 95% confidence interval for the difference between the means was -1.65 to -.35. In accordance with the results, the finding of a statistically significant difference in the means tells us to expect that the confidence interval will not contain the value of zero; and it does not.

Follow-up nonparametric tests using SPSS functionality confirmed the researcher’s decision to reject the null hypothesis. Mann-Whitney *U* analysis revealed significant differences between the groups;  $p = .001$  with  $\alpha = .05$ .

Table 12 displays the SPSS output for group statistics, while table 13 displays the SPSS test results.

Table 12

*Group Statistics STAAR Science by Teacher Type*

		Troops to Teachers Program Participation			
		N	Mean	Std. Deviation	Std. Error Mean
STAAR Science Raw Score	TTT Program Participant	970	32.82	10.317	.331
	Non TTT Program Participant	250975	33.83	9.789	.020

Table 13

*Independent Samples Test Results STAAR Science by Teacher Type*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
STAAR Science Raw Score	Equal variances assumed	8.985	.003	-3.183	251943	.001	-1.003	.315	-1.620	-.385
	Equal variances not assumed			-3.021	975.755	.003	-1.003	.332	-1.654	-.351

**Research question four.** An independent samples *t* test was conducted using SPSS v22.0 to test the null hypothesis that there was no statistically significant difference in the mean STAAR social studies scores between Texas eighth grade students taught by TTT participants and those eighth grade students taught by all other teachers. The independent *t* test being the most appropriate inferential test to use with one categorical independent variable (teacher type) and one dependent variable, 2011-2012 STAAR social studies raw score. The independent variable was coded 1 for TTT participant and 0 to indicate a non-TTT participant. As previously noted, the dependent variable was measured on an interval scale, that ranged from 0 to 52, with higher numbers indicating greater achievement.

Courses categorized as social studies by the state of Texas were used for this portion of the analysis; course titles included World Geography Studies, World History Studies, US History since Reconstruction, Special Topics in Social Studies, Social Studies Research Methods, Psychology, Humanities, Sociology, and Social Studies Grade 8. Students may have taken more than one social studies class during their eighth grade year. Courses designated as career and technical education were not included.

Figure 7 displays the distribution of STAAR social studies raw scores. Note that the distribution is bimodal and slightly positively skewed. The skew indicates that students tended to score nearer the lower limit. Cases were excluded list-wise resulting in 5,113 cases with missing scores being excluded from the analysis.

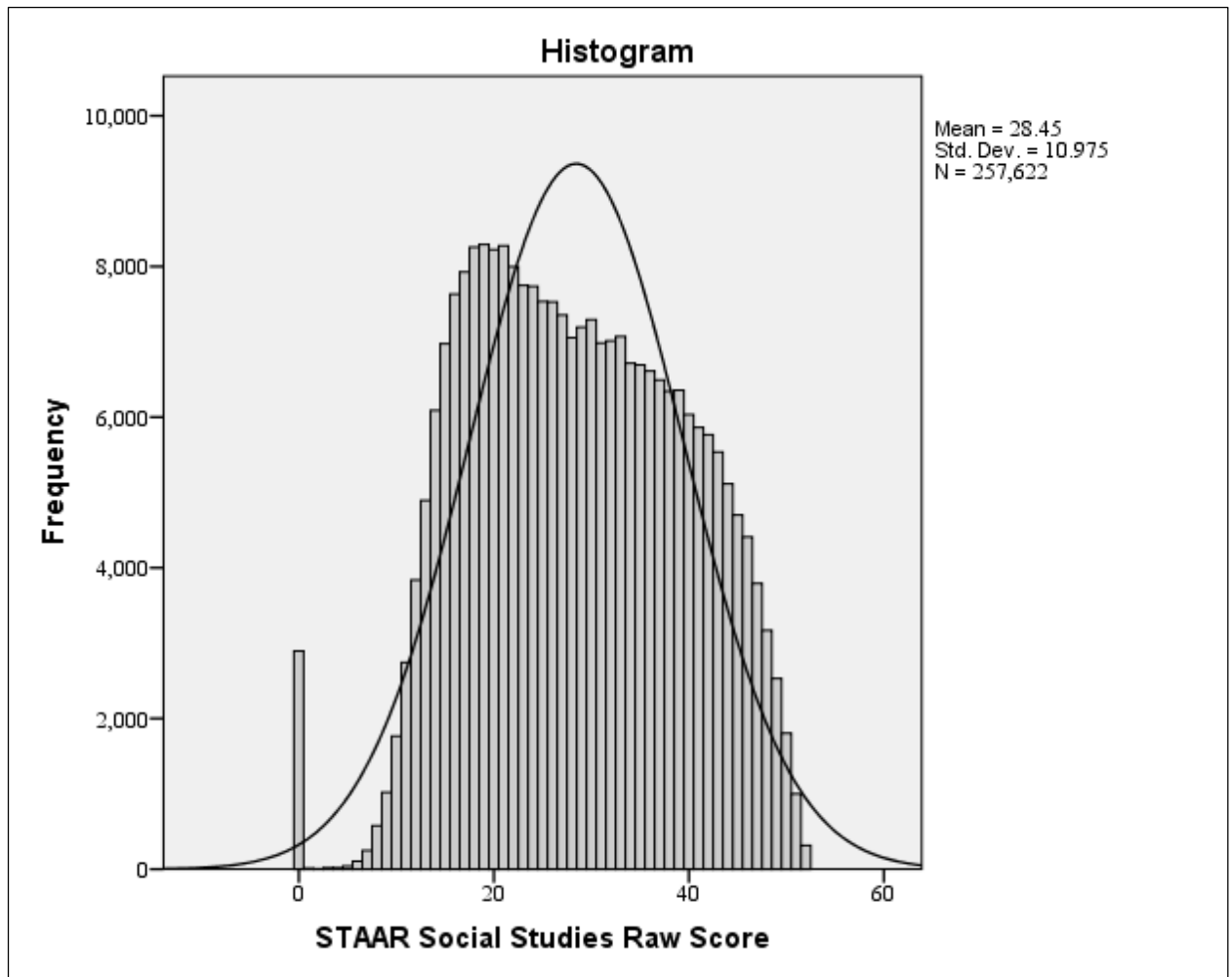


Figure 7. Distribution of STAAR social studies raw scores 2011-2012.

Sample sizes, means, and standard deviations of the participants are listed in Table 14 and grouped by teacher type for those who either taught (teachers) or had valid STAAR scores (students) in social studies courses during the 2011–2012 school year.

Table 14

*STAAR Social Studies Scores by Teacher Type*

Teacher type	Teachers		Students		STAAR Scores	
	<i>n</i>	%	<i>n</i>	%	<i>M</i>	<i>SD</i>
TTT participants	21	0.50	986	0.39	24.83	9.77
Other teachers	4,142	99.50	251,523	99.61	28.53	10.98
Total	4,163	100.00	252,509	100.00	28.45	10.98

The participants under study for this research question were 252,509 eighth grade students who had STAAR social studies test scores and attended Texas public schools during 2011-2012. Students of non-TTT participants had higher mean test scores and a larger standard deviation than their peers taught by TTT participants. Figure 8 is a graphic representation of the comparison of mean STAAR social studies test scores; the plot contains 95% of the scores of each group.



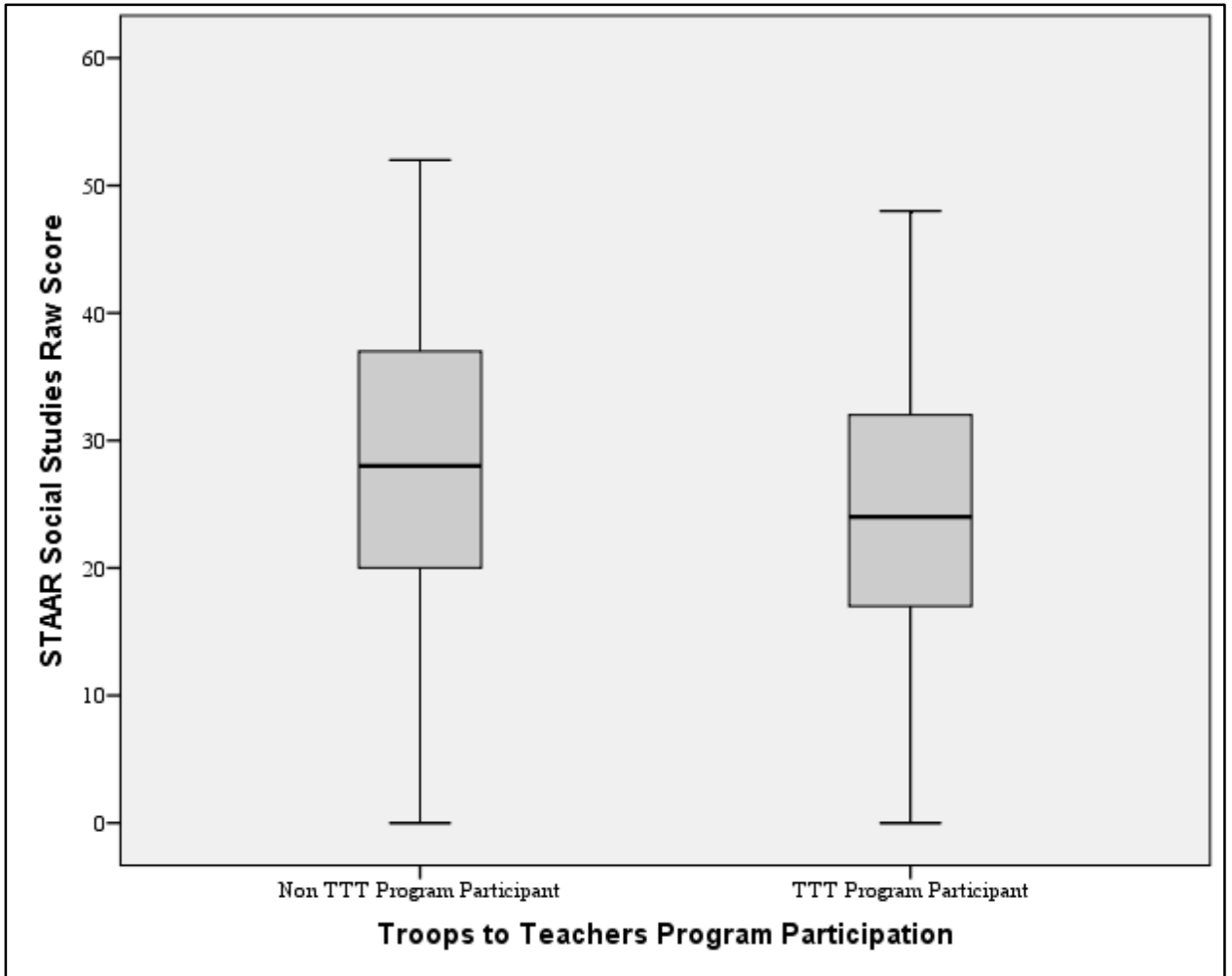


Figure 8. Simple boxplot STAAR social studies raw score by teacher type.

*Assumptions.* In terms of the assumption of normality of the distribution of the variances, the results of Levene's test,  $F(252,507) = 40.099, p < 0.05$ , indicated that the variances of the two populations are not assumed to be equal; the assumption of equal variance was violated. That being the case, the researcher chose to not assume the variances were equal and selected the lower value of the  $t$ -statistic. Independence of the samples is satisfied because each student who took the test exercised an independent effort; proctors monitored the students while they took the test. Despite the slight positive skew of the test scores, based on the results of the Levene's test, and with

satisfaction of the assumption of independence of the samples, the researcher chose to proceed with the independent samples *t* test.

***T test results.*** The *t* test revealed a significant difference between groups,  $t(994.782) = -11.881, p < .01, \eta^2 < 0.01$ . On average students of non-TTT participants scored higher than those of TTT participants (non-TTT:  $M = 28.53, SD = 10.98, n = 251,523$ ; TTT:  $M = 24.83, SD = 9.77, n = 986$ ). Thus, the null hypothesis of no statistically significant difference in the mean STAAR social studies scores between students taught by TTT program participants and other teachers was rejected. The 95% confidence interval for the difference between the means was -4.32 to -3.10. In accordance with the results, the finding of a statistically significant difference in the means tells us to expect that the confidence interval will not contain the value of zero; and it does not.

Follow-up nonparametric tests using SPSS functionality confirmed the researcher’s decision to reject the null hypothesis. Mann-Whitney *U* analysis revealed significant differences between the groups;  $p < .001$  with  $\alpha = .05$ .

Table 15 displays the SPSS output for group statistics, while table 16 displays the SPSS test results.

Table 15

*Group Statistics STAAR Social Studies by Teacher Type*

	Troops to Teachers Program Participation	N	Mean	Std. Deviation	Std. Error Mean
STAAR Social Studies Raw Score	TTT Program Participant	986	24.83	9.767	.311
	Non TTT Program Participant	251523	28.53	10.978	.022

Table 16

*Independent Samples Test Results STAAR Social Studies by Teacher Type*

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STAAR Social Studies Raw Score	Equal variances assumed	40.099	.000	-10.579	252507	.000	-3.704	.350	-4.391	-3.018
	Equal variances not assumed			-11.881	994.782	.000	-3.704	.312	-4.316	-3.093

**Summary**

Through the use of this causal-comparative research study, the researcher was able to determine if there were statistically significant differences between the mean STAAR scores of students taught by TTT participants and students taught by non-TTT participants, on the four subject area tests administered to Texas eighth grade students during school year 2011–2012. Descriptive statistics were developed for the student and teacher samples. Statistical analyses performed included multiple iterations of the independent samples *t* test and the Mann Whitney *U* (each one for each subject area tested). The mean STAAR score was the dependent variable, with teacher type the independent variable.

By determining if there were statistically significant differences in the mean STAAR test scores, the researcher was able to decide if the teacher type played a role in student achievement. Results were mixed. With respect to reading achievement, students of TTT teachers had higher, though not statistically significantly higher, mean STAAR scores than students of all other teachers. The researcher could not reject the null hypothesis with regard to differences between groups' mean reading score. In the

other three subject areas tested, mathematics, science, and social studies, students of non-TTT teachers had statistically significantly higher mean STAAR scores than students of TTT participants. The researcher rejected the null hypothesis in each case. In chapter five the researcher will discuss the implications and limitations derived from the results of the analysis reported in this chapter.

## CHAPTER FIVE: DISCUSSION

Chapter four contained the results from the TTT background questionnaire, along with the results from multiple iterations of the  $t$  test for independent samples. Each iteration was relative to one of the four research questions developed for this study, which is a causal-comparative examination of the impact of teacher type on student achievement. Each of the four research questions compared the mean subject-specific STAAR scores of Texas public school students taught by TTT participants with the mean subject-specific STAAR scores of all other Texas eighth grade students during academic year 2011–2012.

The purpose of this final chapter is to review the findings of this study and offer a discussion of the highlights. The chapter is divided into sections as follows:

- restatement of the problem;
- restatement of the research questions and associated null hypotheses;
- summary of the results of the findings;
- discussion of the findings;
- implications of the study related to the relevant literature;
- limitations of the study;
- recommendations for practical application and further research; and
- conclusion.

### **Restatement of the Problem**

The particular problem that this research addresses is: “Do second-career teachers, particularly TTT participants, have an effect on eighth grade student achievement as measured by mean subject-specific STAAR test scores?” Two

challenges intersect in this research: (a) bringing effective teachers into secondary schools and (b) maximizing student achievement. The TTT program is one pipeline that brings individuals with leadership experience, a successful first career, and technical expertise into the teaching profession. This second-career preparatory program allows participants to utilize many regional alternative teacher certification methods. In this study, TTT teachers form one-half of the independent variable; the other half consists of traditionally certified teachers. Traditionally certified teachers attain a bachelor's degree in an educational field after completing high school before going on to teach in a school.

Maximizing student achievement, currently measured nationally by batteries of standardized tests, is the heart of many programs in public education. Annually, the state of Texas assesses its students using the STAAR, a set of grade- and subject-specific standardized examinations. This study used the archival results from students in grade 8 that were tested in reading, mathematics, science, and social studies during the 2011–2012 school year.

### **Restatement of the Research Questions and Null Hypotheses**

The researcher constructed four research questions for the study, each question with an associated null hypothesis. These research questions are outlined below.

**Research question one.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis one.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question two.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis two.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

**Research question three.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis three.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program and those in grade 8 taught by all other teachers in science, as measured by their scores on the -2011–2012 State of Texas Assessment of Academic Readiness.

**Research question four.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

**Null hypothesis four.** There is no statistically significant difference between the performance of eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program TTT and those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness.

### **Summary of the Findings**

The researcher used a causal-comparative design to study the achievement of two groups of Texas students in public schools during the 2011–2012 school year on four subject-matter-specific standardized tests. The archival data used in the study was provided by the Texas Education Agency. Data files included information on 40,584 teachers, of which 123 were TTT participants, and data elements on 312,117 students. The independent variable was teacher type, with teachers categorized as TTT participants or as all other teachers. The dependent variable was mean student test score on each of the four subject-specific STAAR examinations.

**Research question one.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in reading, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?



The results of the  $t$  test evidenced no statistically significant difference between the STAAR reading test scores between students taught by TTT participants and students taught by all other teachers. Students taught by TTT participants had a mean STAAR reading test raw score of 35.43, while students taught by all other teachers had a mean score of 34.97.

The results of the  $t$  test suggest that teacher type may not have a statistically significant impact on student reading achievement. Based upon the results of the analysis for this research question, the null hypothesis could not be rejected because there was no statistically significant difference in the STAAR reading test scores between the two groups.

**Research question two.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in mathematics, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

The results of the  $t$  test evidenced a statistically significant difference in the STAAR mathematics test scores between students taught by TTT participants and students taught by all other teachers. Students taught by TTT participants had a mean STAAR mathematics test raw score of 26.21, while students taught by all other teachers had a mean score of 29.59.

The results of the  $t$  test suggest that teacher type may have a statistically significant impact on student mathematics achievement. Based upon the results of the analysis for this research question, the null hypothesis was rejected because of the

statistically significant difference in the STAAR mathematics test scores between the two groups.

**Research question three.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in science, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

The results of the  $t$  test evidenced a statistically significant difference in the STAAR science test scores between students taught by TTT participants and students taught by all other teachers. Students taught by TTT participants had a mean STAAR science test raw score of 32.82, while students taught by all other teachers had a mean score of 33.83.

The results of the  $t$  test suggest that teacher type may have a statistically significant impact on student science achievement. Based upon the results of the analysis for this research question, the null hypothesis was rejected because of the statistically significant difference in the STAAR science test scores between the two groups.

**Research question four.** How well do eighth grade students taught by teachers who obtained teaching credentials through the Troops to Teachers program perform relative to those in grade 8 taught by all other teachers in social studies, as measured by their scores on the 2011–2012 State of Texas Assessment of Academic Readiness?

The results of the  $t$  test evidenced no statistically significant difference in the STAAR social studies test scores between students taught by TTT participants and students taught by all other teachers. Students taught by TTT participants had a mean

STAAR social studies test raw score of 24.83, while students taught by all other teachers had a mean score of 28.53.

The results of the *t* test suggest that teacher type may have a statistically significant impact on student social studies achievement. Based upon the results of the analysis for this research question, the null hypothesis was rejected because of the statistically significant difference in the STAAR social studies test scores between the two groups.

### **Discussion of the Findings**

The results of this study generally parallel the results obtained in the original research with respect to student achievement of TTT participants in reading. Nunnery et al. (2008) found that students of “Troops teachers performed about equally well in reading, and achieved a small but statistically significant advantage in mathematics” (p. 2). The results of this work suggest that students of TTT participants achieved, on average, higher, though not statistically significant, mean test scores in reading than students of all other teachers. In terms of mathematics scores, however, this study evidenced that students of TTT teachers did not achieve higher test scores in mathematics based on teacher type.

The findings of the literature review, with respect to alternative certification of teachers, are reinforced by the outcome of this study. The mixed results relative to student achievement on the four subject-specific STAAR examinations suggest that alternatively certified teachers are equally prepared and as effective as traditionally prepared teachers. Stated another way, both teacher preparation pathways (i.e.,

traditional and alternative) appear to be equally useful in producing effective teachers (Darling-Hammond, 2011; Humphrey & Wechsler, 2007).

**Teacher and student demographics.** The differences in the demographics between the students taught by the two groups of teachers suggest that one purpose for the TTT program is indeed being fulfilled. That is, to get highly qualified teachers in front of the students that need them the most. The sample obtained from the TEA revealed that TTT teachers taught higher proportions of students with economic disadvantages (67.31% vs. 59.91%), special education needs (9.70% vs. 5.92%), and those identified as at-risk (48.8% vs. 40.0%) than their colleagues. TTT participants taught proportionately more males (55.46% vs. 51.23%), fewer gifted and talented students (4.70% vs. 7.72%), and higher proportions of students proficient in English (96.22% vs. 92.43%). Results from the TTT background questionnaire suggest that TTT participants in Texas taught primarily in urban public schools. These two indicators, when joined with the higher proportion of Black or African-American and Hispanic / Latino students taught by TTT teachers than their colleagues (20.43% vs. 12.48% and 58.02% vs. 52.04%, respectively), indicate that, on average, TTT teachers taught a group of students that were more English proficient, more diverse, and less gifted. Significantly, these students also struggled with other aspects of their lives outside of school.

The cumulative effects of cultural, social, economic, and other aspects of diversity may have influenced the results of this study. Future scholars in this area should attempt to control for aspects related to culture and socialization by limiting the setting of their research to particular schools or school districts in an effort to obtain a uniform sample,

though internally the sample may be diverse. This approach may account for the influence of suburbs or wealthy districts, and conversely may account for the impact of urban/rural districts.

The following sections discuss the results of the analysis, by research question. This organization allows the reader to focus on each analysis exclusively. Follow-on sections are intended to be summaries, that is, the discussion presented draws together the entirety of the analysis.

**Research question one.** The mean reading scores were virtually identical between groups; there was a difference of 0.466, with students taught by TTT teachers scoring on average slightly higher than students taught by non-TTT teachers. The smaller standard deviation of the TTT group (9.13 vs. 10.04) suggests a potential issue of uniform preparation or uniform teaching approach among TTT participants, resulting in fewer students who scored in the extremes.

As previously noted, the results correspond to similar findings published by Nunnery et al. (2008) in terms of reading achievement between groups segregated by teacher type. Compounding the results of the two studies implicates teacher type as influential in a student's reading achievement. The current study contributes to the field of existing research by adding a second quantitative element to the existing 2008 study. The current study was conducted on the state-level with a large student and teacher sample, and it effectively doubles the available quantitative research into the effects of teacher type on student achievement in reading and ELA.

**Research question two.** The mean mathematics scores were not close between groups, with students taught by non-TTT teachers scoring on average slightly higher

(3.376 or 12.88% higher) than students taught by TTT teachers. The smaller standard deviation (9.596 vs. 11.488) of the TTT group suggests a potential uniform preparation and a unique or uniform teaching approach among TTT participants, resulting in fewer students who scored in the extremes.

The results do not directly correspond to the findings of Nunnery et al. (2008) in terms of mathematics achievement between groups segregated by teacher type. Compounding the results of the two studies implicates teacher type as influential in a student's mathematics achievement.

These results may indicate that the outcome may have been affected by cultural or socio-economic differences, by personal circumstances, by a modeling connection (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978), by a teaching technique, by a subject matter mastery difference, by a testing or test preparation technique, or by some other element in the teacher–scholar relationship that is different between teacher types.

The current study contributes to the field of existing research by adding a second quantitative element, conducted on the state-level with a large student and teacher sample, to the existing 2008 study, effectively doubling the available quantitative research into the effects of teacher type on student mathematics achievement.

**Research question three.** The mean science scores were not close between groups, with students taught by non-TTT teachers scoring on average slightly higher (1.003 or 3% higher) than students taught by TTT teachers. The smaller standard deviation (9.789 vs. 10.317) of the non-TTT group suggests a potential uniform preparation and a unique or uniform teaching approach among non-TTT participants,

resulting in fewer students who scored in the extremes. This research question evidences the only episode where the *SD* of the non-TTT group was lower than the *SD* of the TTT group.

These results may indicate that the outcome may have been affected by cultural or socio-economic differences, by personal circumstances, by a modeling connection (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978), by a teaching technique, by a subject matter mastery difference, by a testing or test preparation technique, or by some other element in the teacher–scholar relationship that is different between teacher types.

The current study contributes to the field of existing research by providing a primary quantitative element, conducted on the state-level with a large student and teacher sample, to the quantitative research into the effects of teacher type on student science achievement.

**Research question four.** The mean social studies scores were not close between groups, with students taught by non-TTT teachers scoring on average slightly higher (3.704 or 14.92% higher) than students taught by TTT teachers. The smaller standard deviation (9.767 vs. 10.978) of the TTT group suggests a potential uniform preparation and a unique or uniform teaching approach among TTT participants, resulting in fewer students who scored in the extremes.

These results may indicate that the outcome may have been affected by cultural or socio-economic differences, by personal circumstances, by a modeling connection (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978), by a teaching technique, by a subject matter mastery difference, by a testing or test preparation

technique, or by some other element in the teacher–scholar relationship that is different between teacher types.

The current study contributes to the field of existing research by providing a primary quantitative element, conducted on the state-level with a large student and teacher sample, to the quantitative research into the effects of teacher type on students' social studies achievement.

### **Implications**

School administrators, legislators, principals, and teachers are constantly searching for ways to help students achieve more from their K–12 experience. This is particularly true in the current environment of high-stakes testing, teacher shortages, focus on science, technology, engineering, and mathematics (STEM), and efforts to tie teacher performance and pay to student test results. The results of this study support efforts by schools of education and school districts to bring more second-career professionals into the classroom. Results of the study reveal that in three of the four subjects (i.e., math, science, and social studies) the group of second-career teachers studied produced student achievement on par with achievement produced by their traditionally prepared colleagues.

The results of the study also support several implications for practitioners (teachers), and provide additional evidence for human resources professionals and those who make managerial and policy decisions in the education field to include not only TTT participants, but also second-career professionals in their search for classroom teachers. Practitioners are reminded that student achievement is not a linearly derived test score; rather, there are elements in the teacher–scholar relationship that may also influence



student achievement, several of which require additional exploration, such as teaching technique(s), years of teaching experience, and age (see Recommendations section below).

Practitioners should use the results of this study as a “jumping off point” for discussions on tactics, techniques, and procedures. For TTT participants, this is especially true in light of the finding that students of traditionally prepared teachers, on average, outperformed students of TTT teachers on three of the four STAAR examinations, despite the fact that TTT teachers were represented proportionately higher in their groups than non-TTT teachers in mathematics (25.20% and 13.34% of each group respectively), science, (13.82% and 9.51% of each group respectively), and social studies (17.07% and 10.24% of each group respectively).

In terms of methodology, the results of this study suggest that there is a difference in student achievement based on teacher type. The results suggest that there are differences between second-career teachers and traditionally prepared teachers, and that there may be differences in student achievement in different subject areas based on teacher type. The specific methods, modeling connections (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978), teaching techniques, and differences in approach to the teacher-scholar relationship between second-career teachers and traditionally prepared teachers are all areas for future research.

While the statistical technique chosen was adequate for comparison, the *t* test does not account for variations in teacher and student characteristics that may play a role in achievement, e.g. prior achievement or at-risk status. Additionally, because the independent variable contained only two categories, and questions were tested

independently, statistical adjustments, such as Bonferoni, were not applied. Future researchers should construct analyses that could take advantage of statistical methods to reduce the chance of a Type I error.

**Practical applications.** An analysis of the data suggests that administrators, hiring managers, and human resource professionals should include second-career teachers in their search for employees. In addition, legislators should find ways to craft budgets that ensure a continuum of support for alternative certification efforts. This study and previous quantitative works (Owings, et al., 2005; Nunnery et al., 2008) suggest that TTT participants may have a positive effect on students' achievement in the areas of reading mathematics, while also increasing the diversity in the teacher population.

### **Limitations**

This study had several limitations. These limitations were threats connected to the survey, and threats to the internal and external validity of the analysis. Threats to internal validity included, maturation and testing. Additional threats included the inability to account for several confounding variables related to prior student achievement and the inability to account for aspects related to teachers (i.e., years of teaching experience, age). The lack of ability to account for differences in teacher techniques and methods (i.e., differences in techniques, teaching tactics, classroom management practices, or test preparation methods) was also a limitation. In terms of external validity, there was a threat posed by the redaction of student information from the larger available file due to privacy concerns.

Surveys also have inherent limitations. The questionnaire used a self-report method. Intentional deception, poor memory, or misunderstanding of the questions, all

problems associated with self-reporting information, could have all contributed to inaccuracies in the data (Northrup, 1996). No statistical analysis, apart from collection of the results, was conducted on the eight questions of the TTT background questionnaire. It is possible that the questions were neither valid nor reliable. The researcher reduced these threats by using commonly understood terms (e.g., rural, suburban, urban) and reliance on organizational structures common in K-12 education (e.g., grade structure).

The researcher did not experience any technical glitches with the online survey because SurveyMonkey is a mature site. The online survey used in this study was simple, consisting of eight questions that required less than five minutes to complete.

The low return rate of the TTT background questionnaire (6.86%) could have been ameliorated by using several methods or pathways to connect with the target audience. The researcher used only one method, the postcard. Connecting with the target audience via email, mail, and phone may have generated a larger response. However, gathering the necessary additional information (e.g., email and phone numbers) would have made execution of the survey difficult, as the additional contact information would have required release of personally identifiable information by the TEA or the TTT offices. An additional option for contacting the target group would be to mail an additional set of invitations directly to each middle school in Texas. Once received, the invitations could have been distributed to each teacher via internal school mail. This method has drawbacks in terms of cost, time, and burden on school staff. This is also a less precise approach than direct mail to the individual; a combination of both methods, however, may have increased the return rate.

The study relied on archived data and lacked randomized assignment of students to control and treatment groups. The large sample size and expansive collection (across an entire state) however, worked to reduce this weakness.

Threats to internal validity of the study include maturation and testing (Gall, et al, 2010b). The eighth grade students matured physically and cognitively during the school year. The testing effect should be considered in terms of “teaching to the test;” that is, teachers may have prepared their students for the test by using test questions and conditions that simulated actual testing, producing the testing effect despite the difference in actual questions on the STAAR.

This study could not account for potential student covariates such as sex, race, ethnicity, SES, LEP, special education needs, gifted and talented status, and at-risk status, or prior achievement. Factors such as previous year STAAR score, overall grade point average, and students’ final course grade (subject-specific) should also be considered by future researchers (Gall, et al., 2010b).

Several possible covariates related to teacher type (the independent variable in the analysis) were not included in the analysis. Years of teaching experience, years teaching at the current grade or subject, and age are three components of a teacher’s skill and techniques. If added to the analysis, this information could have helped isolate teacher type.

A qualitative component, such as a short survey or interview, could have posed questions related to classroom techniques, such as “teaching to the test,” or whether a teacher provided extra-curricular reinforcement or instruction for students. Other areas of the students’ experience, such as available tutoring or peer teaching, may also help future researchers gain insight into differences in achievement.

The assumption of normality of distribution was violated in three of the four iterations of the  $t$  test. Caution should therefore be exercised when interpreting the results of the analysis, as there may be an increased risk of a Type I error. The researcher mitigated against this by executing a Mann Whitney  $U$  test for all research questions.

There were also threats to external validity present in the analysis. The statistical technique chosen (independent samples  $t$  test) was adequate, however future researchers may desire to account for teacher and student characteristics as covariates, thereby isolating the effect of teacher type on student achievement. Statistical techniques such as ANCOVA may be appropriate to that end.

The redaction of student information based on privacy concerns caused a large number of records to be removed from the data used in this study. Campus-level information indicating that a student or teacher attended or worked at a particular campus created concern on the part of the TEA over the ability of the researcher to be able to identify a particular student. For example, this could have been the case for a campus that has only one or two students of ethnicity  $X$ , making them identifiable if the researcher chose to probe. Thus, the experimentally accessible population, as defined by Bracht & Glass (1968), was composed of the student records that passed the ethics review and were allowed to be released by the TEA. It is impossible for the researcher to know if the records that were removed had concentrations of students relative to a particular teacher type.

The results of this causal-comparative study were generated based on a sample of eighth grade public school students across one state. The results are applicable only to eighth grade students in Texas. The results are not generalizable to eighth grade students in other states due to differences between the sample and other states in terms of

curriculum, school structure, or demographic makeup. Students in a different grade level, in a different state, in private and religious schools, and those tested in different subject areas could have had different academic achievement (Gall, et al., 2010b).

### **Recommendations for Further Research**

The findings of this study support the notion that teacher type does make a difference in student achievement. The following recommendations may not be universally applied, as they are directed at the group of teachers who participated in the study.

Several areas for further research can be derived from this work. Among these are qualitative inquiry into teacher type differences and the differences in teaching techniques or approaches and methods employed by TTT teachers, or any group of second-career teachers, and those used by traditionally prepared teachers. Additionally, researchers could embark upon a longitudinal examination of student progress (year-to-year) to examine these questions. Inquiry into the motivations and opportunities for second-career teachers can take several directions. The first or feeder career of second-career teachers can be explored in order to establish if a particular field is a provider. Tangents on this theme include: (a) age, (b) years of work experience in the primary field, and (c) the primary field itself (e.g., accounting) in order to reveal when and under what circumstances a choice for a second career is made. Moreover, investigation into the different attitudes and choices related to choice of school location (i.e., public, private, charter) could be useful to teacher preparation programs.

The desire for research studies that empirically examine the effectiveness of second-career teachers leads to a direct demand for replication studies, academically

cloning the initial effectiveness study that examined Florida teachers. Issues such as the passage of time, different regions of the country, differing populations, and shallowness or depth of the pool of program participants all offer avenues and reasons for exploration. With the passage of time, additional teachers would have joined schools across the nation, offering a larger sample for study. Immediately, researchers could embark upon more than 50 additional supporting studies, examining TTT participants across the nation. Other variations that would immeasurably grow the body of knowledge in this small area include expanding the comparison group to other first careers, and examining strictly urban or rural school systems. Researchers may also desire to examine the effects of second-career teachers with respect to race or sex of both the student and the teacher.

Different states also present opportunities to apply different standardized tests as a partial measure of student achievement; this line of thought, however, is dependent on the United States Department of Education waiver policy that may decrease the prevalence of standardized tests in the classroom. Finally, examining second-career teachers in private and religious schools, and comparing them with their colleagues in public schools, or comparing teachers in their respective groups based on total years of teaching experience or years of public/private school experience (matched pair comparison) may offer insight into the effects of experience or school culture on student achievement.

The role of culture in the educational achievement of students is not widely explored. This study provides evidence for the advancement of research with respect to student achievement based on cultural similarities with the teacher, as well as potential for research into modeling (Cherry, 2012a; Cherry, 2012b; Crawford, 1996; Mcleod, 2007; Vygotsky, 1978) effects in the teacher–scholar relationship.

This study could be replicated with any of the following variations: (a) the use of several notification methods to alert the survey population to the existence of the survey; (b) a focus on a different state; (c) the examination of a different group of second-career teachers (e.g., former accounts); (d) the expansion of the participant group to include private and religious schools; (e) the choice to group second-career teachers together; (f) the use matched-pair comparisons between TTT participants and other teachers based on years of teaching experience, race, sex, or ethnicity; (g) a focus on only one school or school district, especially an urban school as the setting; or (h) a focus on a different grade level, particularly the upper grades (9–12).

### **Conclusion**

The results of this study were mixed. Texas eighth grade students who were taught by TTT participants achieved higher mean STAAR test scores in reading than students of non-TTT teachers, though the results were not statistically significant. In mathematics, science, and social studies, students of non-TTT teachers had statistically significant, higher mean STAAR test scores than students of non-TTT teachers.

This study suggests that teacher type may effect student academic achievement. Student and teacher characteristics may play a role in student achievement, and the effects of teacher type may be peculiar to particular academic subjects or academic areas.



## REFERENCES

- Abbott, L. (2007). In University of Texas (Ed.), *Social learning theory*. Retrieved July 2, 2012 from [http://teachnet.edb.utexas.edu/~lynda\\_abbott/Social.html](http://teachnet.edb.utexas.edu/~lynda_abbott/Social.html)
- Accountability program must be rigorous, (2013, February 22). *Wyoming Tribune Eagle*. Retrieved March 19, 2013 from [http://www.wyomingnews.com/articles/2013/03/13/opinion/staff\\_editorials/column360.prt](http://www.wyomingnews.com/articles/2013/03/13/opinion/staff_editorials/column360.prt)
- Accountability, (2004, August 3). *Education Week*. Retrieved September 11, 2012 <http://www.edweek.org/ew/issues/accountability/>
- Anonymous. (2012). In loco parentis. In *The Free Dictionary*. Retrieved July 2, 2012 from <http://legal-dictionary.thefreedictionary.com/In+Loco+Parentis>
- Association for Educational Communications & Technology. (2001). *Elementary and Secondary Education Act of 1965 (ESEA)*. Retrieved July 2, 2012 from <http://www.aect.org/About/History/esea.htm>
- Au, M. S., & Nanna, M. J. (2007). The testing culture and the persistence of high stakes testing reforms. *Education & Culture*, 23(1), 55-72. Retrieved from Education Research Complete.
- Au, W. (2011). Teaching under the new Taylorism: High-stakes testing and standardization of the 21st century curriculum. *Journal of Curriculum Studies*, 43(1), 25-45. doi:10.1080/00220272.2010.521261.
- Auguste, M. (2010). Welcoming the alternate route teacher-librarian. *Teacher Librarian*, 37(3). Retrieved from Education Research Complete.

- Ballard, M. A. (2005). Second career military veterans teaching in the public school classroom: Why they are there, why they stay and why they leave. *Dissertation Abstracts*. Retrieved from ProQuest.
- Bandow, D., Minsky, B. D., & Voss, R. S. (2007). Reinventing the future: Investigating career transitions from industry to academia. *Journal of Human Resource Education, 1*(1), 23-37. Retrieved September 26, 2011 <http://business.troy.edu/JHRE/Articles/PDF/1-1/2.pdf>
- Bandura, A. (1977). *Social learning theory*. New York: General Learning Press.
- Bandura, A. (2009). *Bandura original footage* [Video file]. Retrieved from <http://www.bing.com/videos/search?q=bobo+doll+experiment&mid=13BDF7156D87C6A194EB13BDF7156D87C6A194EB&view=detail&FORM=VIRE2>
- Bank, D. (2007a). Troops to Teachers a model pathway to a second tour of duty. In *Civic Ventures Policy Series* (Troops to Teachers). Retrieved July 2, 2012 from [http://www.civicventures.org/publications/policy\\_papers/pdfs/troops\\_teach.pdf](http://www.civicventures.org/publications/policy_papers/pdfs/troops_teach.pdf)
- Bank, D. (2007b, Fall). Boots on the school ground. *Standard Social Innovation Review*. Retrieved July 2, 2012 from [http://www.ssireview.org/articles/entry/boots\\_on\\_the\\_school\\_ground/](http://www.ssireview.org/articles/entry/boots_on_the_school_ground/)
- Barna, E. G. (2008). A comparative analysis of high school students' perceptions of classroom quality in traditional pathway and second career teachers' classrooms. *Dissertation Abstracts*. Retrieved from ProQuest.
- Berg, M. (2004). An investigation of second-career music teaching. *Music Teacher Education, 14*(1). Retrieved from Education Research Complete.

- Berliner, D. (2011). Rational responses to high stakes testing: The case of curriculum narrowing and the harm that follows. *Cambridge Journal of Education*, 41(3), 287-302. doi:10.1080/0305764X.2011.607151.
- Billet, S. (2010). The perils of confusing lifelong learning with lifelong education. *International Journal of Lifelong Learning*, 29(4), 401-413. doi:10.1080/02601370.2010.488803.
- Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *International Review of Research in Open & Distance Learning*, 13(1), 56-71. Retrieved from Education Research Complete.
- Boeree, G. (2006). *Personality theories: Albert Bandura*. Retrieved July 2, 2012 from <http://webpace.ship.edu/cgboer/bandura.html>
- Bowen, B. (2010). Second-career mathematics teachers' knowledge of mathematical connections. *Dissertation Abstracts*. Retrieved from ProQuest.
- Boyd, D., Goldhaber, D., Lankford, H. M., & Wyckoff, J. (2007). The effect of certification and preparation on teacher quality. *The Future of Children*, 17(1), 45-68. Retrieved from Education Research Complete.
- Boyd, D., Grossman, P. L., Lankford, H., Loeb, S., & Wyckoff, J. (2005). How changes in entry requirements alter teacher workforce and affect student achievement. *Education Finance and Policy*, 1(2), 176-216. Retrieved from Education Research Complete.
- Bracht, G. H., & Glass, G. V. (1968). The external validity of experiments. *American Educational Research Journal*, 5, 437-474.

- Brannan, L., & Reichart, R. (2001). *Alternative teacher education: A review of selected literature*. Retrieved July 2, 2012 from [http://www.mcrel.org/PDF/TeacherPrepRetention/5021RR\\_4007\\_AltLitReview.pdf](http://www.mcrel.org/PDF/TeacherPrepRetention/5021RR_4007_AltLitReview.pdf)
- Brickman, W. W. (2010). The quest for quality in teacher education. *European Education*, 42(2), 67-73. doi:10.2753/EUE1056-4934420208.
- Buddin, R., & Zamarro, G. (2009, May). Teacher qualifications and student achievement in urban elementary schools. In The RAND Corporation (Ed.), *Rand Corporation Reports* (Rand Working Paper: Education, p. 42). Retrieved July 2, 2012 from [http://www.rand.org/content/dam/rand/pubs/reprints/2010/RAND\\_RP1410.pdf](http://www.rand.org/content/dam/rand/pubs/reprints/2010/RAND_RP1410.pdf)
- Bush, G. W. (2007). George W. Bush, 2004. In Office of the Federal Register (Ed.), *Public papers of the Presidents of the United States* (Vol. 1, p. 2). Washington, DC: Office of the Federal Register.
- Carr, K. (2009). Interview: Bryce Hack - high school chemistry teaching gets a boost. *Science Activities*, 46(2), 38-40. Retrieved from ERIC.
- Carter, J. H., & Keiler, L. S. (2009). Alternatively certified teachers in urban small schools: Where policy reform meets the road. *Urban Review*, 41, 437-460. doi:10.1007/s11256-008-0117-7.
- Castro, A. J., & Bauml, M. (2009). Why now? Factors associated with choosing teaching as a second career and their implications for teacher education programs. *Teacher Education Quarterly*, 36(1), 113-126. Retrieved from Education Research Complete.

- Chambers, D. (2002). The real world and the classroom: Second-career teachers. *The Clearing House*, 75(4), 212. Retrieved from ProQuest Education Journals.
- Chaparro-Ramirez, R. (2008). Troops to teachers: Transition from military culture to school culture. *Dissertation Abstracts*. Retrieved from ProQuest.
- Chase, S. A., & Tennant, J. E. (1986). *Employing retired military personnel as vocational education teachers* (ED 267 232, p. 87). Retrieved from Education Research Complete.
- Cherry, K. (2012a). *What is sociocultural theory*. Retrieved January 31, 2012 from <http://psychology.about.com/od/developmentcourse/f/sociocultural-theory.htm>
- Cherry, K. (2012b). *Social learning theory*. Retrieved July 2, 2012 from [http://www.city-journal.org/2009/19\\_4\\_hirsch.html](http://www.city-journal.org/2009/19_4_hirsch.html)
- Children's Bureau, Administration on Children, Youth, & Families, U.S. Department of Health & Human Services. (2009, November). Understanding the effects of maltreatment on brain development. *Child Welfare Information Gateway* (Issue Brief November 2009). Retrieved July 2, 2012 from [http://www.childwelfare.gov/pubs/issue\\_briefs/brain\\_development/brain\\_development.pdf](http://www.childwelfare.gov/pubs/issue_briefs/brain_development/brain_development.pdf)
- Clewell, B. C., Darke, K., Davis-Googe, T., Laurie, F., & Manes, S. (2000). Literature review on teacher recruitment programs. In The Urban Institute (Ed.), *Program and Evaluation Service Bulletin* (Planning and Evaluation Service, U.S. Department of Education). Retrieved January 31, 2012 from [www.ed.gov/offices/OUS/eval](http://www.ed.gov/offices/OUS/eval)

- Cogshall, J. G., & Sexton, S. K. (2008, May). Teachers on the move: A look at teacher interstate mobility policy and practice. In National Association of State Directors of Teacher Education & Certification (NASDTEC) (Eds.), Report. Retrieved July 2, 2012 from [http://www.nasdtec.org/docs/Final\\_Report.pdf](http://www.nasdtec.org/docs/Final_Report.pdf)
- Constantine, J., Player, D., Silva, T., Hallgren, K., Grider, M., Deke, H., & Warner, E. (2009). An evaluation of teachers trained through different routes to certification. In National Center for Education Evaluation & U.S. Department of Education. Regional Assistance (Eds.), *NCEE Report* (NCEE 2009-4043). Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- Coppola, J. (2011, August 18). *The educational theories of E. D. Hirsch*. Retrieved March 15, 2013 from <http://www.newfoundations.com/GALLERY/Hirsch.html>
- Crawford, K. (1996). Vygotskian approaches to human development in the information era. *Educational Studies in Mathematics*, 31(12), 43-62. Retrieved from <http://www.jstor.org/stable/3482934>
- Dabkowski, B. (2000). *The history of peer tutoring* [Professional paper]. Retrieved March 15, 2013 from <http://wrt-intertext.syr.edu/VIII/dabkowski.html>
- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. Retrieved from Education Research Complete.
- Darling-Hammond, L. (2009). Recognizing and enhancing teacher effectiveness. *The International Journal of Educational and Psychological Assessment*, 3, 25. Retrieved from Education Research Complete.

- Darling-Hammond, L. (2011). Teacher preparation: Build on what works. *Education Week*, 30(24), 26-36. Retrieved June 11, 2012 from <http://search.ebscohost.com.ezproxy.liberty.edu:2048/login.aspx?>
- Darling-Hammond, L., & Berry, B. (2006). High quality teachers for all. *Educational Leadership*, November, 14-20. Retrieved from Education Research Complete.
- Darling-Hammond, L., Berry, B., & Thoreson, A. (2001). Does teacher certification matter? Evaluating the evidence. *Education Evaluation and Policy Analysis*, 23(1), 47-77. Retrieved July 7, 2012 from <http://www.teachingquality.org/pdfs/doescertificationmatter.pdf>
- DC Teaching Fellows. (2012). *Program overview*. Retrieved March 3, 2013 from <http://dcteachingfellows.ttrack.org/AboutUs/ProgramOverview.aspx>
- Defense Activity for Non-Traditional Education Support, U. S. Department of Defense. (Ed.). (2012, February 9). *Troops to teachers-program overview*. Retrieved July 2, 2012, from dantes.doded.mil Web site: [http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT\\_Overview.html](http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT_Overview.html)
- Defense Activity for Non-Traditional Education Support, United States Department of Defense (Ed.). (2012a, February 9). *Troops to teachers - program overview*. Retrieved July 2, 2012 from [http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT\\_Overview.html](http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT_Overview.html)
- Defense Activity for Non-Traditional Education Support, United States Department of Defense (Ed.). (2012b, May 14). *Troops to teachers*. Retrieved June 25, 2012 from [http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT\\_Main.html](http://www.dantes.doded.mil/Sub%20Pages/TTT/TTT_Main.html)

- Eacott, S., & Holmes, K. (2010). Leading reform in mathematics education: Solving a complex equation. *Mathematics Teacher Education & Development*, 12(2), 84-97. Retrieved from Education Research Complete.
- Ediger, M. (2008). Leadership in the school setting. *Education*, 129(1), 17-20. Retrieved from ERIC.
- Education Commission of the States (Ed.). (2002). *No Child Left Behind policy brief: Teaching quality* [Policy brief]. Retrieved June 25, 2012 from <http://www.ecs.org/clearinghouse/34/63/3463.pdf>
- Education Testing Service. (2012). In Education Testing Service (Ed.), *Texas educator certification program*. Retrieved June 9, 2012 from <http://texas.ets.org/tecprogram/>
- Fairtest. (2007, August 17). In The National Center for Fair & Open Testing (Eds.), *Criterion- and standards- referenced tests* [Fact Sheet]. Retrieved July 22, 2012 from <http://fairtest.org/criterion-and-standards-referenced-tests>
- Feiman-Nemser, S., Schwille, S., Carver, C., & Yusko, B. (1999). A conceptual review of literature on new teacher induction. *Information Analysis* (Office of Educational Research SP039726). Retrieved from ERIC.
- Feistritzer, C. E. (2005, June 2). *Alternate routes are attracting talented individuals from other careers who otherwise would not become teachers*. Retrieved July 2, 2012 from <http://www.ncei.com/part.html>



- Feistritzer, C. E., Hill, M. D., & Willett, G. G. (1998). Profile of troops to teachers. In Washington National Center for Education Information (Ed.), *Agency Report* (Agency Report, p. 46). Retrieved from ERIC.
- Feistritzer, C. E. (1998). *Profile of troops to teachers*. Washington, DC: National Center for Education Information.
- Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal of Legislation*, 28(2), 465-498.
- Finn, C. E., Jr. (2002). Real accountability in K-12 education. In M. E. Williamson & H. Walberg (Eds.), *School accountability* (pp. 23-46). Retrieved March 19, 2013 from <http://hooverpress.org/productdetails.cfm?PC=976>
- FOCUS Saint Louis. (2005). In Corporation for Public Broadcasting (Ed.), *Who is accountable for children's education?* [Guide]. Retrieved March 19, 2013 from [http://www.pbs.org/newshour/btp/pdfs/stlouis\\_accountability\\_2005.pdf](http://www.pbs.org/newshour/btp/pdfs/stlouis_accountability_2005.pdf)
- Fosnot, C. T. (2005). *Constructivism. Theory, perspectives and practice* (2nd ed.). New York: Teachers College Press. (Original work published 1996).
- Franklin-Guy, S. (2010). A meta-analysis of excessive assessment practices in education: Negotiating the complexity and understanding the need for change. *International Journal of Learning*, 17(9), 331-338. doi:AN64439258.
- Freeman, M. (2010). Vygotsky and the virtual classroom: Sociocultural theory comes to the communications classroom. *Christian Perspectives in Education*, 4(1), 5. Retrieved January 31, 2012 <http://digitalcommons.liberty.edu/cpe/vol4/iss1/5>

- Freidus, H. (1990, April). *The call of the sirens? The influence of gender in the decision to choose teaching as a career change*. Conference paper presented at the annual meeting of the American Educational Research Association, Boston, MA.
- Freidus, H. (1992, April). *Men in a woman's world: A study of male second career teachers in elementary schools*. Conference paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Freidus, H., & Krasnow, M. (1991, April). *Second career teachers: Themes and variations*. Conference paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- Freund, L. S. (1990). Maternal regulation of children's problem-solving behavior and its impact on children's performance. *Child Development*, *61*(1), 113-126. doi:10.1111/1467-8624.ep9102040547.
- Fullan, M. (2009). Large-scale reform comes of age. *Journal of Educational Change*, *10*(2/3), 101-113. doi:10.1007/s10833-009-9108-z.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2010a). *Applying educational research* (6th ed.). Boston: Allyn & Bacon. (Original work published 1999).
- Gall, M. D., Gall, J. P., & Borg, W. R. (2010b). *Educational research: An introduction* (8th ed.). New York, NY: Allyn & Bacon. (Original work published 1963).
- Glod, M. (2009, June 4). Program helps military veterans become schoolteachers. *The Washington Post*. Retrieved June 27, 2012 from <http://www.washingtonpost.com/wp-dyn/content/article/2009/06/03/AR2009060303884.html>

- Goodwin, K. L. (2011). Perceptions of effectiveness of alternatively and traditionally licensed teachers. (Doctoral dissertation, Liberty University, 2011). *Dissertation Abstracts*. Retrieved from Liberty University Digital Commons.
- Gordon, R., Kane, T. J., & Staiger, D. O. (2006, April). The Hamilton Project. In The Brookings Institution (Ed.), *Discussion Paper* (pp. 1-40). Retrieved from Education Research Complete.
- Green, S. B., & Salkind, N. J. (2011). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (6th ed.). Upper Saddle River, NJ: Pearson.
- Grier, J. M., & Johnston, C. C. (2009). An inquiry into the development of teacher identities in STEM career changers. *Journal of Science Teacher Education, 20*, 57-75. Retrieved from Education Research Complete.
- Guskey, T. R. (2007). Multiple sources of evidence: An analysis of stakeholders' perceptions of various indicators of student learning. *Educational Measurement: Issues and Practice, 26*(1), 19-27. doi:10.1111/j.1745-3992.2007.00085.x.
- Haggard, C., Slostad, F., & Winterton, S. (2006). Transition to the school as workplace: Challenges of second career teachers. *Teaching Education, 17*(4), 317-327. Retrieved from Education Research Complete.
- Hammes, R. R. (1982). "In Loco Parentis": Considerations in teacher/student relationships. *The Clearing House, 56*(1), 8-11. Retrieved from ERIC.
- Hanushek, E. (1992). The trade-off between child quantity and quality. *Journal of Political Economy, 100*, 84-117.

- Hanushek, E. A. (2007). The single salary schedule and other issues of teacher pay. *Peabody Journal of Education*, 82(4), 574-586. Retrieved from Education Research Complete.
- Hanushek, E. A. (2011a, June 4). Recognizing the value of good teachers. *Education Week*, 30(27), 34-34. Retrieved from Education Research Complete.
- Hanushek, E. A. (2011b, Summer). Valuing Teachers. *Education Next*, 11(3). Retrieved from Education Research Complete.
- Harms, B. M., & Knobloch, N. A. (2005). Pre-service teachers' motivation and leadership behaviors related to career choice. *Career and Technical Education Research*, 30(2), 101-124. Retrieved from Education Research Complete.
- Haselkorn, D., & Hammerness, K. (2008). *Encore performances* (The Woodrow Wilson National Fellowship Foundation). Retrieved July 2, 2012 from [http://www.woodrow.org/images/pdf/policy/EncorePerformances\\_0908.pdf](http://www.woodrow.org/images/pdf/policy/EncorePerformances_0908.pdf)
- Haycock, K., & Hanushek, E. A. (2010). An effective teacher in every classroom. *Education Next*, 10(3), 46-52. Retrieved from Education Research Complete.
- Hirsch, E. D., Jr. (1983). Cultural literacy. *American Scholar*, 52(2), 159-169. Retrieved from Education Research Complete.
- Hirsch, E. D., Jr. (1996). *The schools we need and why we don't have them*. New York: Doubleday.
- Hirsch, E. D., Jr. (1999). Americanization and the schools. *The Clearing House*, 72(3), 136-139. Retrieved from ProQuest Central.
- Hirsch, E. D., Jr. (2006). *The knowledge deficit*. Boston: Mariner Books.

- Hirsch, E. D., Jr. (2009). Response. *Pedagogy*, 9(3), 520-523. Retrieved from Education Research Complete.
- Hirsch, E. D., Jr. (2010). Beyond comprehension. *American Educator*, 34(4), 30-36. Retrieved from ERIC.
- Hirsch, E. D., Jr. (2013, February 25). Mere facts, mere knowledge, mere college readiness [Blog]. Retrieved March 15, 2013 from The Core Knowledge Blog: <http://blog.coreknowledge.org/tag/domain-knowledge/>
- Hirsch, E. D., Jr., Podgursky, M., & Finn, C. E., Jr. (2004). Mental fight: A prescription for K-12. *Academic Questions*, 18(1), 66-68. Retrieved from Education Research Complete.
- Howell, D. C. (2011). *Fundamental statistics for the behavioral sciences* (7th ed.). Belmont, CA: Wadsworth. (Original work published 2008).
- Huang, F. L., & Moon, T. R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low performing schools. *Educational Assessment, Evaluation & Accountability*, 21, 209-234. doi:10.1007/s11092-009-9074-2.
- Humphrey, D. C., & Wechsler, M. E. (2007). Insights into alternative certification: Initial findings from a national study. *Teachers College Record*, 109(3), 486-530. Retrieved from Education Research Complete.
- Hurley, M. (2009). School reform and high stakes testing: Their impact on students in the United States and England. *International Journal of Learning*, 16(4), 145-154. Retrieved from Education Research Complete.

- Hussar, W. J. (1999). *Predicting the need for newly hired teachers in the United States 2008-09* (National Center for Educational Statistics). Retrieved January 31, 2012 from <http://nces.ed.gov/pubs99/1999026.pdf>
- Ingersoll, R. M. (2003). Is there really a teacher shortage? In Center for the Study of Teaching & Policy and The Consortium for Policy Research in Education (Eds.), *Research reports* (Research Report R-03-4). Retrieved July 7, 2012 from <http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf>
- Ingersoll, R. M. (2012). Power, accountability and the teacher quality problem. In S. Kelly (Ed.), *Assessing Teacher Quality* (pp. 97-109). Retrieved September 11, 2012 from [http://www.cpre.org/sites/default/files/chapter/1292\\_ingersollchapterinkellyvolume.pdf](http://www.cpre.org/sites/default/files/chapter/1292_ingersollchapterinkellyvolume.pdf)
- Institute of Education Sciences, National Center for Education Statistics. (2011). *Enrollment trends*. Retrieved June 25, 2012 from <http://nces.ed.gov/fastfacts/display.asp?id=65>
- Izumi, L. T., & Evers, W. M. (2002). State accountability systems. In M. E. Williamson & H. Walberg (Eds.), *School accountability* (pp. 105-153). Retrieved March 19, 2013 from <http://www.hooverpress.org/productdetails.cfm?PC=976>
- Jenne, J. T. (1996, November). *Common assumptions about second career teachers and the social studies*. Conference paper presented at the annual meeting of the National Council for the Social Studies, Washington, DC.
- Jenne, J. T. (1997). Conserving the status quo in social studies teaching: The case of second career military teachers. *Theory & Research in Social Education*, 25(4), 446-469. Retrieved from Education Research Complete.

- Jensen, E. (2009). *Teaching with poverty in mind*. Retrieved July 2, 2012 from <http://www.ascd.org/publications/books/109074/chapters/How-Poverty-Affects-Behavior-and-Academic-Performance.aspx>
- Johnson, D. (2009, December 23). *High stakes testing*. Retrieved October 10, 2013, from [www.education.com](http://www.education.com) Web site: <http://www.education.com/reference/article/high-stakes-testing1/>
- Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. *Economics of Education Review*, 27(6), 615-631. doi:10.1016/j.econedurev.2007.05.005.
- Kelly, G. (2011, March 4). Khaki's all very well, but troops to teachers is a military intervention too far: Comment. *The Times Educational Supplement*, p. 2. Retrieved July 2, 2012 from Times Educational Supplement Web site: <http://proquest.umi.com/pqdlink?did=2325436051&Fmt=3&clientI>
- Kungu, K., & Machtmes, K. (2009). Lifelong learning: Looking at triggers for adult learning. *International Journal of Learning*, 16(7), 501-511. Retrieved from Education Research Complete.
- Lacour, M., & Tissington, L. D. (2011). The effects of poverty on academic achievement. *Education Research and Reviews*, 6(7), 522-527. Retrieved July 2, 2012 from <http://www.academicjournals.org/ERR/PDF/Pdf%202011/July/Lacour%20and%20Tissington.pdf>
- LaRocco, D. J., & Bruns, D. A. (2006a). Practitioner to professor: An examination of second career academics' entry into academia. *Education*, 126(4), 626-639. Retrieved from ERIC.

- LaRocco, D. J., & Bruns, D. A. (2006b, April). *Practitioner to professor: Second career academics' perceptions of entry into the academy*. Conference paper presented at the annual Council for Exceptional Children convention and expo, Salt Lake City, UT.
- Lee, D. (2010). Non-traditional entrants to the teaching profession: A hermeneutic phenomenological study of the motivations, experiences, and reflections of second-career teachers. (Doctoral dissertation, Liberty University, 2010). *Dissertation Abstracts International*, 305.
- Linek, W. M., Sampson, M. B., Gomez, K. A., Linder, P. E., Torti, C., Levingston, C., & Palmer, J. (2009). Middle school alternatively certified science teachers: Resources, teacher choices, and student achievement. *Journal of Educational Research*, 102(6), 403-414. Retrieved from Education Research Complete.
- Longo, C. (2010). Fostering creativity or teaching to the test? Implications of state testing on the delivery of science instruction. *The Clearing House*, 83, 54-57. doi:10.1080/00098650903505399.
- Madkins, T. C. (2011). The black teacher shortage: A literature review of historical and contemporary trends. *Journal of Negro Education*, 80(3), 417-427. Retrieved from Education Research Complete.
- Maryland State Department of Education (Ed.). (2003). *General definition of a high qualified teacher*. Retrieved June 25, 2012 from [http://www.marylandpublicschools.org/MSDE/programs/esea/docs/TQ\\_Regulations/general\\_definition.htm](http://www.marylandpublicschools.org/MSDE/programs/esea/docs/TQ_Regulations/general_definition.htm)



- Maslow, A. (1987). *Motivation and personality* (3rd ed.). New York: Addison-Wesley.  
(Original work published 1954).
- McCaffrey, D. F., Lockwood, J. R., Koretz, D. M., & Hamilton, L. S. (2003). Evaluating value-added models for teacher accountability. In The RAND Corporation (Ed.), *RAND Education* (RAND Corporation Report). Retrieved July 2, 2012 from [http://www.rand.org/pubs/monographs/2004/RAND\\_MG158.pdf](http://www.rand.org/pubs/monographs/2004/RAND_MG158.pdf)
- McCree, H. (1993, November). *Post-career military as an alternative pool of teacher candidates*. Conference paper presented at the annual meeting of the Mid-South Educational Research Association, New Orleans, LA.
- McDonald, J. R. (2008). A case study of second-career alternatively certified science teachers: What research and understanding of nature of science do they bring to classroom practices? *Dissertation Abstracts*. Retrieved from ProQuest.
- McLaughlin, M. J., & Rhim, L. M. (2007). Accountability frameworks and children with disabilities: A test of assumptions about improving public education for all students. *International Journal of Disability, Development and Education*, 54(1), 25-49. Retrieved from Education Research Complete.
- McLeod, S. (2007). *Vygotsky*. Retrieved July 2, 2012 from <http://www.simplypsychology.org/vygotsky.html>
- McMurray, A. J. (2008). Troops to teachers: Future implications for teacher educators. *The Teacher Educator*, 43, 315-321.
- McNay, M. (2001). Insights from the life history of a second career male grade one teacher. *McGill Journal of Education*, 36(2), 131-148. Retrieved from Education Research Complete.

Morris, A. L. (2002). Teacher retention: A comparison of alternate route, special alternate route, and approved program route licensure in Mississippi. *Dissertation Abstracts*. Retrieved from ProQuest.

National Center for Education Evaluation, & Regional Assistance, U.S. Department of Education. (2009). An evaluation of teachers trained through different routes to certification. In J. Constantine, D. Player, T. Silva, K. Hallgren, M. Grider, J. Deke, & E. Warner (Eds.), *NCEE Report* (NCEE 2009-4043). Washington, DC: U.S. Department of Education.

National Commission on Teaching & America's Future & NCTAF State Partners. (2002). *Unraveling the "teacher shortage" problem: Teacher retention is the key* (Symposium Report). Retrieved July 7, 2012 from [http://www.ncsu.edu/mentorjunction/text\\_files/teacher\\_retentionsymposium.pdf](http://www.ncsu.edu/mentorjunction/text_files/teacher_retentionsymposium.pdf)

National Comprehensive Center for Teacher Quality & Public Agenda. (2007). Working without a net: How new teachers from three prominent alternate route programs describe their first year on the job. In J. Rochkind, A. Ott, J. Immerwahr, J. Doble, & J. Johnson (Eds.), *Lessons learned: New teachers talk about their jobs, challenges and long-range plans* (Issue no. 2). Retrieved July 2, 2012 from [http://www.publicagenda.org/files/pdf/lessons\\_learned\\_3.pdf](http://www.publicagenda.org/files/pdf/lessons_learned_3.pdf)

National Council for Accreditation of Teacher Education. (2012a). *NCATE glossary*. Retrieved July 7, 2012 from <http://www.ncate.org/Standards/NCATEUnitStandards/NCATEGlossary/tabid/477/Default.aspx>

- National Council for Accreditation of Teacher Education. (2012b, July 10). *Accredited institutions by state: Texas*. Retrieved July 10, 2012 from <http://ncate.org/tabid/177/Default.aspx?state=tx>
- National Education Association. (2013). *Issues and action*. Retrieved March 4, 2013 from <http://www.nea.org/home/IssuesAndAction.html>
- Nebraska State Education Association. (2012). In Nebraska State Education Association (Ed.), *National teacher shortage*. Retrieved July 2, 2012 from <http://nsea.org/policy/salaries/index.htm>
- New York State Education Department. (2006). *The New York State's revised plan to enhance teacher quality* (Revised plan). Retrieved July 2, 2012 from <http://www2.ed.gov/programs/teacherqual/hqtplans/ny.pdf>
- Newman, E. (2010). I'm being measured as an NQT, that isn't who I am: An exploration of the experiences of career changer primary teachers in their first year of teaching. *Teachers and Teaching: Theory and Practice*, 16(4), 461-475. Retrieved from Education Research Complete.
- Northrup, D. A. (1996). *The problem of the self-report in survey research*. Retrieved September 30, 2013 from <http://www.math.yorku.ca/ISR/self.htm>
- Novak, D., & Knowles, J. G. (1992, April). *Life histories and the transition to teaching as a second career*. Conference paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

- Nunnery, J. A., Owings, W. A., Kaplan, L. S., & Pribesh, S. (2008). *The effects of Troops-to-Teachers on student achievement: A meta-analytic approach* (Final Report for Troops to Teachers). Norfolk, VA: Old Dominion University, College of Education.
- Opfer, V. D., Henry, G. T., & Mashburn, A. J. (2008). The district effect: Systemic responses to high stakes accountability policies in six southern states. *American Journal of Education, 114*(2), 299-332. Retrieved from Education Research Complete.
- Owings, W. A., & Kaplan, L. S. (2010). *Effectiveness of Troops to Teachers who have become school administrators: A national survey* (Report to Executive Director Troops to Teachers). Norfolk, VA: Old Dominion University, College of Education.
- Owings, W. A., Kaplan, L. S., Nunnery, J., Marzano, R., Myran, S., & Blackburn, D. (2005). *Supervisor perceptions of the quality of Troops to Teachers program completers and program completer perceptions of their preparation to teach: A national survey* (Report prepared for Director, Virginia Office of Troops to Teachers, p. 79). Norfolk, VA: Old Dominion University, College of Education.
- Pearson Educational Measurement Psychometric Services. (2006, April). *TAKS higher education readiness component (HERC) contrasting groups study*. Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/reports/>
- Perez, E. (2006, September 6). From Troops to Teachers. *The Orange County Register*. Retrieved July 2, 2012 from <http://www.ocregister.com/news/school-39157-military-moore.html>

- Peter D. Hart Research Associates. (2010). *Career changers in the classroom*. Retrieved July 7, 2012 from [http://www.woodrow.org/images/pdf/policy/CareerChangersClassroom\\_0210.pdf](http://www.woodrow.org/images/pdf/policy/CareerChangersClassroom_0210.pdf)
- Peterson, P. E., & Nadler, D. (2009). What happens when states have genuine alternative certification? *Education Digest*, 75(1), 57-60. Retrieved from Education Research Complete.
- Picha, C. (2012). *Troops to Teachers*. Retrieved July 2, 2012 from <http://teaching.monster.com/careers/articles/10320-troops-to-teachers>
- Postal, L. (2013, February 22). Teacher evaluation bill would count “student performance” less, dropping it to 40% and adding in other measures of teaching [Blog]. Retrieved March 3, 2013 from Sentinal School Zone Web site: [http://blogs.orlandosentinel.com/news\\_education\\_edblog/2013/02/teacher-evaluation-bill-would-count-student-performance-less-dropping-it-to-40-and-adding-in-other-measures-of-teaching.html](http://blogs.orlandosentinel.com/news_education_edblog/2013/02/teacher-evaluation-bill-would-count-student-performance-less-dropping-it-to-40-and-adding-in-other-measures-of-teaching.html)
- Riccards, P. (n.d.). What is student achievement [Blog]. Retrieved July 2, 2012 from [http://teaching.monster.com/benefits/articles/5119-what-is-student-achievement#comment\\_form](http://teaching.monster.com/benefits/articles/5119-what-is-student-achievement#comment_form)
- Rice, J. K. (2012). *Teacher quality: Understanding the effectiveness of teacher attributes*. Retrieved September 9, 2012 from [http://www.epi.org/publication/books\\_teacher\\_quality\\_execsum\\_intro/](http://www.epi.org/publication/books_teacher_quality_execsum_intro/)

- Risacher, B. F. (1998). *Scientists and mathematicians become school teachers*. Washington, DC: ERIC Clearinghouse for science, mathematics, and environmental education. (ERIC Document Reproduction Service No. RR93002013).
- Robertson, J. S., & Singleton, J. D. (2010). Comparison of traditional versus alternative preparation of special education teachers. *Teacher Education & Special Education, 33*(3), 213-224. doi:10.1177/0888406409359904.
- Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economics Review, 94*(2), 247-252. Retrieved from Education Research Complete.
- Rogers, J. (2005). Aspiring to leadership-identifying teacher-leaders. *Medical Teacher, 27*(7), 629-633. doi:10.1080/01421590500156228.
- Roose, G. (2012, April 11). *Federal program helps local veteran lead in the classroom*. Retrieved July 2, 2012 from <https://woub.org/2012/04/11/federal-program-helps-local-veteran-lead-classroom>
- Rothman, R., & Barth, P. (2009, December 17). *How good are your teachers? Trying to define teacher quality*. Retrieved June 25, 2012 from <http://www.centerforpubliceducation.org/Main-Menu/Staffingstudents/How-good-are-your-teachers-Trying-to-define-teacher-quality/default.aspx>
- Runnalls, J. J., & others. (1970). *Pre-service teacher recruitment, training, & placement for professional personnel retiring from industry* (Report No. NIH-90-7921). Menomonie, WI: Stout State University. (ERIC Document Reproduction Service No. NIH-90-792)

- Sanders, W. L., & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement. In *Research Progress Report* (Research Progress Report). Knoxville, TN: University of Knoxville Value-Added Research and Assessment Center.
- Scaffolding. (2013). In *North Central Regional Educational Laboratory*. Retrieved March 15, 2013 from <http://www.ncrel.org/sdrs/areas/issues/students/learning/lr1scaf.htm>
- Schneider, A., & Burton, N. (2005). An ideal “type”? - The characteristics of effective school principals as perceived by aspiring principals both from within education and those from an alternate career path. *Management in Education, 19*(2), 6-9. Retrieved from Education Research Complete.
- Shaw, M. (2008). The impact of alternative teacher certification programs on teacher shortages. *International Journal of Learning, 15*(3), 89-97. Retrieved from Education Research Complete.
- Shepard, L. A. (2008). The role of assessment in a learning culture. *Journal of Education, 189*(1/2), 95-106. Retrieved from Education Research Complete.
- Smith, S. J., & Pantana, J. J. (2010, April). Pre-service second-career teachers in a blended online-residential preparation program: Profiling characteristics and motivations [Faculty Publications and Presentations #143]. Retrieved from Digital Commons @ Liberty University, [http://digitalcommons.liberty.edu/educ\\_fac\\_pubs/143](http://digitalcommons.liberty.edu/educ_fac_pubs/143)

Stanley, B., & Martin, E. (2009). Research based alternative certification: The answer to teacher attrition. *Southeastern Teacher Education Journal*, 2(3), 101-111.

Retrieved from Education Research Complete.

State Board for Educator Certification. (n.d.). *Educator certification online system*.

Retrieved July 10, 2012 from <http://www.sbec.state.tx.us/SBECONLINE/approvedprograms.asp?s=3#r1>

Stern, S. (2009, Autumn). E. D. Hirsch's Curriculum for Democracy. *City Journal*, 19(4),

7. Retrieved June 2, 2012 from [http://www.city-journal.org/2009/19\\_4\\_hirsch.html](http://www.city-journal.org/2009/19_4_hirsch.html)

Student Assessment Division, Texas Education Agency. (2010, October 15). In Texas Education Agency (Ed.), *STARR to TAKS comparison studies* [Fact Sheet].

Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/staar/>

Student Assessment Division, Texas Education Agency. (2012, July 20). In Texas Education Agency Student Assessment Division (Ed.), *Testing calendar*.

Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/calendars/>

Supovitz, J. (2009). Can high stakes testing leverage educational improvement? Prospects from the last decade of testing and accountability reform. *Journal of Educational Change*, 10, 211-227. doi:10.1007/s10833-009-9105-2.

Teach for America. (2011). *Our Organization*. Retrieved June 25, 2012, from

teachforamerica.org Web site: <http://www.teachforamerica.org/our-organization>



- Texas Education Agency (Ed.). (2009c, January 12). Texas Education Agency growth model pilot application for adequate yearly progress determinations under the No Child Left Behind Act [Revised Proposal]. Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/measures/archive/>
- Texas Education Agency. (2009a). Chapter 16: Reliability. In Texas Education Agency (Ed.), *Technical Digest 2007-2008* (Vols. 2007-2008, pp. 151-162). Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/techdigest/yr0708/>
- Texas Education Agency. (2009b). Chapter 17: Validity. In Texas Education Agency (Ed.), *Technical Digest 2007-2008* (Vols. 2007-2008, pp. 177-184). Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/techdigest/yr0708/>
- Texas Education Agency. (2010). Technical digest. In *Technical Digest* (Chapter 3, Technical Digest 2010–2011). Retrieved July 10, 2012 from <http://www.tea.state.tx.us/student.assessment/techdigest/yr1011.aspx>
- Texas Education Agency. (2011a, August 15). In Texas Education Agency Student Assessment Division (Ed.), *TAKS revised information booklets*. Retrieved July 22, 2012 from <http://www.tea.state.tx.us/student.assessment/taks/infobooks/>
- Texas Education Agency. (2011b, November 4). *TAKS Resources*. Retrieved July 10, 2012 from <http://www.tea.state.tx.us/student.assessment/taks/>
- Texas Education Agency. (2012, February 13). *Gifted and talented education - Frequently asked questions*. Retrieved March 13, 2013 from <http://www.tea.state.tx.us/index2.aspx?id=6263>

- Texas Education Agency. (n.d.a). In Texas Education Agency (Ed.), *Snapshot 2011 summary tables district size*. Retrieved July 10, 2012 from <http://ritter.tea.state.tx.us/perfreport/snapshot/2011/distsize.html>
- Texas Education Agency. (n.d.b). In Texas Education Agency (Ed.), *2011 Snapshot summary tables state totals*. Retrieved July 10, 2012 from <http://ritter.tea.state.tx.us/perfreport/snapshot/2011/state.html>
- Texas Education Agency. (n.d.c). In Texas Education Agency (Ed.), *Determining an appropriate index of reliability for the TAKS mixed-model tests* [Fact Sheet]. Retrieved July 22, 2012 from [http://search.tea.state.tx.us/search?q=cache:5r0apcHDp8oJ:www.tea.state.tx.us/WorkArea/linkit.aspx%3FLinkIdIdentifier%3Ddid%26ItemID%3D2147494128%26libID%3D2147494125+TAKS+reliability&access=p&output=xml\\_no\\_dtd&client=default\\_frontend&ie=UTF-8&proxystylesheet=default\\_frontend&site=default\\_collection&oe=UTF-8](http://search.tea.state.tx.us/search?q=cache:5r0apcHDp8oJ:www.tea.state.tx.us/WorkArea/linkit.aspx%3FLinkIdIdentifier%3Ddid%26ItemID%3D2147494128%26libID%3D2147494125+TAKS+reliability&access=p&output=xml_no_dtd&client=default_frontend&ie=UTF-8&proxystylesheet=default_frontend&site=default_collection&oe=UTF-8)
- Texas Education Agency. (n.d.d). In Texas Education Agency (Ed.), *Independent School District – At-risk assessment form*. Retrieved March 13, 2013 from <http://www.tea.state.tx.us/WorkArea/linkit.aspx?LinkIdIdentifier=id&ItemID=2147494459&libID=2147494456>
- Texas Education Agency. (n.d.e). In Texas Education Agency (Ed.), *Vertical scale* [Information Sheet]. Retrieved July 2, 2012 from <http://www.tea.state.tx.us/student.assessment/taks/vertscales/>

- Texas Education Agency. (November 17, 2008). A review of the literature on the comparability of scores. In *Texas Educational Agency Technical Report Series*. Retrieved July 10, 2012 from <http://www.tea.state.tx.us/student.assessment/techdigest/>
- Texas Troops to Teachers. (2012, June 29). *Texas Troops to Teachers*. Retrieved July 12, 2012 from <http://www.texas troopstoteachers.org/index.html>
- Thompson, G. L., & Allen, T. G. (2012). Four effects of the high-stakes testing movement on African-American K-12 students. *Journal of Negro Education*, 81(3), 218-227. Retrieved from Education Research Complete.
- Thurlow, M. (n.d.). In The Gale Group (Ed.), *Accountability*. Retrieved September 11, 2012 from <http://www.education.com/reference/article/accountability/>
- Trent, J., & Gao, X. (2009). At least I'm the type of teacher I want to be: Second-career English language teachers' identity formation in Hong Kong secondary schools. *Asia-Pacific Journal of Teacher Education*, 37(3), 253-270. Retrieved from Education Research Complete.
- Troops to Teachers Program. (2011, December 19). *Troops to teachers list of program services* [Fact Sheet]. Retrieved July 2, 2012 from [http://www.dantes.doded.mil/Sub%20Pages/TTT/Docs/Program\\_Services.pdf](http://www.dantes.doded.mil/Sub%20Pages/TTT/Docs/Program_Services.pdf)
- U.S. Government Accountability Office. (2006, March). Troops to Teachers. In *Report to Congressional Committees* (GAO-06-265). Retrieved July 2, 2012 from <http://www.gao.gov/new.items/d06265.pdf>

- United States Department of Education (Ed.). (2004, March). *New No Child Left Behind flexibility: Highly qualified teachers* [Fact sheet]. Retrieved June 25, 2012 from <http://www2.ed.gov/nclb/methods/teachers/hqtflexibility.html>
- United States Department of Education. (2009, November). *Race to the top program* (Executive Summary). Retrieved September 9, 2012 from <http://www2.ed.gov/programs/racetothetop/executive-summary.pdf>
- United States Department of Education. (2010, March). *A Blueprint for reform: The reauthorization of the Elementary and Secondary Education Act*. Retrieved October 10, 2013, from [www2.ed.gov/policy/elsec/leg/blueprint](http://www2.ed.gov/policy/elsec/leg/blueprint) Web site: [www2.ed.gov/policy/elsec/leg/blueprint](http://www2.ed.gov/policy/elsec/leg/blueprint)
- Urban Institute. (2000). *Literature review on teacher recruitment programs* [Brochure]. Retrieved January 31, 2012 from [http://www2.ed.gov/offices/OUS/PES/lit\\_review.doc](http://www2.ed.gov/offices/OUS/PES/lit_review.doc)
- Vigoda-Gadot, E., Yehuda, B., & Shmuel, G. (2010). Career transitions: An empirical examination of second career military retirees. *Public Personnel Management*, 39(4), 379-404. Retrieved from ERIC.
- Vygotsky, L. (1978). *Mind and society*. Cambridge, MA: Harvard University Press.
- Wilcox, D. R., & Samaras, A. P. (2009). Examining our career switching teachers first year of teaching: Implications for alternative teacher education program design. *Teacher Education Quarterly*, Fall, 173-191. Retrieved from Education Research Complete.
- William, D. (2010). Standardized testing and school accountability. *Educational Psychologist*, 45(2), 107-122. doi:10.1080/00461521003703060.

- Wilkins, J. L., & Jones, B. D. (2009). An examination of a state-level mathematics test: What type of learning does the test actually measure? *Planning and Change*, 40(3&4), 194-206. Retrieved from Education Research Complete.
- Wong, M. (n.d.). Trauma leaves children behind: The effects of violence, traumatic stress, and depression on academic achievement and school attendance [PowerPoint slides]. Retrieved July 2, 2012 from <http://www.cimh.org/downloads/handouts/T300%20Wong.%20M%20MHSATrauma%20leaves%20children%20behind%20Wong%20Aug%202%2006.pdf>
- Wright, P. (2013, March 15). Op-Ed: Student achievement, the real goal of education evaluation. *South Brunswick Patch*. Retrieved March 16, 2013 from <http://southbrunswick.patch.com/articles/op-ed-student-achievement-the-real-goal-of-educator-evaluation>

## Appendix A: Institutional Review Board Approval



The Graduate School at Liberty University

June 14, 2013

Kurt Osuch

IRB Exemption 1619.061413: The Impact of Troops to Teachers Participants on Student Achievement: A Causal-Comparative Study

Dear Kurt,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b) (2, 4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
  - (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
  
- (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at [irb@liberty.edu](mailto:irb@liberty.edu).

Sincerely,

A handwritten signature in black ink, appearing to read "Fernando Garzon".

**Fernando Garzon, Psy.D.**  
Professor, IRB Chair  
Counseling

(434) 592-4054



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## **Appendix B: Informed Consent Letter**

The Impact of Troops to Teachers Participants on Student Achievement: A Causal-Comparative Study. This study is being conducted by Kurt S. Osuch, a researcher from the Liberty University School of Education.

You are invited to participate in a research study on the impact of Troops to Teachers program participants on student achievement. You were selected because you are a participant in the Troops to Teachers program. Please read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Kurt S. Osuch, doctoral candidate, School of Education, Liberty University.

### **Background Information:**

The purpose of this study is to examine the impact of a particular group of second-career teachers, Troops to Teachers participants, on student achievement. The researcher poses four questions: How well do eighth grade students in Texas public schools, who are taught by Troops to Teachers program participants, perform relative to their peers on State of Texas Assessment of Academic Readiness (STAAR) examinations in reading, mathematics, science, and social studies?

### **Procedures:**

If you agree to be in this study, we would ask you to do the following two (2) things:

- 1) You will be asked to complete an eight (8) question survey which may take you five minutes to complete.
- 2) You will be asked to provide your email address, to be used to contact you if you are the winner in the drawing for a \$250 Visa gift card.

### **Risks and Benefits of Participating in the Study:**

The study has minimal risks. Your demographic and background information will not be used to identify you personally. All information will be summarized. No identifiable information will be collected from your students. The risks are no more than you would encounter in everyday life.

The benefits to participation are twofold:

- 1) Your participation furthers the research on second-career teachers, particularly Troops to Teachers participants; this research may benefit teacher recruitment and retention, as well as inform teacher preparation programs across the country.
- 2) Your participation may affect the human resource and recruiting practices of schools across the country, positively impacting the teaching profession by helping to broaden the acceptance of second-career teachers, and retired and former U.S. military members in particular.

**Compensation:**

Participating teachers will be entered into a random drawing for a \$250 Visa gift card.

**Confidentiality:**

The records of this study will be kept private. In any sort of report, published or unpublished, the researcher will not include any information that will make it possible to identify you or a student as a participant. Research records will be stored securely, not online, and only the researcher will have access to the records. The researcher will access SurveyMonkey™ data provided by participants in response to survey questions, and will deactivate the survey immediately upon completion. All data will be stored on the researcher's password-protected computer for a period of up to three years, and then irrevocably destroyed.

Persons who voluntarily consent to participate in this study must complete this informed consent acknowledgement available on the *welcome screen*, before proceeding to the linked Teacher Background Questionnaire. Participants who consent to participate in the study will provide an email address for follow-up contact, to be used only to notify the winner of the random drawing for a \$250 Visa gift card. Participants will remain forever anonymous to the researcher.

**Voluntary Nature of the Study:**

Participation in this study is voluntary. If you decide to participate, you are free to not answer any question or to withdraw at any time without affecting your voluntary status.

**Contacts and Questions:**

The researcher conducting this study is: Kurt S. Osuch. You may ask any questions you have now by contacting the researcher at [ksosuch@verizon.net](mailto:ksosuch@verizon.net). If you have questions after you complete the survey, you are encouraged to contact the researcher by telephone at (571) 435-6078, or email at [ksosuch@verizon.net](mailto:ksosuch@verizon.net). Likewise, you may contact Kurt's Committee Chair, Dr. John J. Pantana, at Liberty University, by telephone at (434) 582-2835, or email at [jjpantan@liberty.edu](mailto:jjpantan@liberty.edu).



If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board by mail at 1971 University Blvd., Suite 1837, Lynchburg, VA 24502, or by email at [irb@liberty.edu](mailto:irb@liberty.edu).

Signature of Investigator:

/s/ Kurt S. Osuch

Date: 1 March 2013

IRB Code Number: 1619

IRB Expiration: June 2014

Welcome.

Thank you for your participation in this research effort.

The purpose of this study is to examine the impact of a particular group of second-career teachers, Troops to Teachers participants, on student achievement. The researcher poses four questions: How well do eighth grade students in Texas public schools, who are taught by Troops to Teachers program participants, perform relative to their peers on State of Texas Assessment of Academic Readiness (STAAR) examinations in reading, mathematics, science, and social studies?

Your participation in this research is voluntary, and all information is anonymous and confidential. You will not be identified by name. The principal investigator will have access only to your voluntarily provided address information (for random drawing and award purposes), and will have sole access to the survey data you provide for review and analysis.

Thank you for your time, cooperation, and attention.

**Statement of Consent:**

I have read and understand the above information. I have asked questions if I desired, and I have received acceptable replies. I consent to participate in the study.

By clicking on the below check-box, I understand that:

- a) I am not required to participate in this survey, and I may decide at any time not to complete the survey;
  - b) The responses I will provide will be used only in summary form, and no part of the data will be attributed to me by name;
  - c) If I do not complete the survey, none of the responses I have submitted will be used for any purpose by the researcher.
- Yes, I understand. I wish to participate in the study.

## Appendix C: TTT Teacher Background Questionnaire

Thank you for taking the time to complete this questionnaire. I want to understand the impact that you have on the academic success of your students.

**Directions:** It is important that you fill the survey out completely, honestly, and accurately in order to get data that are meaningful and representative of your experience.

If you choose to participate in a random drawing for a \$250 Visa gift card, please provide your email address directly to the researcher at [ksosuch@verizon.net](mailto:ksosuch@verizon.net). Your email address will be used only to contact the winner of the random drawing for the \$250 Visa gift card.

### 1. Are you currently employed as a teacher or school administrator?

- Yes - Teacher
- Yes - Administrator
- No

### 2. Total years of teaching experience? (May include experience outside of K-12 schools)

- 1-5 years
- 6-10 years
- 11-15 years
- More than 15 years

### 3. Total years of public and/or private school teaching experience?

- 1-5 years
- 6-10 years
- 11-15 years
- More than 15 years

### 4. Total years of teaching at your current grade level?

- 1-5 years
- 6-10 years
- 11-15 years
- More than 15 years

**5. Grade-level(s) taught during the 2011–2012 school year?**

- Kindergarten
- 1<sup>st</sup> grade
- 2<sup>nd</sup> grade
- 3<sup>rd</sup> grade
- 4<sup>th</sup> grade
- 5<sup>th</sup> grade
- 6<sup>th</sup> grade
- 7<sup>th</sup> grade
- 8<sup>th</sup> grade
- 9<sup>th</sup> grade
- 10<sup>th</sup> grade
- 11<sup>th</sup> grade
- 12<sup>th</sup> grade

**6. Category of school system taught in during 2011–2012 school year?**

- Urban
- Suburban
- Rural

**7. Type of school system taught in during 2011–2012 school year?**

- Public
- Private/Religious/Independent

**8. Subject(s) taught during the 2011–2012 school year?**

- Mathematics
- English Language Arts/Reading
- Sciences
- Social Studies
- Elementary Education
- Physical Education
- Other (Music, JROTC, etc.)

## Appendix D: Postcard Invitation

**As a  
Troops to Teachers  
participant  
you are invited to  
participate in an  
exciting study**

Please  
place  
stamp  
here

Place Address Label Here

### YOU ARE UNIQUE AMONG TEACHERS

A STUDY ON THE IMPACT OF TROOPS TO TEACHERS PARTICIPANTS ON STUDENT ACHIEVEMENT IS BEING CONDUCTED BY KURT S. OSUCH, RETIRED MARINE OFFICER AND RESEARCHER FROM THE LIBERTY UNIVERSITY SCHOOL OF EDUCATION.

- ★ Would you like to participate?
- ★ To participate, log on at <https://www.surveymonkey.com/s/TTTBQ> and answer the 8 questions. This should take no more than **5 minutes**.

Participants will be entered in a random drawing to win a **\$250 Visa Gift Card!**

**THANK YOU FOR YOUR PARTICIPATION**



THE STUDY EXAMINES TROOPS TO TEACHERS' IMPACT ON STUDENT ACHIEVEMENT BY COMPARING HOW WELL EIGHTH GRADE STUDENTS TAUGHT BY TROOPS TO TEACHERS PROGRAM PARTICIPANTS PERFORM RELATIVE TO THEIR PEERS ON STATE OF TEXAS ASSESSMENT OF ACADEMIC READINESS EXAMINATIONS IN READING, MATHEMATICS, SCIENCE, AND SOCIAL STUDIES. THE STUDY WILL USE TEST RESULTS FROM THE 2011 - 2012 SCHOOL YEAR.

## Appendix E: Tabular Information

This appendix is segregated into five sections. The first is devoted to teacher demographic information, the second includes student demographic information, the third selectively combines aspects of the first two sections, the fourth focuses on the TTT background questionnaire, and the last contains information obtained from the multiple iterations of the *t* test of independent samples. Tables were derived from demographic information provided by the TEA relative to teachers and students in the public schools during the 2011–2012 school year, and distributions produced by the researcher using SPSS v21.0.

Tables E1 through E3 display tabulated information derived from the archival data provided by TEA related to teachers.

Table E1

*Teacher Race by Teacher Type*

Race	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Hispanic or Latino	25	20.33	8,587	21.22	8,612	21.22
Non-Hispanic or non-Latino	98	79.67	31,877	78.78	31,975	78.78
Total	123	100.00	40,464	100.00	40,587	100.00

Table E2

*Teacher Ethnicity by Teacher Type*

Ethnicity	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Native American or Alaska Native	0	0.00	188	0.46	188	0.46
Asian	0	0.00	501	1.24	501	1.23
Black or African-American	39	31.71	4,111	10.16	4,150	10.22
Hispanic or Latino	25	20.33	8,587	21.22	8,612	21.22
Native Hawaiian or other Pacific Islander	0	0.00	26	0.06	26	0.06
White	58	47.15	26,502	65.49	26,560	65.44
Two or more races	1	0.81	549	1.36	550	1.36
Total	123	100.00	40,464	100.00	40,587	100.00



Table E3

*Teacher Sex by Teacher Type*

Sex	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Male	103	83.74	14,500	35.83	14,603	35.98
Female	20	16.26	25,964	64.17	25,984	64.02
Total	123	100.00	40,464	100.00	40,587	100.00

Tables E4 through E16 display tabulated student demographic information derived from the archival data provided by TEA.

Table E4

*Students by Race*

Race	Students	
	<i>N</i>	%
Hispanic or Latino	162,284	52.0
Non-Hispanic or non-Latino	149,883	48.0
Total	312,117	100.0

Table E5

*Students by Ethnicity*

Ethnicity	Students	
	<i>N</i>	%
Native American or Alaska Native	108	0.0
Asian	7,238	2.3
Black or African-American	39,101	12.5
Hispanic or Latino	162,284	52.0
Native Hawaiian or other Pacific Islander	21	0.0
White	102,157	32.7
Two or more races	1,208	0.4
Did not identify	0	0.0
Total	312,117	100.0

Table E6

*Students by Sex*

Sex	Students	
	<i>N</i>	%
Female	152,191	48.8
Male	159,926	51.2
Did not identify	0	0.0
Total	312,117	100.0

Table E7

*Students by SES Status*

SES Status	Students	
	<i>N</i>	%
Non-disadvantaged	125,026	40.1
Disadvantaged	187,091	59.9
Total	312,0117	100.0

Table E8

*Students by English Proficiency*

English proficiency	Students	
	<i>N</i>	%
Proficient	288,496	92.4
Limited proficiency	23,621	7.6
Total	312,117	100.0

Table E9

*Students by Special Education Needs*

Special education needs	Students	
	<i>N</i>	%
With needs	18,546	5.9
Does not have needs	293,571	94.1
Total	312,117	100.0

Table E10

*Students by Gifted and Talented Status*

Gifted and talented status	Students	
	<i>N</i>	%
Not utilizing services	288,166	92.3
Utilizing services	23,951	7.7
Total	312,117	100.0

Table E11

*Students by At-Risk Status*

At-risk status	Students	
	<i>N</i>	%
Not at-risk	179863	57.6
At-risk	120043	38.5
Missing	12211	3.9
Total	312117	100.0

Table E12

*Student Ethnicity by SES*

Ethnicity	Disadvantaged		Non-disadvantaged		All students	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Native American or Alaska Native	96	0.05	12	0.01	108	0.0
Asian	1,740	0.93	5,498	4.40	7,238	2.3
Black or African-American	29,541	15.79	9,560	7.65	39,101	12.5
Hispanic or Latino	130,315	69.65	31,969	25.57	162,284	52.0
Native Hawaiian or other Pacific Islander	21	0.01	0	0.00	21	0.0
White	25,070	13.40	77,087	61.66	102,157	32.7
Two or more races	308	0.16	900	0.72	1,208	0.4
Total	187,091	100.00	125,026	100.00	312,117	100.0

Table E13

*Student Race by English Proficiency*

Race	Proficient		Non-proficient		All students	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Hispanic or Latino	139,159	48.24	23,125	97.9	162,284	48.01
Non-Hispanic or Non-Latino	149,337	51.76	496	2.1	149,833	51.99
Total	288,496	100.00	23,621	100.00	312,117	100.00

Table E14

*Student Sex by Special Education Needs*

Special education needs	With needs		Does not have needs		All students	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Male	13,819	74.51	146,107	49.77	152,191	51.24
Female	4,727	25.49	147,464	50.23	159,926	51.24
Total	18,546	100.00	293,571	100.00	312,117	100.00

Table E15

*Students Sex by Gifted and Talented Status*

Sex	Gifted and talented		Not gifted and talented		All students	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Male	11,918	49.76	148,008	51.36	159,926	51.24
Female	12,033	50.24	140,158	48.64	152,191	48.76
Total	23,951	100.00	288,166	100.00	312,177	100.00

Table E16

*Student Ethnicity by At-Risk Status*

Ethnicity	At-risk		Not at-risk		All students	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Native American or Alaska Native	46	0.04	58	0.03	104	0.03
Asian	1,028	0.86	6,048	3.36	7,076	2.36
Black or African-American	18,708	15.58	18,332	10.19	37,040	12.35
Hispanic or Latino	77,200	64.31	78,708	43.76	155,908	51.99
Native Hawaiian or other Pacific Islander	8	0.01	11	0.01	19	0.01
White	22,800	18.99	75,812	42.15	98,612	32.88
Two or more races	253	0.21	894	0.5	1,147	0.38
Total	120,043	100.00	179,863	100.00	299,906 <sup>a</sup>	96.09 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>12,211 students did not have a risk status reported, accounting for 3.91% of the total.

Tables E17 through E33 display tabulated information, selectively and intentionally combined to broaden the perspective of the reader to the circumstances for teachers as they existed in Texas public schools during school year 2011–2012. Tables were derived from the archival data provided by TEA related to both teachers and students.

Table E17

*Student Race by Teacher Type*

Race	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Hispanic or Latino	568	58.02	161,117	52.04	161,685	51.80
Non-Hispanic or Non-Latino	411	41.98	148,514	47.96	148,925	47.71
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

*Note.* Troops to Teachers participants taught 0.3% of the overall student population.

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.



Table E18

*Student Ethnicity by Teacher Type*

Ethnicity	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Native American or Alaska Native	0	0.00	108	0.03	108	0.03
Asian	2	0.20	7201	2.33	7,203	2.31
Black or African-American	200	20.43	38,645	12.48	38,845	12.45
Hispanic or Latino	568	58.02	161,117	52.04	161,685	51.80
Native Hawaiian or other Pacific Islander	0	0.00	21	0.01	21	0.01
White	202	20.63	101,366	32.74	101,568	32.54
Two or more races	7	0.72	1,173	0.38	1,180	0.38
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.

Table E19

*Student Sex by Teacher Type*

Sex	TTT participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Male	543	55.46	158,617	51.23	159,160	51.00
Female	436	44.54	151,014	48.77	151,450	48.52
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.

Table E20

*Student SES by Teacher Type*

SES	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Non-disadvantaged	320	32.69	124,145	40.09	124,465	39.88
Disadvantaged	659	67.31	185,486	59.91	186,145	59.64
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.

Table E21

*Student English Proficiency by Teacher Type*

	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
English proficiency						
Proficient	942	96.22	286,189	92.43	287,131	92.00
Limited proficiency	37	3.78	23,442	7.57	23,479	7.52
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.49% of the total.

Table E22

*Student Special Education Needs by Teacher Type*

	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Special education needs						
With needs	95	9.70	291,287	5.92	18,439	5.91
Does not have needs	884	90.30	18,344	94.08	292,171	93.61
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.

Table E23

*Student Gifted and Talented Status by Teacher Type*

Gifted and talented status	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Not identified	933	95.30	285,728	92.28	286,661	91.85
Identified	46	4.70	23,903	7.72	23,949	7.67
Total	979	100.00	309,631	100.00	310,610 <sup>a</sup>	99.52 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>1,507 cases had no teacher data assigned, accounting for 0.48% of the total.

Table E24

*Student At-Risk Status by Teacher Type*

At-risk status	TTT Participants		Other teachers		All teachers	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Not at-risk	482	51.72	178,667	60.0	179,863	57.63
At-risk	450	48.28	119,040	40.0	120,043	38.46
Total	932	100.00	297,707	100.00	310,610 <sup>a</sup>	96.09 <sup>b</sup>

<sup>a</sup>Total student cases = 312,117.

<sup>b</sup>12,211 students did not have a risk status reported, accounting for 3.91% of the total.

Tables E25 through E32 display tabulated information derived from the responses to the TTT background questionnaire.

Table E25

*Reply to Q1 of the TTT Background Questionnaire*

Current job	Respondents	
	<i>N</i>	%
Yes – teacher	146	79.8
Yes – administrator	7	3.8
No	30	16.4
Total	183	100.0

*Note.* Question 1 asked, “Are you currently employed as a teacher or school administrator?”

Not responding/skipping this question were 10 (5.18%) respondents.

Table E26

*Reply to Q2 of the TTT Background Questionnaire*

Experience	Respondents	
	<i>N</i>	%
1–5 years	43	23.4
6–10 years	62	33.7
11–15 years	29	15.8
>15 years	50	27.1
Total	184	100.0

*Note.* Question 2 asked, “Total years of teaching experience?”

Not responding/skipping this question were 9 (4.66%) respondents.

Table E27

*Reply to Q3 of the TTT Background Questionnaire*

Experience	Respondents	
	<i>N</i>	%
1–5 years	49	26.6
6–10 years	61	33.1
11–15 years	29	15.8
>15 years	45	24.5
Total	184	100.0

*Note.* Question 3 asked, “Total years of public and/or private school teaching experience?” Not responding/skipping this question were 9 (4.66%) respondents.

Table E28

*Reply to Q4 of the TTT Background Questionnaire*

Experience	Respondents	
	<i>N</i>	%
1–5 years	69	37.9
6–10 years	60	33.0
11–15 years	25	13.7
>15 years	28	15.4
Total	182	100.0

*Note.* Question 4 asked, “Total years of teaching at your current grade level?” Not responding/skipping this question were 11 (5.70%) respondents.

Table E29

*Reply to Q5 of the TTT Background Questionnaire*

Grade	Responses <i>N</i>
Kindergarten	7
Grade 1	10
Grade 2	18
Grade 3	18
Grade 4	25
Grade 5	21
Grade 6	22
Grade 7	25
Grade 8	36
Grade 9	68
Grade 10	73
Grade 11	75
Grade 12	76
Total	474

*Note.* Question 5 asked, “Grade-level(s) taught during the 2011–2012 school year?” 169 respondents answered this question. Several sent email communication noting that they taught several grade levels in their subject. Not responding/skipping this question were 24 (12.44%) respondents.

Table E30

*Reply to Q6 of the TTT Background Questionnaire*

Category	Respondents	
	<i>N</i>	%
Urban	88	51.2
Suburban	52	30.2
Rural	32	18.6
Total	172	100.0

*Note.* Question 6 asked, “Category of school system taught in during 2011–2012 school year?”

Not responding/skipping this question were 21 (10.88%) respondents.

Table E31

*Reply to Q7 of the TTT Background Questionnaire*

Type	Respondents	
	<i>N</i>	%
Public	168	98.8
Private/Religious/ Independent	2	1.2
Total	170	100.0

*Note.* Question 7 asked, “Type of school system taught in during 2011–2012 school year?”

Not responding/skipping this question were 23 (11.92%) respondents.



Table E32

*Reply to Q8 of the TTT Background Questionnaire*

Subject	Responses	
	<i>N</i>	%
Mathematics	59	20.55
English Language Arts/Reading	33	11.50
Sciences	50	17.42
Social Studies	52	18.12
Elementary Education	28	9.76
Physical Education	9	3.14
Other (Music, JROTC, etc.)	56	19.51
Total	287	100.0

*Note.* Question 8 asked, “Subject(s) taught during the 2011–2012 school year?”  
 Not responding/skipping this question were 23 (11.92%) respondents.  
 Respondents may have taught multiple subjects during the 2011–2012 school year.