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A Correlational Study of Teacher Efficacy and Culturally Responsive Teaching Techniques in a Southeastern Urban School District

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Abstract

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This study investigated the level of personal and general teacher efficacy of teachers from three high schools within a southeastern urban school district. Additional research questions focused on correlational relationships between teacher efficacy and culturally responsive teaching, instructional strategies, student engagement, and classroom management as measured by the Teacher Efficacy Scale (TES), Culturally Responsive Teaching Techniques (CRTT) Scale, and Teachers' Sense of Efficacy Scale (TSES).

This study was conducted in a large urban school district located in the mid-Atlantic region of the United States; three of the five high schools in the district participated. The CRTT Scale and TSES were combined to create a 29-item instrument to examine culturally responsive teaching, instructional strategies, student engagement, and classroom management. Personal and general teacher efficacy were explored using the TES.

This study found that cultural teaching is a dimension of teacher efficacy. Survey data were analyzed to determine the impact of teaching efficacy on culturally responsive teaching. Significant relationships were found between teacher efficacy and culturally responsive teaching, instructional strategies, student engagement, and classroom management. Teacher efficacy and culturally responsive teaching are positively related; the finding supports studies that indicate teachers who possess high levels of efficacy are more likely to use higher levels of culturally responsive pedagogy which has a positive impact on student engagement and achievement.

Table of Contents

Tables

Figures

Chapter 1: Introduction

Introduction

This study was designed to provide insight into the different aspects of teacher efficacy and their relationship with instructional strategies, student engagement, and classroom management. Chapter 1 of this study discusses the theoretical framework as it pertains to culturally responsive teaching techniques (CRTTs), instructional strategies, student engagement, and classroom management. A general description of the district is also included as well as district demographic and enrollment information. The chapter concludes with a statement concerning the significance of the study.

Problem Statement

African-American, American-Indian, Latina/o, and Southeast-Asian groups consistently underperform on English reading and mathematics EOC standardized tests relative to their Caucasian and other Asian-American counterparts (American Psychological Association, 2012; Delpit, 1995; Griner, 2012; Harris & Schroeder, 2013). For the purpose of this research, African-American, American-Indian, Latina/o, and Southeast-Asian groups will be collectively termed "minority."

In the United States, educational reform has focused primarily on student performance on standardized tests and the reduction of the achievement gap between Caucasian and minority students (American Psychological Association, 2012; Elish-Piper, Matthews, & Risko, 2013; Oyerinde, 2008). Current trends for accountability in education are challenging educators to redesign classroom instruction to eliminate performance gaps between groups and increase student academic achievement levels (Balls, Eury, & King, 2011).

Purpose Statement

This study sought to examine how teacher efficacy impacts CRTTs, instructional strategies, student engagement, and classroom management.

Research Questions

1. What is the personal teacher efficacy (PTE) and general teacher efficacy (GTE) of high school teachers as measured by the Teacher Efficacy Scale (TES)?
2. What is the relationship between teacher efficacy and CRTTs as measured by the TES and the CRTT Scale?
3. What is the relationship between teacher efficacy and student engagement in high school classrooms as measured by the Teachers' Sense of Efficacy Scale (TSES) and the CRTT Scale?
4. What is the relationship between teacher efficacy, CRTTs, instructional strategies, student engagement, and classroom management as measured by the TSES and the CRTT Scale?

Context of Problem

RAND education researchers originally developed the construct of teacher efficacy using Rotter's (1966) work on locus of control (Fives, 2003). Rotter conceptualized locus of control as the extent to which an individual believes his or her behavior determines specific life events. According to Rotter, when a person perceives an action is contingent upon his or her own behavior, that belief should be termed *internal control*. Conversely, if a person believes an action is not entirely contingent upon his or her behavior, that belief should be termed *external control.* Rotter was the first to attempt measurement of this construct (Tschannen-Moran & Woolfolk Hoy, 2001).

Using Rotter (1966) as a theoretical base, RAND researchers combined the score of Rotter's two efficacy measurement items to determine one overall efficacy score. The first item stated, "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment" (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977, p. 137). This item reflected an external control orientation; in effect, it highlights the powerlessness of teachers in the face of students' home experiences (Fives, 2003).

The second Rotter (1966) item stated, "If I try hard, I can get through to even the most difficult or unmotivated students" (Berman et al., 1977, p. 137). This item reflected an internal control orientation emphasizing the power of the teacher to reach students regardless of the students' environmental conditions (Fives, 2003; Tschannen-Moran, Hoy, & Hoy, 1998).

According to Bandura (1997), perceived self-efficacy is concerned with personal beliefs about capabilities to produce levels of performance that, in turn, influence events and affect individual lives. "Efficacy affects the effort they invest in teaching, the goals they set, and their level of aspiration" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). Dembo and Gibson (1984) found that high-efficacy teachers spent more time monitoring students, checking seatwork, and providing whole-group instruction.

Teacher efficacy is also related to teachers' racial attitudes and perceived abilities to work with diverse students (American Psychological Association, 2012; Soodak & Podell, 1994; Tucker et al., 2005). Tucker et al. (2005) noted that many teachers feel unprepared to teach students from different cultural backgrounds. Therefore, efforts to increase teacher efficacy are vital in increasing the low academic achievement among culturally diverse students (Tucker et al., 2005).

Background

This study was conducted in the Jonestown School District (a fictitious district name created to protect the anonymity of the district). Jonestown is a large, urban, school district located in the mid-Atlantic region of the United States. The district was the focus of national attention in the late 1950s for spearheading racial desegregation of its schools; the district garnered national attention again in 1986 when a judicial ruling allowed them to end busing and achieve racial balance in its schools.

Mandatory busing for the purpose of desegregation in the district began in 1971. Within the first weeks of busing, 8,000 students left the district (most of whom were Caucasian). In 1983, the school board voted to end cross-town busing of elementary students. Their decision was upheld in 1986 when the U.S. Supreme Court refused to review the lower court decision. A community oversight committee was established to oversee equality among schools in the district, but it disbanded itself in 1991. The district currently enrolls a racially and economically diverse population of approximately 32,000 total students supported by a staff of more than 4,600 employees.

Table 1 compares the percentage of enrollment for African-American, Hispanic, and Caucasian students in the three high schools being studied and the district for the past 3 academic years.

Table 1

Longitudinal Enrollment and Demographics

Entity	Ethnicity	2013-2014 n (%)	2012-2013 n (%)	2011-2012 n (%)
Madison H.S.		1,265	1,277	1,327
	African American	904 (71)	921 (72)	964 (72)
	Hispanic	81 (6)	71 (5)	82 (6)
	Caucasian	174 (13)	172 (13)	168 (12)
Allinon H.S.		1606	1650	1685
	African American	838 (52)	881 (53)	904 (53)
	Hispanic	76 (4)	82 (4)	78 (4)
	Caucasian	553 (34)	565 (34)	572 (33)
Callahan H.S.		1988	1949	2076
	African American	1,053 (52)	1,024 (52)	1,054 (50)
	Hispanic	149 (7)	138 (7)	142 (6)
	Caucasian	580 (29)	590 (30)	660 (31)
District		32,597	32,862	33,461
	African American	19,988 (61)	20,365 (62)	20,840 (62)
	Hispanic	2,141 (6)	2,025 (6)	2,063 (6)
	Caucasian	7,395 (23)	7,419 (23)	7,475 (22)

* Percentages may not total 100% because small numbers of multiracial and other ethnicities are not included.

Table 1 shows a 61% or higher enrollment of minority students at schools within

the district from 2011 to 2014. District Caucasian student enrollment during those years ranged from 22% to 23%. African-American student enrollment in the district ranged from 61% to 62%, while Hispanic student district enrollment remained steady at 6% for the same time period. Among the schools that were studied, African-American students accounted for 50% to 72% of the student body; Caucasian students made up 12% to 34%; and Hispanic student enrollment ranged between 4% and 7%.

Community Influences

The school district has a population of 238,832. There are 33 elementary schools, one kindergarten through eighth grade school, eight middle schools, and five high schools in the district. In addition, the district supports auxiliary facilities which house alternative and specialty programs. The operating budget for fiscal year 2013 was $305.3 million with 77% dedicated to direct instruction.

Table 2 compares the school district community characteristics of the residents with that of the state and national norms for household, income, family size, and family income.

Table 2

Community Economic Characteristics

	District	State	National
Average Household Income	$56,083	$81,608	$68,259
Average Family Size	3.06	3.06	3.14
Average Family Income	$67,895	$94,262	$79,338

The average household and family income in the district is below that of the state and national levels for the same average family size. The percentage of students in the

district who are eligible for the free and reduced lunch program is 58%.

Testing Data

Students classified as economically disadvantaged make up nearly 67% of the district's student body; African-American students are a majority of the district's economically disadvantaged population of students. Nationally and across the state, students who are economically disadvantaged tend to have lower performance on EOC tests due to a variety of factors that influence readiness to learn; this district follows the same trend. District-wide, students who are not economically disadvantaged tend to exceed state standards on EOC tests. The district's primary challenge is to close the "achievement gap" between the two groups of students.

Table 3 provides information for the 3 most recent years on the achievement of students based on the EOC English reading and writing tests. Due to the size of the achievement gap between African-American students and Caucasian students, the district places a specific focus on that gap although an achievement gap exists between minority students from other ethnic groups and Caucasian students.

Table 3

Percentage of Students Passing English Reading

English Performance	High School					
	2011-2012		2012-2013		2013-2014	
Student Subgroup	Pass	Tested	Pass	Tested	Pass	Tested
African American	75	99	50	100	52	100
Hispanic	84	100	66	100	65	100
Caucasian	91	100	80	100	79	100
Asian	90	100	80	100	82	100

* Small numbers of multiracial and other ethnicities are not included.

A closer examination of Table 3 shows 99-100% of students were tested during the past three testing cycles. African-American students scored 16% lower than Caucasian students during the 2011-2012 school year on the English reading EOC state assessment. During the same testing cycle, Hispanic students' scores lagged Caucasian student scores by 7%. Asian students scored only 1% less than Caucasian students. Test scores decreased for all students during the 2012-2013 testing cycle; however, Caucasian students scored 30% higher than their African-American counterparts and 14% higher than Hispanic students. Asian students kept pace with their Caucasian peers. The 2013-2014 testing cycle shows a slight increase in African-American, Hispanic, and Asian reading scores; Caucasian student scores decreased 1%. Despite the small decrease in proficiency, Caucasian students scored 27% higher than African-American students and 14% higher than Hispanic students. Asian students scored 3% higher than Caucasian students during that testing cycle.

Table 4 provides information for the 3 most recent years on the achievement of students based on the EOC mathematics tests.

Table 4

Percentage of Students Passing Mathematics

Math Performance	High School					
	2011-2012		2012-2013		2013-2014	
Student Subgroup	Pass	Tested	Pass	Tested	Pass	Tested
African American	45	100	47	99	53	99
Hispanic	61	100	63	100	68	100
Caucasian	73	99	76	99	80	100
Asian	82	99	80	100	85	100

* Small numbers of multiracial and other ethnicities are not included.

Table 4 shows 99-100% of students were tested during the past three testing cycles. African-American students scored well below all of their counterparts during all testing cycles. Caucasian students scored 28% higher than African-American students and 12% higher than Hispanic students on their 2011-2012 EOC math exams; Asian students scored 9% higher than Caucasian students on the same exam. The following testing cycle (2012-2013) test scores increased 1% for African-American and Hispanic students; Caucasian students' scores increased by 3%. Asian student scores decreased 5% during the 2012-2013 testing cycle. All scores increased during the 2013-2014 testing cycle; however, Caucasian students passing scores remained 27% higher than African American passing scores in mathematics. Table 5 displays the percentage of change in the achievement gap between African-American and Caucasian students in the district on the EOC exams in reading and writing for 3 consecutive school years.

Table 5

Achievement Gap Trends for English: Reading 2010-2011 through 2012-2013

Standards of Learning Test	2010-2011	2011-2012	2012-2013	3-year change
EOC English: Reading	8.5	15.7	16	-8%
EOC English: Writing	7.2	9.8	16	-9%

* A positive percentage indicates a gap between African-American and Caucasian students.

According to Table 5, the achievement gap between African-American students and their Caucasian counterparts within the district steadily increased from 2010 to 2013. The 2010-2011 reading EOC achievement gap was 8.5%; by 2012-2013, that gap had

increased to 16%. The writing EOC achievement gap also rose steadily within the district; it increased from 7.2% in 2010-2011 to 16% by 2012-2013.

Table 6 shows the percentage of change in the achievement gap between African-American and Caucasian students in the district on the EOC exams in Algebra I, Geometry, and Algebra II for 3 consecutive school years.

Table 6

Achievement Gap Trends for Math: Algebra & Geometry 2010-2011 through 2012-2013

Standards of Learning Test	2010-2011	2011-2012	2012-2013	3-year change
EOC Math: Algebra I	2.6	22.4	18	-15%
EOC Math: Geometry	24.2	34.3	25	-1%
EOC Math: Algebra II	10.0	30.6	29	-19%

* A positive percentage indicates a gap between African-American and Caucasian students.

The math achievement gap between African-American students and their Caucasian counterparts within the district experienced a sharp increase from 2010 to 2012. The Algebra I gap in achievement rose from 2.6% to 22.4% (19.8% increase); the gap decreased to 4.4% during the 2012-2013 testing cycle. The achievement gap for Algebra I widened 15% from the 2010-2011 testing cycle to the 2012-2013 testing cycle. Geometry also increased sharply during the 2011-2012 testing cycle but rebounded during the 2012-2013 testing cycle. Over the course of the three testing cycles, the achievement gap for Geometry increased by 1%. Algebra II suffered the largest increase overall between the 2010 and 2013 testing cycles. The gap increased 20.6% from the 2010-2011 testing cycle to the 2011-2012 testing cycle. The gap closed slightly during the 2012-2013 testing cycle, but the increase remained steady at 19% overall for Algebra

II.

The three areas of focus that the district espouses as having a positive impact on student achievement are high-quality teaching and instruction in the classroom, trusting relationships in school, and supports for pro-academic behavior in the school and community. In a district-wide effort to narrow the achievement gap between African-American and Caucasian students, the district operates under an established and detailed accountability system for all of its schools.

Three of the five high schools in this district were chosen for this study because they have the highest percentage of African-American students and the lowest percentages of pass rates on the EOC exams for the past 3 academic years.

Researchers have found a connection between teachers' sense of efficacy, culturally responsive pedagogy, and student achievement (Oyerinde, 2008; Tschannen-Moran & Woolfolk Hoy, 2001; Tucker et al., 2005). "Teaching is most effective when ecological factors, such as prior experiences, community settings, cultural backgrounds, and ethnic identities of teachers and students are included in its implementation" (Gay, 2010, p. 22).

Theoretical Framework

Research on teacher efficacy and its relationship with CRTTs illustrates a need to address teacher self-efficacy with respect to working with children from diverse backgrounds (American Psychological Association, 2012; Oyerinde, 2008; Tucker et al., 2005).

Diversity influences how students learn; teachers should create a fair/enhanced classroom climate to facilitate learning for diverse students (Kitsantas, 2012: Oyerinde, 2008; Tucker et al., 2005). "The more efficacious teachers are in successfully instructing

their students, the more effort they will put into teaching" (Kitsantas, 2012, p. 37). Highly efficacious teachers have more persistence when helping struggling students, and they create lessons designed to engage their students (Bandura, 1997; Kitsantas, 2012; Protheroe, 2008). Figure 1 illustrates the relationship between the construct of teacher efficacy and its connection to student achievement.

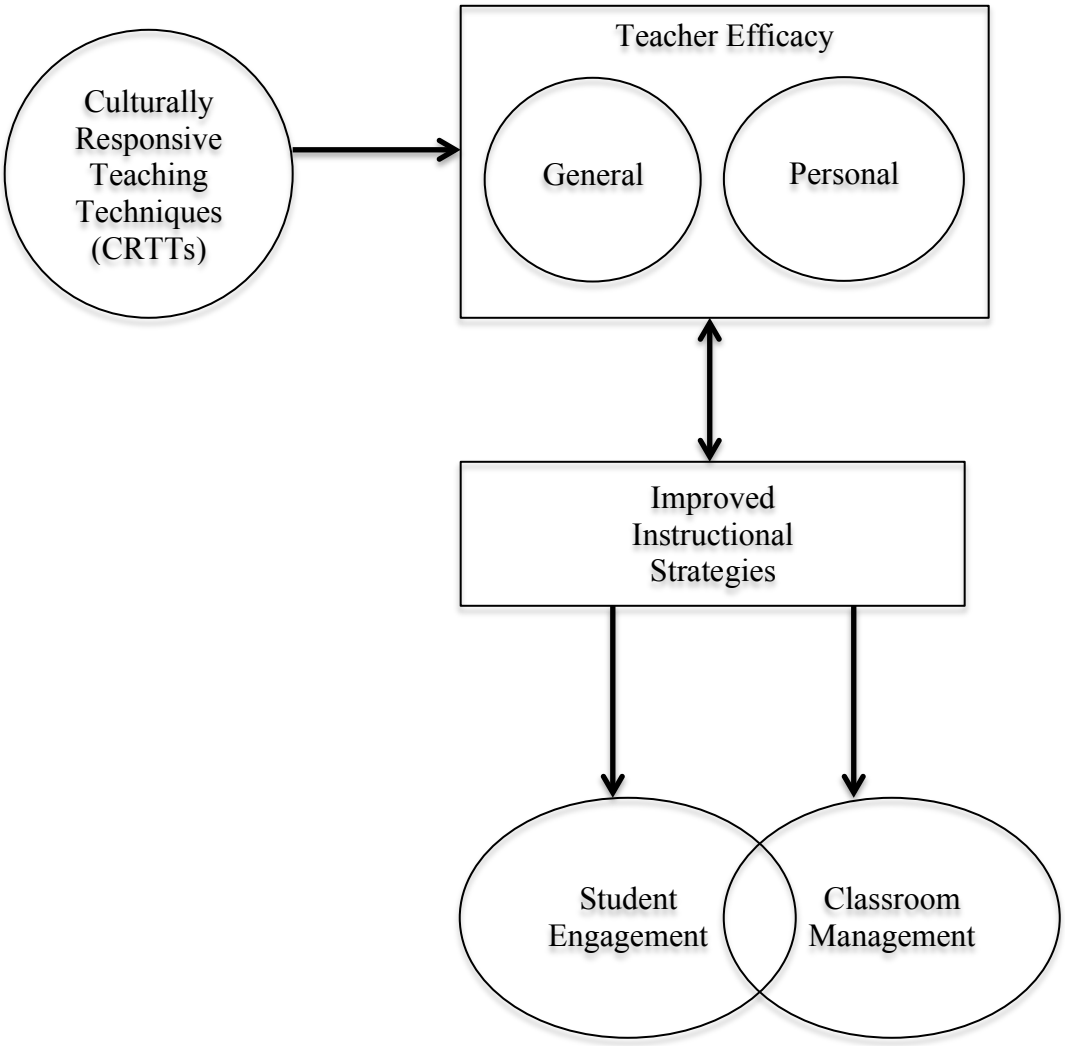

Figure 1. Theoretical Framework**.**

Figure 1 displays the association of teacher efficacy with CRTTs, instructional strategies, student engagement, and classroom management. Researchers have

historically considered "general" and "personal" efficacy as the parameters for measuring teacher efficacy (Dembo & Gibson, 1985; Fives, 2003; Soodak & Podell, 1996). Oyerinde's (2008) study found a strong positive correlation between CRTTs and teacher efficacy. "Empirical analysis clearly supports the contention that those teachers who use culturally responsive teaching techniques have higher teacher efficacy" (Oyerinde, 2008, p. ii). Teacher efficacy is also related to student achievement gains (Fives, 2003; Moseley, Bilica, Wandless, & Gdovin, 2014; Tschannen-Moran & Woolfolk Hoy, 2001). Teachers who possess different levels of efficacy behave differently in the classroom (Dembo & Gibson, 1985; Tracz & Gibson, 1986). Teachers with a stronger sense of efficacy "are more open to new ideas and are more willing to experiment with new methods to better meet the needs of their students" (Protheroe, 2008, p. 43). The use of CRTTs can lead to higher teacher efficacy which in turn could improve instructional strategies. According to Ladson-Billings (2000), the elevated efficacy combined with the use of improved instructional strategies will dramatically raise student engagement. Ultimately, "the teacher is the most critical 'ingredient' in maximizing student academic growth and achievement" (Eury, King, & Balls, 2011, p. 1).

This study duplicated the methodology used in the Oyerinde (2008) study. Oyerinde's study constructed a theoretical model that showed CRTTs are an essential component of teacher efficacy. Oyerinde's model sought to expand the definition of teacher efficacy to include a teacher's ability to incorporate CRTTs into their classroom practices (Oyerinde, 2008).

The primary objective of Oyerinde's (2008) study was to investigate the "empirical relationship" between teacher efficacy and CRTTs. An additional objective was to test three null hypotheses: (1) there is no significant difference in teacher efficacy

of teachers in four middle schools; (2) there is no significant difference in teacher efficacy by gender in four middle schools; and (3) there is no significant difference in teacher efficacy by race in four middle schools.

The primary objective of this study was to examine how teacher efficacy impacts CRTTs, instructional strategies, student engagement, and classroom management. In addition, the researcher examined the PTE and GTE of high school teachers in three urban mid-Atlantic high schools.

The researcher duplicated Oyerinde's (2008) methodology to examine the relationship between teacher efficacy and CRTTs in three urban mid-Atlantic high schools. The purpose for the replication of methodology was to examine whether Oyerinde's findings are generalizable (i.e., hold across populations and settings; Laerd Statistics, 2012).

This study added to the current body of knowledge on teacher efficacy and CRTTs. This study helped to fill the gap in the quantitative literature the Oyerinde (2008) study addressed concerning the relationship between teacher efficacy and CRTTs.

Definition of Terms

Self-efficacy. Self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997).

GTE. GTE is the teacher's judgment of his or her capabilities to organize and execute courses of action required to attain designated types of performances (Bandura, 1997). GTE is a teacher's general belief that all students can learn regardless of socioeconomic status (SES), family background, etc. (Tracz & Gibson, 1986).

PTE. A teacher's belief that they possess the necessary teaching abilities to bring about student learning or the belief in one's ability to effectively teach and guide students

toward understanding (Tracz & Gibson, 1986; Moseley et al., 2014).

Multicultural education. Multicultural education is a process that permeates all aspects of school practices, policies, and organization as a means to ensure the highest levels of academic achievement for all students. It helps students develop a positive self-concept by providing knowledge about the histories, cultures, and contributions of diverse groups. It values cultural differences and affirms the pluralism that students, their communities, and teachers reflect. It challenges all forms of discrimination in schools and society through the promotion of democratic principles of social justice (National Association for Multicultural Education, 2015).

CRTTs. This study defined CRTTs as a theoretical framework in which a teacher "employs a variety of strategies to meet the learning needs of all students through the knowledge and use of their social, economic, and cultural backgrounds" (Oyerinde, 2008, p. 21).

Culturally responsive teaching. Involves using the cultural backgrounds, experiences, and perspectives of ethnically diverse students as channels for teaching students more effectively and efficiently (Gay, 2002).

Classroom management. Making the classroom environment hospitable for learning (Rothstein-Fisch & Trumbull, 2008).

Significance

Researchers, educators, teachers, and policymakers may gain insight into the relationship between teacher efficacy and CRTTs from this study. This study created awareness and understanding of the elements needed to effectively create a culturally diverse learning environment. This study also added to the growing body of literature on teacher efficacy and culturally responsive pedagogy.

Summary

Researchers have found a connection between teachers' sense of efficacy and student achievement (Armor et al., 1976; Oyerinde 2008; Tschannen-Moran & Woolfolk Hoy, 2001; Tucker et al., 2005). In order to raise student achievement, teachers must take into account students' prior experiences, community settings, cultural backgrounds, and ethnic identities (Gay, 2010; Oyerinde, 2008). This study sought to examine how teacher efficacy impacts CRTTs, instructional strategies, student engagement, and classroom management.

Chapter 2: Literature Review

Introduction

Chapter 2 of this study focuses on historical and current research concerning teacher efficacy which includes general and personal efficacy. CRTTs are discussed as they pertain to instructional strategies, student engagement, and classroom management of diverse student populations. Research questions are included in this chapter as well as a brief summary.

Literature Review

Teachers exert a powerful influence over the achievement of all students (Bandura, 1997; Moseley et al., 2014; Tschannen-Moran & Woolfolk Hoy, 2001; Tucker et al., 2005). Teachers who believe in their ability to create meaningful learning experiences for their students are very important to the future success of those students (Fives, 2003; Dembo & Gibson, 1985; Moseley et al., 2014; Siwatu, 2011). Teacher efficacy has been identified as one of the contributing factors to individual differences in teaching effectiveness (Gibson & Dembo, 1984).

Teacher efficacy. Researchers have focused on various measurement techniques to define teacher efficacy. Teacher efficacy has been defined in terms of locus of control (Rotter, 1966), student engagement (Bandura, 1977), instructional strategies, and classroom management (Bandura, 1997; Gibson & Dembo, 1984; Tschannen-Moran & Woolfolk Hoy, 2001). Teacher efficacy is the belief that one can bring about desired outcomes in one's students (Gibson & Dembo, 1984; Soodak & Podell, 1996; Tschannen-Moran & Woolfolk Hoy, 2001). Teacher efficacy is related to many educational outcomes such as teachers' persistence, enthusiasm, commitment, and instructional behavior as well as students' achievement, motivation, and self-efficacy

beliefs (Allinder, 1994; Tschannen-Moran & Woolfolk Hoy, 2001; Vesely, Saklofske, & Leschied, 2013). "Teachers who believe strongly in their ability to promote learning create mastery experiences for their students" (Bandura, 1997, p. 241).

Rotter (1966) laid the groundwork for the construct of teacher efficacy with his work on locus of control. Rotter found that individuals perceived reward or reinforcement events in different ways. When reinforcement is perceived as following an individual's action but not entirely contingent upon his/her action, individuals typically attribute those occurrences to luck, fate, chance, or under the control of powerful others (out of one's control); this lack of personal control, according to Rotter, is *external* (locus of) *control. Internal* (locus of) *control,* on the other hand, is when a person perceives that an event is within his/her control and based on their behavior.

Rotter's (1966) social learning theory is based on his theory of reinforcement. Rotter stated, "a reinforcement acts to strengthen an *expectancy* that a particular behavior or event will be followed by that reinforcement in the future" (p. 2). In other words, if one expects an event or behavior to occur and it actually occurs, the expectation will be reinforced in the future. If the expectation of the event or behavior is not met, according to Rotter, the reinforcement of the expectation will be reduced or disappear altogether. Rotter hypothesized that when individuals see the reinforcement as being contingent upon his/her own behavior, expectancy increased. Based on Rotter's theory, if a teacher believes a situation is contingent upon his/her own behavior, the "occurrence of either a positive or negative reinforcement will strengthen or weaken potential for that behavior to reoccur in the same or similar situation" (p. 5).

The Rand Corporation conducted two studies (Armor et al., 1976; Berman et al., 1977) which are generally credited with being the first to measure the construct of teacher

efficacy (Parkay, Greenwood, Olejnik, & Proller, 1988). The results of their study showed the variable of efficacy as a powerful explanatory variable; it had major positive effects on the "percentage of project goals achieved, improved student performance, teacher change, and continuation of project methods and materials" (Berman et al., 1977, p. 73). Armor et al. (1976) found significant positive correlations between teacher efficacy and student performance. Both Armor et al. (1976) and Berman et al. (1977) measured teachers' feelings of classroom efficacy using two questions that were based on Rotter's (1966) locus of control theory. The first question asked teachers whether they felt "when it comes right down to it, a teacher really can't do much [because] most of a student's motivation and performance depends on his or her home environment" (Armor et al., 1976, p. 23; Berman et al., 1977, p. 137). "Teachers who concur that the influence of the environment overwhelms a teacher's ability to have an impact on a student's learning, exhibit a belief that reinforcement of their teaching efforts lies outside their control or is *external* to them" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 784; Fives, 2003; Gibson & Dembo, 1984). The second question asked teachers whether they thought, "If I try really hard, I can get through to even the most difficult or unmotivated students" (Armor et al., 1976, p. 23; Berman et al., 1977, p. 137). "Teachers who express confidence in their ability to teach difficult or unmotivated students evidence a belief that reinforcement of teaching activities lies within the teacher's control or is *internal*" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 784; Fives, 2003; Gibson & Dembo, 1984). The combined score on those two items became the first assessment of the construct teacher efficacy (Armor et al., 1976; Berman et al., 1977; Fives, 2003; Tschannen-Moran & Woolfolk Hoy, 2001). Ashton, Buhr, and Croker (1984), Guskey (1981), and Rose and Medway (1981) defined, extended, and measured the construct of teacher efficacy

between 1981 and 1984 (Fives, 2003). Table 7 outlines the various definitions and measurements used by each researcher.

Table 7

Teacher Efficacy Research Trends 1981-1984 (Fives, 2003; Appendix A)

Researcher	Definition	Measurement
Rose & Medway (1981)	The extent to which a teacher believes that he or she can control student outcomes.	Teacher Locus of Control (TLC) Scale: Assessed teacher's feelings of an internal or external locus of control for student outcomes.
Guskey (1981)	A teacher's belief or conviction that he or she can influence how well students learn, even those who are difficult or unmotivated.	Responsibility for Student Achievement (RSA) Scale: assessed general responsibility, responsibility for student success and for student failure.
Ashton et al. (1984)	A teacher's belief in his or her ability to have a positive effect on student learning.	Ashton Vignettes: Assessed outcome and efficacy expectations.

In keeping with Rotter's (1966) locus of internal/external control theory, Rose and Medway (1981) used 45 elementary school teachers who had participated in professional development concerning improving student instruction for the purpose of developing, verifying reliability, and validating the Teacher Locus of Control (TLC) scale. The TLC scale "consisted of 28 forced-choice items that required teachers to endorse an option indicating either internal or external control of various classroom events" (Rose & Medway, 1981, p. 186). The main goal of the instrument was to determine whether teachers believed they were capable of influencing the achievement of their students

(Rose & Medway, 1981). They found that teachers who attributed student outcomes to their own actions tended to use improved educational practices more often than teachers who attributed student outcomes to external factors.

In the same year, Guskey (1981) extended the meaning of teacher efficacy to include teacher responsibility for academic success or failure. Guskey's study used 215 elementary and secondary school teachers from a large metropolitan school system to develop and validate the Responsibility for Student Achievement (RSA) Scale. The RSA scale was designed to assess teacher beliefs concerning responsibility for the academic successes and failures of their students. Guskey found that the expectations a teacher holds for student learning might be closely associated with the teacher's belief in self-responsibility for students' academic successes and failures.

In 1984, Ashton et al. further extended the meaning of the construct of teacher efficacy with their investigation to determine whether the construct of self-efficacy was "self" or "norm" referenced. They developed two instruments, each consisting of 25 teaching vignettes: "one required self-referenced responses, while the other required norm-referenced responses" (p. 1). The purpose was to determine whether teachers evaluated their effectiveness in terms of personal performance or compared to the performance of other teachers. Ashton et al.'s study suggested that teachers generally compare their performance to the performance of other teachers.

The second strand of research on teacher efficacy began with Bandura's (1977) social cognitive theory. Bandura (1997) proposed the concept of self-efficacy, which he defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). In other words, self-efficacy is a "future-oriented belief about the level of competence a person expects he or she will display in a

given situation" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 787). Bandura (1997) believed teacher efficacy beliefs help to determine how they structure classroom academic activities and shape students' self-efficacy. Bandura's (1977) social cognitive theory makes a clear distinction between an efficacy expectation and outcome expectancy. According to Bandura (1977), "An outcome expectancy is defined as a person's estimate that a given behavior will lead to certain outcomes" (p. 193); in this instance, a person believes he or she has control over an outcome based on their actions (Parkay, Greenwood, Olejnik, & Proller, 1988; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfolk & Hoy, 1990). Bandura (1977) defined an efficacy expectation as "the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 193); this is an individual's belief that he or she can competently perform a task, which should produce an expected outcome (Parkay et al., 1988; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfolk & Hoy, 1990). "Efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences" (Bandura, 1977, p. 194). Gibson and Dembo (1984) applied Bandura's (1977) outcome expectancy theory to the construct of teacher efficacy; they believed that outcome expectancy reflects "the degree to which teachers believe the environment could be controlled" (p. 570) or the extent to which students can be taught given outside influences such as family and community (Tschannen-Moran et al., 1998; Woolfolk & Hoy, 1990).

Bandura (1977, 1997) recognized four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal. "Mastery experiences are the most powerful source of efficacy information" (Tschannen-Moran et al., 1998, p. 211). Because of the influence on the long-term

development of teacher self-efficacy, early mastery experiences are extremely important (Hoy, 2000; Protheroe, 2008). "Personal mastery is more authentic than other sources of efficacy in helping individuals measure their capability" (Balls et al., 2011, p. 44). It is therefore very important for individuals to experience personal mastery experiences early in their development of teacher self-efficacy. According to Bandura (1977), "successes raise mastery expectations; repeated failures lower them, particularly if the mishaps occur early in the course of events" (p. 195).

Vicarious experiences are occurrences where someone is modeling a particular skill and the observer feels that emulating the modeled skill will improve their ability to perform the same task (Balls et al., 2011; Bandura, 1977, 1997; Tschannen-Moran et al., 1998). Balls et al. (2011) explained that "the information observers draw from vicarious experiences is a comparative analysis of the effectiveness of the modeled behavior to their own capacity as it relates to their perceived judgment of the capabilities of those modeling the behavior" (p. 46). In other words, if a teacher observes another teacher (whom he or she respects as being capable) using a particularly effective practice, that teacher will feel more confident using the observed practice to successfully reach his or her own students (Fives, 2003; Protheroe, 2008; Tschannen-Moran et al., 1998).

Verbal persuasion, according to Bandura (1977, 1997), occurs when "people are led, through suggestion, into believing they can cope successfully with what has overwhelmed them in the past" (p. 198). This source of self-efficacy determination is sometimes referred to as social persuasion and could involve pep talks, constructive criticism, feedback that highlights strengths, or recruitment of one's input (Balls et al., 2011; Protheroe, 2008; Tschannen-Moran et al., 1998). In order to avoid diminishing

the positive impact of its use, Balls et al. (2011) emphasized that the encouragement given should be authentic and realistic.

Physiological arousal is the final source of self-efficacy recognized by Bandura (1997). "People often read their physiological activation in stressful or taxing situations as signs of vulnerability to dysfunction" (Bandura, 1997, p. 106). When people feel stress during an event that overwhelms them, they tend to believe they are weak and vulnerable. When people feel weak and vulnerable, they are unlikely to experience success in a given situation; individuals are more likely to experience success when they are not overwhelmed and stressed about an event or activity (Balls et al., 2011; Bandura, 1977; Fives, 2003).

In 1984, Gibson and Dembo developed a link between Bandura's (1977) theory of self-efficacy and Rand researchers' (Armor et al., 1976; Berman et al., 1977) Rotter (1966) inspired measure of teacher efficacy. Specifically, they developed and validated an instrument designed to "examine the relationship between teacher efficacy and observable teacher behaviors" (Gibson & Dembo, 1984, p. 569; Fives, 2003; Tschannen-Moran et al., 1998).

Gibson and Dembo (1984) selected 53 items based on teacher interviews and literature that reported characteristics of high-efficacy teachers. After an initial (pilot) study that consisted of 90 teachers, they created a revised 30-item Likert format TES. They used a factor analysis solution to analyze the underlying factor structure of teacher responses to the 30-item TES; the existence of two factors resulted (Tschannen-Moran et al., 1998). Gibson and Dembo called Factor 1 *Personal Teaching Efficacy* (PTE). According to Gibson and Dembo, this dimension corresponded to the first Rand research item, specifically, "If I try really hard, I can get through to even the most

difficult or unmotivated students" (Armor et al., 1976, p. 23; Berman et al., 1977, p. 136). Factor 2 was assumed to reflect GTE, "or belief that any teacher's ability to bring about change is significantly limited by factors external to the teacher" (Gibson & Dembo, 1984, p. 574; Tschannen-Moran et al., 1998), this dimension corresponded to the second Rand research item, " When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment" (Armor et al., 1976, p. 23; Berman et al., 1977, p. 136).

Due to "persistent measurement problems that have plagued those who have sought to study teacher efficacy" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783), Tschannen-Moran and Woolfolk Hoy (2001) reviewed all of the major measures discussed above, noted problems that arose with each, and proposed a new measure of teacher efficacy called Ohio State Teacher Efficacy Scale (OSTES). They examined the new measure in three separate studies.

> In the first study, the original 52 items were reduced to 32 and in the second, the scale was further reduced to 18 items made up of three subscales. In the third study, 18 additional items we're developed and tested. The resulting instrument had two forms; a long form with 24 items and a short form what 12 items. (Tschannen-Moran & Woolfolk Hoy, 2001, p. 796)

Tschannen-Moran and Woolfolk Hoy (2001) examined the appropriateness of the new scale for use with pre and in-service teacher populations as well as the validity, reliability, and factor structure of the instrument. Today, the instrument is referred to as the TSES. It is used to measure efficacy in student engagement, efficacy in instructional practices, and efficacy in classroom management (Tschannen-Moran & Woolfolk Hoy, 2001).

PTE and GTE can operate independently (Fives, 2003; Gibson & Dembo, 1984; Oyerinde, 2008). Gibson and Dembo (1984) referred to them as the teacher's belief about the general relationship between teaching and learning and the teachers' sense of personal responsibility in student learning which corresponds to Bandura's (1997) self-efficacy dimension. Vesely et al. (2013) described GTE as "the 'professional' skills and characteristics needed for optimal effectiveness in the classroom and with students generally" (p. 72). PTE, according to Vesely et al., is the "personal skills and characteristics that shield the unfavorable components and situations of teaching, and contribute to the building of resilience and psychological well-being" (p. 72). Numerous studies suggest a relationship between elevated levels of PTE and GTE and the instructional practices that contribute to elevated levels of student academic achievement (Moseley & Utley, 2006; Oyerinde, 2008; Protheroe, 2008; Vesely et al., 2013). PTE and GTE have an influence on teacher behaviors in the classroom; they also affect student achievement (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001; Shaughnessy, 2004; Tucker et al., 2005; Vesely et al., 2013).

CRTTs. The term *culturally responsive pedagogy* has been used interchangeably with other terms such as multicultural, culturally congruent, culturally diverse, and culturally appropriate; although there are many variations in terminology, each term has the same general meaning and an influence on curriculum and pedagogy (Esposito & Swain, 2009; Gay, 2010; Greenwood, 2011; Ladson-Billings, 1995, 2009; Oyerinde, 2008).

Culturally responsive pedagogy is generally defined as the ability to use the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant and effective

(Cholewa, Amatea, West-Olatunji, & Wright, 2012; Delpit, 1995; Gay, 2010; Greenwood, 2011; Ladson-Billings, 2009; Oyerinde, 2008; Tharp, 1989).

Multicultural education originated in the early 1970s out of concern for the racial and ethnic inequalities that were apparent in learning opportunities and outcomes for culturally diverse students and that continue to prevail to this day (Gay, 2010).

The significance of multicultural education continues to increase due to the increase in racial, ethnic, socioeconomic, cultural, and linguistic orientations of students entering U.S. classrooms (Brown & Wheeler, 2009; Kena et al., 2014; Milner, Flowers, Moore, Moore, & Flowers, 2003; Nadelson et al., 2012). The racial/ethnic enrollment in prekindergarten-12 public schools located in United States has changed dramatically and is continuing to shift (Kena et al., 2014; Nadelson et al., 2012). For example,

> From fall 2001 through fall 2011, the number of white students enrolled in prekindergarten through 12th grade in U.S. public schools decreased from 28.7 million to 25.6 million, and their share of public school enrollment decreased from 60 to 52 percent. In contrast, the number of Hispanic students enrolled during this period increased from 8.2 million to 11.8 million students, and their share of public school enrollment increased from 17 to 24 percent. In 2002, the Hispanic share of public school enrollment exceeded the Black share and has since remained higher than the Black share in each subsequent year through 2011 (Kena et al., 2014, p. 48).

The changing demographics of American public schools illuminates the need for teachers to be open-minded, understanding, and able to respond to the educational needs of a broad range of students (Brown & Wheeler, 2009; Gay, 2010; Glickman, Gordon, & Ross-Gordon, 2014; Greenwood, 2011; Ladson-Billings, 2009; Nadelson et al., 2012;

Oyerinde, 2008). Gay's (2010) philosophy illustrated the need for a broader understanding of teaching; she believed that "teaching is most effective when ecological factors, such as prior experiences, community settings, cultural backgrounds, and ethnic identities of teachers and students, are included in its implementation" (p. 22). Lopez (2011) added to that philosophy by stressing the need for teachers to teach in culturally relevant ways that take into consideration how all students experience the curriculum. Siwatu, Frazier, Osaghae, and Starker (2011) stressed that it is important to understand how teacher cultural self-efficacy beliefs are formed and to recognize that cultural self-efficacy is an important step in designing effective strategies to prepare teachers to be culturally responsive within their diverse classrooms.

The aim of culturally responsive pedagogy is to "empower ethnically diverse students through academic success, cultural affiliation, and personal efficacy" (Gay, 2010, p. 127; Ladson-Billings, 1995; Villegas & Lucas, 2002). One way to achieve that goal is to rethink the curriculum and consider changes that reflect the learning and cultural styles of diverse students. Researchers have found that diverse students, particularly students of color, are not achieving to their full potential in school; and this has prompted calls for teachers to examine the curricula and their teaching practices (Ladson-Billings, 2009; Lopez, 2011, p. 75; Nadelson et al., 2012; Oyerinde, 2008; Ramsey, Williams, & Vold, 2003).

Banks (2010) described a *mainstream-centric* curriculum as "curriculum that focuses on the experiences of mainstream Americans and largely ignores the experiences, cultures, and histories of other ethnic, racial, cultural, language, and religious groups" (p. 234). Other researchers agree; for example, Gay (2010) described the mainstream-centric curriculum focus as *Eurocentric*, which she labeled as being the framework that shapes

U.S. school practices. Glickman et al. (2014) provided another perspective on mainstream-centric curriculum by mentioning *cultural clashes* between teachers and students. Sanacore's (2004) perspective expands on Glickman et al.'s cultural clash explanation by referring to it as a *mismatched entanglement* between student experiences and what students' schools expect for success. A curriculum that focuses solely on the experiences of mainstream Americans has negative consequences for both mainstream students and students of color (Banks, 2010; Brown & Wheeler, 2009; Delpit, 1995; Gay, 2010; Glickman et al., 2014; Ladson-Billings, 2009; Oyerinde, 2008; Ramsey et al., 2003).

Since the civil rights movement of the 1960s, educators have been trying, in various ways, to better infuse school curriculum with multicultural content and to move away from a mainstream-centric (or Eurocentric) curriculum (Banks, 2010; Osborn, 2005). The focus on high-stakes testing and accountability that have emerged within the last decade, the low level of knowledge about ethnic cultures that most educators have, and the heavy reliance on textbooks for teaching has slowed the institutionalization of a multicultural curriculum (Banks, 2010; Elish-Piper et al., 2013; Gay, 2010; Nadelson et al., 2012).

Most school reform efforts over the years have focused primarily on improving efficiency and assuming the status quo, "with little impact on the basic structures of schooling established over 100 years ago" (Edwards, 2014, p. 3; Villegas & Lucas, 2002). Glickman et al. (2014) thought "the emphasis in schools in recent years has been on teaching mandated content and preparing students for the test, not on assessing the value of the content students are being taught or on improving the curriculum" (p. 38). Other researchers have advanced the same point. For example, Schmoker's (2011) view

is that 21st century career demands and citizenship are very similar to the skills students need if they want to enter college. Whether or not students decide to go to college is their choice; they at least need to have that option. Schmoker went on to explain,

> it is increasingly clear that the primary reason so many students don't even have the option of attending college is our manifest failure to provide a coherent, content-rich curriculum that includes adequate opportunities for them to read, write, and talk thoughtfully. (p. 26)

Ainsworth (2010) connected student test preparation with the increasing external accountability pressures that school systems are facing, especially school systems with a majority of underachieving students. Ainsworth saw some school systems answering the external pressure with a lowering of expectations for their students. Glickman et al. (2014) saw a different alternative. Their position was to develop an authentic curriculum that meets the needs of the local community and individual students and addresses higher-level learning not typically reflected in external mandates; the curriculum should incorporate and go beyond external mandates (Ainsworth, 2010).

In 2002, Villegas and Lucas proposed a curriculum for preparing culturally responsive pre-service teachers. It outlined six qualities that define a culturally responsive teacher: sociocultural consciousness (Banks, 2010; Gay, 2010; Glickman et al., 2014; Siwatu et al., 2011); an affirming attitude towards students from culturally diverse backgrounds (Delpit, 1995; Ladson-Billings, 1994, 2009; Gay, 2010; Good & Brophy, 2008); commitment and skills to act as agents of change (Cholewa et al., 2012; Fullan, 2001); constructivist views of learning (Banks, 2010; Glickman et al., 2014; Ladson-Billings, 2009); learning about students (Cholewa et al., 2012; Good & Brophy, 2008; Ladson-Billings, 2009); and learning about students (Gay, 2010; Glickman et al., 2014;

Good & Brophy, 2008).

The first quality Villegas and Lucas (2002) proposed was sociocultural consciousness. Villegas and Lucas challenged teachers to expand their sociocultural consciousness to include an understanding that the way people think, behave, and exist is deeply influenced by race/ethnicity, social class, and language. Gay (2010) made the same point; her position is realized in the expression, "The individuality of students is deeply intertwined with their ethnic identity and cultural socialization" (Gay, 2010, p. 25). Banks (2010) echoed Villegas and Lucas's request for teachers to expand their sociocultural consciousness; he acknowledged that there are individuals who believe in the dominant mainstream-centric curriculum that supports, reinforces, and justifies the existing social, economic, and political structure of U.S. society. Banks (2010) suggested that there is a connection between multicultural curriculum resistance and the existing power structure in the United States; he declared, "Many people who resist a multicultural curriculum believe that knowledge is power and that a multicultural perspective on U.S. society challenges the existing power structure" (p. 237).

Sociocultural consciousness entails an understanding that in all social systems, some positions are accorded greater status than others, and with this status variation comes differential access to power (Banks, 2010; Villegas & Lucas, 2002). Villegas and Lucas (2002) believed teachers have an obligation to come to terms with the differences in access to power in the U.S. as well as the profound influence of the stratification of American society along racial/ethnic, social class, and gender lines.

There are teachers who enter the teaching profession with a strong sense of who they are socially and culturally. Villegas and Lucas (2002) urged teachers to engage in autobiographical exploration, reflection, and critical self-analysis to develop a sense of

their own sociocultural identities. Drago-Severson (2009) suggested *collegial inquiry* as a way to accomplish that goal. Drago-Severson described collegial inquiry as a process which, over time,

> Creates a context for teachers to develop greater awareness in their beliefs, convictions, values, and assumptions; to reflect with others in ways that may allow with them two envision and perhaps test the validity of their assumptions about practice; and to entertain and test alternative ways of thinking, acting, or behaving. (p. 161)

Because many teachers feel frustrated and overwhelmed when it comes to acquiring cultural knowledge, it becomes important for teachers to work together to share and promote ideas while developing relationships through both professional problem-solving activities and social interactions with one another (Drago-Severson, 2009; Hall & Hord, 2015; Rothstein-Fisch & Trumbull, 2008).

Glickman et al. (2014) expressed a need for teachers to ponder the reality that our society, our institutions, and our schools have let so many lower socioeconomic and racial/ethnic minority students down; in particular, teachers need to reflect on the schools and institutions that have "failed to address the learning needs of so many bright young people with so much potential because of their parents' incomes, their ethnicity/race, or their first language" (Glickman et al., 2014, p. 368). The more challenging task, according to Villegas and Lucas (2002), will be to motivate teachers (including teacher candidates) "to inspect their own beliefs about students from non-dominant groups and to confront negative attitudes they might have towards the students" (p. 24).

Siwatu et al. (2011) advocated for efforts to prepare prospective teachers to teach diverse students. They supported extending preservice teachers' classroom learning by

requiring them to participate in a meaningful community service activity which can be tied to preservice teachers' own learning about teaching in diverse educational settings. Community service experiences present opportunities for direct interaction with diverse sociocultural groups and it encourages reflection on the experience (Boyle-Baise & Sleeter, 1998); community cultural experiences such as these are a means to encourage the increase of cultural self-efficacy for all teachers. "Even without our being consciously aware of it, culture determines how we think, believe, and behave, and these, in turn, affect how we teach and learn" (Gay, 2010, p. 9).

"An affirming attitude toward students from culturally diverse backgrounds" (Villegas & Lucas, 2002, p. 23) is the second quality Villegas and Lucas (2002) believed culturally diverse teachers should possess. Teachers need affirming attitudes toward students from culturally diverse backgrounds (Edwards, 2014; Gay, 2010; Glickman et al., 2014; Ladson-Billings, 2009; Oyerinde, 2008; Villegas & Lucas, 2002). It is important for teachers to believe that all students can learn; researchers and cognitive scientists agree that "essentially all children are effective and efficient learners" (Danielson, 2006, p. 51; Gay, 2010; Ladson-Billings, 2009; Sanacore, 2004). Teachers who have an affirming attitude toward their culturally diverse students understand that while White, middle-class ways are most valued in American society, "this status derives from the power of the white, middle-class group rather than from any inherent superiority in sociocultural attributes" (Villegas & Lucas, 2002, p. 23).

There is a majority of European-American teachers in American classrooms; they have been educated in U.S. schools and implicitly hold dominant-culture values (Banks, 1991; Dilworth, 1998; Gay, 2010; Glickman et al., 2014; Villegas & Lucas, 2002). The pedagogical instruction that many teachers of diverse students received professed to teach

"the right way" to instruct students and manage the classroom (Ladson-Billings, 1994, 2009; Rothstein-Fisch & Trumbull, 2008; Villegas & Lucas, 2002); those are the very teachers who must make it a priority for their students to effectively function in society as it is now structured (Edwards, 2014; Glickman et al., 2014; Villegas & Lucas, 2002). An excellent example of this priority is the commitment to every child described by Edwards (2014): "The foundation of our mission and culture is an absolute belief that every student can learn and succeed, along with a relentless commitment to attaining those goals for all students and caring for each one of them" (p. 26). The teachers in the Mooresville Graded School District (MGSD)

> see all students, including children who are poor, of color, and speakers of languages other than English, as learners who already know a great deal and who have experiences, concepts, and languages that can be built on and expanded to help them learn even more. (Villegas & Lucas, 2002, p. 23)

Delpit (1995) supported the notion that there are teachers who regularly respect cultural differences and the propensity of those teachers to believe in their ethnically diverse students' capabilities to be learners, even when those children enter school with ways of thinking, talking, and behaving that differ from the dominant cultural norms. This is because, Villegas and Lucas (2002) argued, culturally respectful teachers

> see their role as adding to, rather than replacing, what students bring to learning; they are convinced that all students, not just those from the dominant group, are capable learners who bring a wealth of knowledge and experiences to school. (p. 23)

Teachers' attitudes towards students significantly shape the expectations they hold for student learning, their treatment of students, and what students ultimately learn (Good &

Brophy, 2008; Hoy, 2000; Jones, 2011; Kitsantas, 2012; Moseley et al., 2014; Tschannen-Moran & Woolfolk Hoy, 2001; Vesely et al., 2013: Wilson, 2011).

"Commitment and skills to act as agents of change" is the third quality Villegas and Lucas (2002) felt a culturally responsive teacher should exhibit. They emphasized *change agency* as a moral imperative for teachers: "Leaders who combine a commitment to moral purpose with a healthy respect for the complexities of the change process not only will be more successful but also will unearth deeper moral purpose" (Fullan, 2001, p. 5). In Villegas and Lucas's view, "Teachers are moral actors whose job is to facilitate the growth and development of other human beings" (p. 24). Fullan (2001) envisioned moral action strategies as something that cannot just be stated; from their perspective there needs to be leadership actions that energize people toward a common goal (p. 19). For the Mooresville school district described in Edwards (2014), "the moral obligation to bridge the digital divide is the driving force behind their digital conversion initiative" (p. 17). The district firmly believe that "provided with the right tools and support, all students can be successful academically, regardless of socio-economic status, first language spoken, or special needs" (p. 17).

Schools are under unrelenting pressure to improve results for all students with particular focus on culturally diverse students who have been previously underserved (Danielson, 2006). Because students depend on teachers to have their best interests at heart and to make sound educational decisions, teachers should take an active role to help increase student access to learning (Gay, 2010; Ladson-Billings, 2009; Villegas & Lucas, 2002). Villegas and Lucas (2002) wanted teachers to ensure a stronger focus on student educational success as well as teacher willingness to challenge the prevailing perception that differences among students are problems rather than resources. Fullan's (2001)

position is,

> Leadership, if it is to be effective, has to (1) have an explicit "making-a-difference" sense of purpose, (2) use strategies that mobilize many people to tackle tough problems, (3) be held accountable buy measured and debatable indicators of success, and (4) be ultimately assessed by the extent to which it awakens people's intrinsic commitment, which is none other than the mobilizing of everyone's sense of moral purpose. (p. 21)

Teacher leaders can emphasize the moral dimension of education by guiding fellow teachers in developing their own personal vision of education and teaching (Danielson, 2006; Drago-Severson, 2009; Fullan, 2001; Glickman et al., 2014; Villegas & Lucas, 2002); promoting the development of empathy for students of diverse backgrounds (Gay, 2010; Ladson-Billings, 2009; Villegas & Lucas, 2002); nurturing their passion and idealism for making a difference in students' lives (Edwards, 2014; Gay, 2010); and promoting activism outside as well as inside the classroom (Danielson, 2006; Fullan, 2001; Villegas & Lucas, 2002).

Teacher leaders can assist colleagues to become agents of change by teaching them about the process of change, helping them understand the obstacles they may encounter, helping them develop collaboration skills and ways to deal with conflict, and providing evidence that schools can become more equitable (Danielson, 2006; Edwards, 2014; Fullan, 2001; Hall & Hord, 2015; Villegas & Lucas, 2002).

Villegas and Lucas's (2002) vision of the fourth quality of culturally responsive teaching includes constructivist views of learning. The cultural knowledge children bring to school, derived from personal experiences, is essential to their learning (Rothstein-Fisch & Trumbull, 2008; Villegas & Lucas, 2002). Rothstein-Fisch and Trumbull's

(2008) approach involves teacher innovations that are compatible with a sociocultural, a constructivist, and a developmental view of learning. External information becomes knowledge to a student when he or she gives meaning to it (Christensen, Horn, & Johnson, 2008; Villegas & Lucas, 2002). Christensen et al. (2008) used a supply and demand analogy to describe this concept. They compared students to consumers and products to schools; if the products are "good," demand for them will materialize. In other words, if students were to deem school to be "good" (allow them to feel successful and make progress while giving them the ability to have fun with friends), students would be more motivated to go to school (the demand for school will rise); hence, students would give meaning to school.

All students are capable learners who continuously strive to make sense of new ideas. Their ways of speaking and thinking should be considered resources for further development rather than problems to be remedied (Danielson, 2006; Hart & Risley, 1995; Rothstein-Fisch & Trumbull, 2008; Smith & Wilhelm, 2002; Villegas & Lucas, 2002). Researchers caution against the complete elimination of traditional forms of educating students. They believe students also need to develop ability with dominant forms and uses of literacy because the development of those skills will enable students to decide when, whether, and how to use those conventions (Banks, 2010; Gay, 2010; Glickman et al., 2014; Villegas & Lucas, 2002).

Villegas and Lucas (2002) emphasized teacher-student relationships as their fifth quality, which defines a culturally responsive teacher. Ladson-Billings (2009) noted that culturally relevant teaching involves cultivation of the student-teacher relationship "beyond the boundaries of the classroom" (p. 67). Villegas and Lucas (2002) agreed; they join a chorus of other researchers who support the notion that teachers must know

not only the subject matter they teach but also their students (Edwards, 2014; Gay, 2010; Glickman et al., 2014; Good & Brophy, 2008; Katz, 1999; Sanacore, 2004). Teachers should strive to know as much as possible about the children they teach to facilitate their learning. When students know that adults in their lives truly care about them, trusting relationships can be developed that serve as an important environment for learning (Villegas & Lucas, 2002; Sanacore, 2004). When teachers take the time to get to know their students' hobbies and favorite activities as well as where they excel outside of school, they are in a better position to systematically tie the children's interests, concerns, and strengths into their teaching, thereby enhancing their students' motivation to learn (Danielson, 2006; Gay, 2010; Ladson-Billings, 1994; Villegas & Lucas, 2002).

"Being a culturally responsive teacher" is the last culturally responsive teacher trait. According to Villegas and Lucas (2002), it is "not simply a matter of applying instructional techniques, nor is it primarily a matter of tailoring instruction to incorporate assumed traits or customs of particular cultural groups" (p. 27). Culturally responsive teachers know their students well, and they use what they know about their students to create a classroom environment in which all students are encouraged to construct knowledge that helps them better understand the world rather than memorizing predigested information (Villegas & Lucas, 2002).

Instructional strategies. Educational researchers are critically examining the role of culture in the teaching/learning process (Gay, 2010; Ladson-Billings, 2009; Nadelson et al., 2012; Oyerinde, 2008; Siwatu et al., 2011; Villegas & Lucas, 2002). Stemming from the assumed negative consequences of ignoring the cultural context of teaching and learning, researchers continue to identify alternative approaches to instruction that are more inclusive of students' culture (Gay, 2010; Ladson-Billings,

2009; Nadelson et al., 2012; Oyerinde, 2008; Siwatu et al., 2011; Villegas & Lucas, 2002). Villegas and Lucas (2002) outlined the importance of exposing students to an intellectually rigorous curriculum, teaching students the strategies they can use to monitor their own learning, and setting high performance expectations for students. Other researchers believe it is equally important to consistently hold students accountable for meeting those expectations, to encourage students to excel, and to build on the individual and cultural resources students bring to school (Edwards, 2014; Gay, 2010; Glickman et al., 2014; Good & Brophy, 2008; Ladson-Billings, 2009; Oyerinde, 2008; Sanacore, 2004; Schmoker, 2011).

"Teachers need to continuously adjust their plans of action to meet students' needs while simultaneously building on their strengths" (Villegas & Lucas, 2002, p. 25). One way teachers can support students' construction of knowledge is by involving them in inquiry projects that have personal meaning to them (Christensen et al., 2008; Villegas & Lucas, 2002). Inquiry projects which engage students actively in purposeful, meaningful, collaborative, and intelligently rigorous work convey to children that they are capable thinkers who can create new ideas even if they are not fully fluent an academic English (Christensen et al., 2008; Smith & Wilhelm, 2002; Villegas & Lucas, 2002).

In addition to inquiry projects, research provides evidence to support the use of candid discussions about topics that are relevant to the lives of the students (Gay, 2010; Villegas & Lucas, 2002). When students are given opportunities to explore topics of interest to them, they are more likely to engage in learning (Gay, 2010; Ladson-Billings, 2009; Villegas & Lucas, 2002). Examples of topics for exploration should include discussions concerning "their goals and aspirations for the future, the role they see

schools playing in bringing those plans to fruition, what they value and find interesting about the different school subjects, and what they think about the school curriculum" (Villegas & Lucas, 2002, p. 27; Sanacore, 2004).

In order to develop culturally responsive understandings and abilities, teachers (both in service and perspective) need exposure to culturally responsive teachers (for example, by reading about them, analyzing teaching cases featuring them, and watching them in action) (Glickman et al., 2014; Nadelson et al., 2012; Villegas & Lucas, 2002). They also need practice in diverse classrooms themselves with "feedback from experienced responsive teachers" (Villegas & Lucas, 2002, p. 30; Gay, 2010; Ladson-Billings, 2009).

Student engagement. Edwards (2014) "believes that relevant, personalized, collaborative, and connected learning experiences enhance student engagement, which in turn drive student achievement" (p. 89). Teachers need to believe they have the ability to engage students, and a teacher's ability to engage their students rests primarily on that belief (Nadelson et al., 2012; Siwatu et al., 2011; Villegas & Lucas, 2002). It is impossible to be an effective teacher in today's digital age without being a teacher who has confidence in their ability to assist students in the process of generating meaning in response to new ideas and experiences they encounter in the classroom (Edwards, 2014; Villegas & Lucas, 2002). Students need to have access to "multiple modalities such as audio, visual, and text and employ a variety of experimental activities" in order to effectively engage in the process of learning (Edwards, 2014, p. 112).

Strambler and Weinstein (2010) conceptualized academic engagement as a meta-construct consisting of behavioral, cognitive, and emotional/psychological domains:

Behavioral engagement concerns students' level of school participation in

> learning tasks and school activities as well as rule following. Cognitive engagement reflects students' strategic learning, preference for challenging work, and interest in learning beyond the classroom. The emotional/psychological domain of engagement involves affective responses to school, that include school bonding or alienation, achievement valuing, degree of liking school, and identification. (p. 155)

Student engagement has also been defined as the intensity with which students apply themselves to learning in school; this includes traits such as motivation, enjoyment, and curiosity (Ladson-Billings, 2009; Loveless, 2015). When students are engaged in purposeful, meaningful, collaborative, and intelligently rigorous work, they tend to push themselves to meet the teacher's expectations (Ladson-Billings, 2009; Villegas & Lucas, 2002). Strambler and Weinstein (2010) considered this to be part of the emotional/psychological domain of engagement.

Ladson-Billings (2009) outlined five specific observable behaviors which are present in highly engaging classrooms. The first is the teacher's assumption that his or her students are competent: "When students are treated as competent they are likely to demonstrate competence" (Ladson-Billings, 2009, p. 134). She expanded on this by stressing the need for teachers to provide intellectual challenges; teachers should teach to the "highest standards" rather than the "lowest common denominator" (Ladson-Billings, 2009, p. 134). Strambler and Weinstein (2010) found that the disengagement of ethnic minority students in the classroom "may stem from their perception that they are not expected to achieve or not valued as a member of the classroom or school community" (p. 157).

The second behavior illustrates the need for teachers to provide instructional

scaffolding when necessary: “When teachers provide instructional scaffolding, students can move from what they know to what they need to know” (Ladson-Billings, 2009, p. 134). Villegas and Lucas (2002) defined scaffolding as helping learners build bridges between what they already know and believe about the topic at hand and the new ideas and experiences to which they are exposed. This type of support involves engaging students in questioning, interpreting, and analyzing information in the context of problems or issues that are interesting and meaningful to them (Sanacore, 2004). Strambler and Weinstein (2010) would consider this to be cognitive engagement.

The third behavior addresses the need for an instructional focus in the classroom. During her study, Ladson-Billings (2009) observed this behavior in action; she described what a “primary focus” classroom looks like: “Rossi’s fast-paced, challenging mathematics leaves no room for off-task, non-instructional behavior. The message that the classroom is a place where teachers and students engage is serious work was communicated clearly to everyone” (p. 135). Students’ perceptions of their learning environment, especially how much negative feedback they received, mattered in terms of their level of psychological disengagement, according to Strambler and Weinstein (2010); their results were consistent with other research which points out the importance of classroom quality for the engagement and achievement of students (Ladson-Billings, 2009; Sanacore, 2004; Villegas & Lucas, 2002;).

“Real education is about extending students’ thinking and abilities” (Ladson-Billings, 2009, p. 135), is the fourth behavior Ladson-Billings (2009) outlined in her five specific observable behaviors present in highly engaging classrooms. Sanacore (2002) pointed out that classroom discussions occur every day, and they are often reduced to an interrogation format in which the teacher asks prescribed questions at the literal level of

functioning and then expects students to respond with "correct" answers. Villegas and Lucas (2002) pointed out that teachers must acknowledge the existence and validity of a plurality of ways of thinking, talking, behaving, and learning in order to fully engage students in the classroom. According to Strambler and Weinstein (2010), this behavior exemplifies cognitive engagement.

Ladson-Billing's (2009) fifth behavior involves teachers' "in-depth knowledge of both their students and the subject matter" (p. 136). Strambler and Weinstein (2010) endorsed the concept that the ways in which teachers express care and respect toward students (how they provide feedback and how they respond to emotional and academic needs) have an influence on the development of a classroom culture and can facilitate or hinder students' motivations to engage in learning.

The power of cultural self-efficacy is rooted in its ability to guide decisions that teachers make in the course of their role as teachers (Fives, 2003; Gay, 2010; Nadelson et al., 2012; Villegas & Lucas, 2002). It is important for teachers to have a strong sense of cultural efficacy; it will enable them to make sound decisions in the best interest their students. When students are given opportunities to explore topics of interest to them, "they are more apt to engage in learning than when instructional topics have little relevance to their lives" (Villegas & Lucas, 2002, p. 28; Gay, 2010; Ladson-Billings, 2009)

Classroom management. Rothstein-Fisch and Trumbull (2008) explored a framework for understanding culture that focuses on the most important and fundamental differences between two types of cultural orientations—individualistic and collectivistic (p. 10). They stated, "In individualistic cultures, the emphasis is on the growth and development of the individual as an increasingly independent entity who learns to meet

his or her own needs" (Rothstein-Fisch & Trumbull, 2008, p. 10). They illustrated this worldview using common proverbs such as "Stand on your own two feet," "Every man for himself," and "The squeaky wheel gets the grease" (Rothstein-Fisch & Trumbull, 2008, p. 10). In collectivistic cultures, they continued, the emphasis is on the "growth and development of an individual who remains closely connected to his or her family and makes its well-being a priority" (Rothstein-Fisch & Trumbull, 2008, p. 10). Again, common proverbs best capture this worldview: "No task is too big when done together," "Many hands make light work," and "The nail that sticks up gets pounded down" (Rothstein-Fisch & Trumbull, 2008, p. 10).

Schools in the United States tend to reflect the values of the dominant culture which has its roots in Western Europe (Banks, 2010; Rothstein-Fisch & Trumbull, 2008). They are highly individualistic with the goal of teaching children to become independent and to strive for individual success (Ladson-Billings, 2009; Rothstein-Fisch & Trumbull, 2008). In contrast, "many immigrant families (as well as American Indians, Alaska Natives, Pacific Islanders, and African Americans) socialize their children to be more collectivistic" (Rothstein-Fisch & Trumbull, 2008, p. 11; Banks, 2010; Gay, 2010; Ladson-Billings, 2009). In their child-rearing practices, these families emphasize "maintenance of close bonds to family, responsiveness to family needs and goals, and working on tasks together as a group" (Rothstein-Fisch & Trumbull, 2008, p. 11; Ladson-Billings, 2009).

The goal of classroom management is to create an environment in which teachers understand that the ultimate goal of classroom management is "not to achieve compliance or control, but to provide all students with equitable opportunities for learning" (Weinstein, Curran, Tomlinson-Clarke, 2003).

Research Questions

1. What is the PTE and GTE of high school teachers as measured by the TES?
2. What is the relationship between teacher efficacy and CRTTs as measured by the TES and the CRTT Scale?
3. What is the relationship between teacher efficacy and student engagement in high school classrooms as measured by the TSES, CRTT Scale, and TES?
4. What is the relationship between teacher efficacy, CRTTs, instructional strategies, student engagement, and classroom management as measured by the TES, TSES, and CRTT Scale?

Purpose Statement

This study sought to examine how teacher efficacy impacts CRTTs, instructional strategies, student engagement, and classroom management.

Summary

Researchers have identified important relationships between teacher efficacy and desirable outcomes within learning environments (Armor et al., 1976; Fives, 2003; Oyerinde 2008; Tschannen-Moran & Woolfolk Hoy, 2001; Tucker et al., 2005). In order to raise student achievement, teachers must take into account students' prior experiences, community settings, cultural backgrounds, and ethnic identities (Banks, 2010; Edwards, 2014; Gay, 2010; Glickman et al., 2014; Ladson-Billings, 2009; Oyerinde, 2008; Sanacore, 2004; Villegas & Lucas, 2002). This study sought to examine how teacher efficacy impacts CRTTs, instructional strategies, student engagement, and classroom management.

Chapter 3: Methodology

Introduction

This study replicated the research conducted by Oyerinde (2008). Oyerinde sought to explore the relationship between teacher efficacy and CRTTs; in addition, his study examined the differences in teacher efficacy in four public middle schools by race and gender. This study investigated the relationship between teacher efficacy and CRTTs in three mid-Atlantic high schools. This study also examined the impact of teacher efficacy on instructional strategies, student engagement, and classroom management.

The researcher used a stratified sampling technique to select three high schools of the five district high schools using their minority enrollment and EOC test scores as a guide to ensure that the sample represented the full range of the population studied. The schools selected for study had a minority enrollment that ranged from 66% to 87%.

Stratification sampling means that specific characteristics of individuals are represented in the sample, and the stratified sample should then represent the true proportion in the population of individuals with certain characteristics (Creswell, 2014; Fowler, 2014). Any or all of the high school teachers located in three high schools within the Jonestown School District had the opportunity to participate in the study.

Stratified random sampling can be viewed as superior to a simple random sampling because it improves the potential for a more even representation of the population being studied (Creswell, 2014; Fowler, 2014; Laerd Statistics, 2015). Maxwell (2013) described this strategy as a way to focus on the settings, persons, or activities that are particularly relevant to the questions and goals of the study. The stratified random sample is appropriate for this study because it is important for the final sample to have certain characteristics of the overall population. The sample used in this

study included a random sampling of all teachers from the three high schools selected for the study. Those schools are Madison High School, Allinon High School, and Callahan High School (fictitious school names created to protect the anonymity of the research participants).

Instruments

This study used surveys to investigate the relationship between teacher efficacy, culturally relevant teaching techniques, classroom management, student engagement, and instructional strategies.

Three instruments were used to collect data for this study. The first instrument was the TSES (Appendix A). It was developed and validated by Tschannen-Moran and Woolfolk Hoy (2001). The second instrument (Appendix B) was Woolfolk and Hoy's (1990) TES. It is based on Gibson and Dembo's (1984) original TES. The third instrument was the CRTT Scale (Appendix C) developed by Oyerinde (2008).

TSES

This study used the TSES created by Tschannen-Moran and Woolfolk Hoy (2001). Appendix A provides information about the content of the 24-item scale. The TSES addresses three dimensions of efficacy: instructional strategies, student engagement, and classroom management. Tschannen-Moran and Woolfolk Hoy believed those three dimensions "represent the richness of teachers' work lives and the requirements of good teaching" (p. 801). The instrument has a unified and stable factor structure and assesses a broad range of teacher capabilities without being specific enough to render it useless for comparisons across contexts, levels, and subjects (Tschannen-Moran & Woolfolk Hoy, 2001). The reliability for Tschannen-Moran and Woolfolk Hoy's 24-item TSES is 0.94, indicating that the TSES is a very reliable measure of

teacher efficacy. For the TSES (Appendix A), Tschannen-Moran and Woolfolk Hoy examined the construct validity of the long form of the TSES (originally called the OSTES) by assessing the correlation of the measure with other existing measures of teacher efficacy (Creswell, 2014; Tschannen-Moran & Woolfolk Hoy, 2001); they compared their instrument with the "Rand Items and the Hoy Woolfolk (1993) 10-item adaptation of the Gibson and Dembo TES" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 801).

> Total scores on the OSTES (24-item long form) were positively related to both the Rand items (r=0.18 and 0.53, p<0.01) as well as to both the personal teaching efficacy (PTE) factor of the Gibson & Dembo (1984) measure (r=0.64, p<0.01) and the general teacher efficacy (GTE) factor (r=0.16, p<0.01). (Tschannen-Moran & Woolfolk Hoy, 2001, p. 801)

The results of those analyses indicated that the instrument "could be considered reasonably valid and reliable" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 801).

TES

This study also measured teacher efficacy with the 22-item TES instrument created by Woolfolk and Hoy (1990). The content of the 22-item TES that was used in this study is contained in Appendix B. Woolfolk and Hoy's instrument measures PTE and GTE. PTE describes teachers' confidence about their own abilities (or internal factors) to teach students. GTE describes teachers' beliefs about the power of external factors on student success (Oyerinde, 2008). The TES is an adaptation of the 1984 Gibson and Dembo TES.

Gibson and Dembo (1984) developed an instrument to measure teacher efficacy, provided construct validation support for the construct, and examined the relationship

between the construct and observable teacher behaviors. Gibson and Dembo's 30-item scale has a 0.78 for the first factor, PTE, and 0.75 for the second factor, GTE, which shows a reasonable measure of reliability for PTE and GTE. Woolfolk and Hoy's (1990) 22-item scale has a 0.82 for the first factor, PTE, and 0.74 for the second factor, GTE; 0.82 is a good measure of reliability for PTE; 0.74 indicates a reasonable measure of reliability for GTE. Woolfolk and Hoy's (1990) TES (Appendix B) replicated "the two-factor solution used by Gibson and Dembo in their development of the teacher efficacy scale" (Woolfolk & Hoy, 1990, p. 85). In the Gibson and Dembo study, Factor 1 appeared to represent a teacher's sense of PTE and Factor 2 represented a teacher's sense of teaching efficacy; "acceptable reliability coefficients resulted from only 16 of the original 30 items" (p. 574). Gibson and Dembo determined convergent validity with the use of a closed-ended additive scale format and a more open-ended format to gather evidence of teacher efficacy; they found a positive correlation of .42 ($p<.001$) (p. 574). "Verbal ability, flexibility, and teacher efficacy pass the criteria for convergent validity because the validity diagonal values of all three traits were found to be significant beyond the .05 level (.30, .39, and .42 respectively)" (Gibson & Dembo, 1984, p. 574). Woolfolk and Hoy (1990) used the 16 acceptable reliability coefficients from the Gibson and Dembo study and four others deemed relevant for their study. They also included the two original Rand items on their survey.

CRTT Scale

In addition to the TSES and TES, teacher efficacy was measured from the CRTT Scale perspective. The CRTT Scale was developed by Oyerinde (2008) to address gaps in existing teacher efficacy instruments; "specifically, none of the instruments take into account the culturally responsive teaching techniques dimension of teacher efficacy" (p.

54). The CRTT Scale measured the extent to which teachers are incorporating CRTTs into their pedagogy. The Cronbach's alpha for Oyerinde's CRTT Scale is 0.754, which is a reasonable measure of reliability for this instrument. The TSES and CRTT Scale were combined in this study to provide more information concerning teacher efficacy. "Descriptive statistics is the term given to the analysis of data that helps describe, show, or summarize data in a meaningful way such that patterns might emerge from the data" (Laerd Statistics, 2013c, p. 1).

For the CRTT Scale (Appendices C & D), Oyerinde (2008) established validity by employing factor analysis in order to assess the construct validity of his scale. Oyerinde's study used a combination of confirmatory and exploratory factor Analysis. He used confirmatory factor analysis to confirm the inclusion of CRTTs with teacher efficacy. He used exploratory factor analysis to explore the possibility of discovering a new factor not currently present in the TSES. In order to determine the number of factors to extract, Oyerinde combined the TSES and the CRTT Scale (29 items instead of the original 24). Prior factor analysis was conducted on the TSES and identified three factors: instructional strategies, student engagement, and classroom management. The determinant of the correlation matrix that was generated by Statistical Package for the Social Sciences (SPSS) showed the value for his data was 0.006, which is greater than the necessary value of 0.00001. Kaiser-Meyer-Olkin (KMO) statistics were calculated for all 14 variables simultaneously. Values greater than 0.5 are considered acceptable. For these data, the value was 0.742 which means that factor analysis was appropriate. The results of these analyses indicate that the CRTT Scale could be considered reasonably valid and reliable.

Table 8 provides a summary of item statistics for the CRTT Scale.

Table 8

Summary of Item Statistics for CRTT Scale (Oyerinde, 2008)

	Mean	Std. Deviation	Alpha	N
In this course, I provide students with examples and materials, which reflect different cultures other than their own.	3.79	.884	.750	24
In this course, I employ a variety of teaching styles to meet the learning needs of all students.	3.83	.702	.743	24
My teaching techniques help students to view concepts, issues, themes, and problems from diverse perspectives.	4.25	1.032	.577	24
I have a system in place to help students develop more positive racial attitudes and values.	3.54	.997	.647	24
I support restructuring of the culture and organization of my school so that all students will experience equality.	4.33	.963	.778	24

All of the items in Table 8 are relevant to this study; they represent CRTTs. CRTTs include involving all students in the construction of knowledge, building on students' personal and cultural strengths, and helping students examine the curriculum from multiple perspectives (Glickman et al., 2014; Ladson-Billings, 2009; Oyerinde, 2008; Villegas & Lucas, 2002).

Validity is the extent to which a measurement, test, or study measures what it aims to measure (Creswell, 2014; Huck, 2012). "The core essence of validity is captured nicely by the word accuracy" (Huck, 2012, p. 81). Researchers sometimes assess the degree their instruments provide accurate measurements by comparing them with scores on a relevant criterion variable; "the resulting *r* is called the *validity coefficient*" (Huck,

2012, p. 83).

> The numeric value of the Pearson's *r* indicates the strength of the linear relation between two variables. It can range from –1 to 1, and the closer the value is to the absolute value of 1, the stronger the linear relation between two variables. When there is no relation or when there is a weak linear relation, the Pearson's *r* is 0 or close to 0. (Odom & Morrow, 2006, p. 140)

Reliability is the degree of stability exhibited when a measurement is repeated under identical conditions (Creswell, 2014; Huck, 2012). Cronbach's alpha was employed to assess the reliability of the instruments used in this study. The basic idea of reliability is summed up by the word consistency; the summary of data's consistency "normally assumes a value somewhere between 0.00 and +1.00" (Huck, 2012, p. 69). The two "end points" represent "situations where consistency is either totally absent (0.00) or totally present (+1.00)" (Huck, 2012, p. 69). A good level of internal consistency is a value of 0.7 or higher (Laerd Statistics, 2013a).

Research Design

This study followed a correlational design in which the correlational statistic was used to describe and measure the relationship between two or more variables or sets of scores (Creswell, 2014). Survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population with the intent of generalizing from a sample to a population (Creswell, 2014; Fowler, 2014).

Procedure

The researcher obtained permission from the developers of the TSES, TES, and CRTT Scale to use the instruments (Appendices A, B, C, & D). The researcher obtained

permission from the Jonestown School District (Appendix E), the teachers in the three high schools via informed consent, and Gardner-Webb University Institutional Review Board (IRB) before beginning this study.

Permission regarding the target population was obtained from the Director of Research and Evaluation of the school district where the three public high schools are located. The researcher provided information about the research, an invitation to voluntarily participate, and information about the small incentive-to-participate drawing to all teachers in the three high schools (Appendix F).

The researcher coordinated with each of the three high schools to attend a faculty meeting and administer the survey to any faculty who wished to participate. The survey consisted of all three instruments combined into one 3-part instrument. Each participant was given the survey, the informed consent form to sign prior to completing the survey, and a number that matches the number on their survey (for the drawing). After all surveys were complete, a drawing was held by the principal (or his/her designee) for a chance to win a $20 MasterCard gift card. Five cards were distributed at each of the three schools. The researcher anticipated a survey return rate of 40% or higher, or 128 total surveys returned of a possible 320 respondents.

Less than 128 surveys (40%) were returned; the researcher contacted the assessment, research, and accountability department of the school district and explored the possibility of utilizing online digital versions of the survey instrument. After obtaining permission from the school district's research department, SurveyMonkey was utilized in order to reach the targeted 40% survey return rate.

Paper surveys were number and color coded to protect the anonymity of the participants and to differentiate between schools. Digital surveys were number coded to

protect the anonymity of the participants and to differentiate between schools. In addition, all digital survey data were password protected. After the data were gathered, they were analyzed using SPSS and Microsoft Excel.

Data Collection

The TSES, TES, and CRTT Scale were used to collect data for this study. The researcher combined the TSES with the CRTT Scale to assess efficacy for four factors of the teacher efficacy construct: classroom management, student engagement, CRTTs, and instructional strategies.

Consent forms were provided to participants to inform them of the voluntary nature of their participation and their rights to withdraw, ask questions, and obtain results. The form also explained anonymity and the purpose, procedure, and benefits of the study (Appendix F). The consent forms met all Gardner-Webb University IRB requirements as well as all requirements by the school district for conducting research.

Surveys were number coded to protect the anonymity of the participants and color coded to differentiate between schools. No research surveys were collected prior to informed consent forms being signed by participants.

Data collection consisted of the completion of the surveys which took approximately 10-15 minutes. Teacher responses remained confidential; the researcher collected all data using the number codes attached to the survey in lieu of teacher names. All collected data were kept in a locked location, and any digital data were password protected.

Data Analysis

Teachers were asked to respond to the TES survey using a Likert-type scale with responses of strongly disagree, moderately disagree, disagree slightly, agree slightly,

moderately agree, and strongly agree. The TSES and CRTT Scale are also Likert-type scales; however, teachers were asked to respond by selecting one of the following for each item: nothing, very little, some, quite a bit, and a great deal. With a Likert-type measuring instrument, "the respondent indicates a level of agreement or disagreement with each of several statements by selecting one of several options that typically include 'Strongly Agree' and 'Strongly Disagree' on the ends" (Huck, 2012, p. 439).

An ordinal variable is a clear ordering of the variables (Leeper, 2000, para. 3). Even though respondent levels of agreement or disagreement can be ordered from lowest to highest, the spacing between the values may not be the same across the levels of the variables (Leeper, 2000, para. 3). Statistical computations and analyses assume that the variables have a specific level of measurement (Leeper, 2000, para. 5). If the intervals between each of the values of the Likert instrument cannot be verified as the same, it is an ordinal variable. For the purpose of data analysis in this study, survey data were treated as ordinal. Mean and standard deviation descriptive statistics were shared on GTE and PTE, CRTTs, instructional strategies, student engagement, and classroom management.

An analysis of variance (ANOVA) is designed to explain the correlation between two or more variables (Huck, 2012). When doing an ANOVA, the assumption is that the distribution of the sample means is normally distributed; "if the distribution of the individual observations is not normal, the distribution of the sample means will be normally distributed if the sample size is about 30 or larger" (Leeper, 2000, para. 6). Factor analysis is a method of reducing a large number of variables into a smaller number of factors in order to find patterns in data (Darlington, 1997): "It is used to study the patterns of relationship among many dependent variables, with the goal of discovering

something about the nature of the independent variables that affect them" (p. 1). In accordance with Oyerinde's (2008) methodology, factor analysis, ANOVA, and a descriptive analysis were used to analyze data in this study.

The purpose of the analysis methods is to describe the samples that will be collected and identify relationships between the dependent variable teacher efficacy and several independent variables that might be classified. In order to answer the research questions, the data collected for this study were analyzed using SPSS.

Summary

This study explored the relationship between teacher efficacy and CRTTs (Oyerinde, 2008). This study also examined the impact of teacher efficacy on instructional strategies, student engagement, and classroom management.

Chapter 4: Results

Introduction

This study examined the relationship between teacher efficacy and CRTTs, instructional strategies, student engagement, and classroom management as measured by the TES, CRTT Scale, and TSES. Chapter 4 presents the compilation and analysis of the data collected during this study. The chapter begins with a description of the data collection process and teacher response rate. The next section in the chapter contains research questions and findings. The final section contains instrument reliability analysis, and a summary concludes the chapter.

Survey Distribution and Response Rate

The district was originally contacted in July of 2015 for formal approval of the research study. The district required 30 days to provide feedback concerning when or if the study could be conducted in its high schools. An email was sent to follow up with the district research department in August; they had not made a decision at that time. Thirty days later, a call was made to the district for a disposition on the study; the district still had not made a determination at that time. Approval was finally granted in October 2015 contingent upon high school principal approval from each of the high schools approved for participation in the study.

Each of the three high schools was contacted by email to request an appointment to attend a faculty meeting. Follow-up emails were sent to the principals 1 week later. Madison High School responded and scheduled faculty participation during the November 10, 2015 faculty meeting. Survey distribution and participation commenced after the meeting; there were 23 participants. Following the meeting, follow-up emails were sent to the two remaining schools; in addition, in-person visits were made to each

school to deliver a copy of the district permission letter and a brief summary of the study proposal. Contact information was shared at the time of each visit. Forty-eight hours later, follow-up emails were sent to the principals of both schools. One week later, a personal visit was made to both schools in an attempt to secure an appointment with the principals. An additional email was sent to the principals of both high schools 48 hours after the personal visit. Allinon High School responded to the additional email; the principal agreed to online participation but did not make face-to-face faculty meetings available to the researcher. The respondents at Allinon High School used SurveyMonkey to participate in the study; there were 18 responses from the high school. A follow-up email was sent to the principal of the third high school; a response was received within 48 hours. The principal scheduled a faculty meeting on December 10, 2015. Twenty-three responses were gathered at the end of the meeting. A participation reminder was sent to the faculty at Allinon High School, and a SurveyMonkey link to the survey was sent to the principals of Callahan and Madison High Schools. Five additional responses were received as a result of the effort. The goal for this study was to survey 40% of 320 high school teachers at three mid-Atlantic high schools. Survey data were collected from 84 of the possible 320 participants. Despite the in-person distribution of surveys and the gift card incentive, the total response rate was 26%.

Creswell (2014) referred to this sampling technique as *convenience sampling* because the respondents were "chosen based on their convenience and availability" (p. 158). Rea and Parker (2014) noted the information obtained from nonprobability (or convenience) samples is useful but "does not allow a specific margin of error to be identified, which interferes with any attempt to scientifically generalize the findings" (p. 198). The findings from the data collected in this study were used for the purpose of

elaborating on the otherwise undetected nuances, themes, and patterns of the teachers who participated in the study (Rea & Parker, 2014). Table 9 shows the number of questionnaires returned from each of the high schools.

Table 9

Questionnaires Returned by Teachers in Three High Schools

High Schools	Returned
Madison High School	23
Allinon High School	33
Callahan High School	28
Total	84

Callahan High School returned the highest number of completed surveys; the response rate exceeded Madison High School's rate by five surveys. Of the three high schools surveyed, Allinon High School had the lowest completed survey response rate. They returned 33 surveys: 18 were complete, and 15 were unusable due to very low response rates (6% or less). Table 10 shows the distribution of teachers by gender from each of the three high schools that participated in the study. The "Gender %" represents the total number of males or females, including all missing responses; the "Valid %" represents the responses without missing values (Crowder & Glynn, 2000). Missing responses represent the teachers who chose not to respond to the gender question of the 69 completed surveys.

Table 10

Distribution of Teacher Participants in the three High Schools by Gender

	Gender			
	Male % (Valid %)	Female % (Valid %)	N	Missing (%)
Madison H.S.	26.1 (27.3)	69.6 (72.7)	21	1 (4.3)
Allinon H.S.	11.1 (11.8)	83.3 (88.2)	17	1 (5.6)
Callahan H.S.	25.0 (25.0)	75.0 (75.0)	28	0
Total	21.7 (22.4)	75.4 (77.6)	67	2 (2.9)

Of the 69 total respondents, 75.8% were female and 24.2% were male; two respondents chose to skip this question on the survey. Overall district faculty gender distribution data were not available for comparison at the time of this study; however, the national percentage of female public school teachers is 76% (U.S. Department of Education, 2015).

Table 11 outlines the ethnic distribution of the participants in each of the three high schools studied.

Table 11

Distribution Percentage of Teacher Participants in the three High Schools by Race

	White	African American	Native American	Asian American	Mexican American	Puerto Rican American	Other	No Ans.	%
Madison H.S.	43.5	39.1	0.0	0.0	0.0	4.3	13.0	0.0	100
Allinon H.S.	50.0	33.3	0.0	5.6	0.0	0.0	0.0	11.1	100
Callahan H.S.	71.4	17.9	0.0	0.0	0.0	0.0	10.7	0.0	100
Total	56.5	29.0	0.0	1.4	0.0	1.4	8.7	2.9	100

The ethnic breakdown of participants in Table 11 shows that 56.5% of respondents were White, 29% were African American, 1.4% were Asian, an additional 1.4% identified themselves as Puerto Rican, and 8.7% identified themselves as other. Two respondents did not answer the question; they accounted for 2.9% of the participants. Overall district faculty ethnicity data were not available for comparison at the time of this study. The participant group included 69 teachers from three high schools with varied degrees of teaching experience. Table 12 lists the distribution of participants by teaching experience.

Table 12

Distribution of Teacher Participants in the Three High Schools by Teaching Experience[*]

	Years of Experience								
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	N
Madison H.S.	5	5	1	6	2	1	2	1	23
Allinon H.S.[**]	4	4	5	2	2	0	0	0	17
Callahan H.S.	6	4	3	8	4	2	1	0	28
Total	15	13	9	16	8	3	3	1	68

[**]One missing response from this school.

When asked about teaching experience, 41% of teachers responded that they had between 1 and 10 years of teaching experience, and 49% had between 11 and 25 years of experience in the classroom. Teachers with 26 to 30 years of teaching experience accounted for 4%, and 5% of teacher participants had been teaching for 31 years or more. There was one missing response from Allinon High School; it accounted for the final 1% not listed in Table 12.

TSES and CRTT Scale. The TSES and CRTT Scale scores were calculated based on teacher responses to individual questions on each survey. For the TSES, there were 18 questions divided into three sections of questions for each of the three constructs: classroom management, instructional strategies, and student engagement. According to the scale, each of the questions had a Likert-type scale response and each response was assigned a numerical value range. *Nothing* was assigned one to two points; *very little*, three to four points; *some influence*, five to six points; *quite a bit,* seven to eight points; and *a great deal* was assigned nine points. There were three questions for the construct

of cultural teaching; those questions also had a Likert-type scale which assigned a numerical value to responses. *Nothing* was assigned one point; *very little,* two points; *some,* three points; *quite a bit,* four points; and *a great deal*, five points. Additionally, each of the four constructs were calculated separately and entered into SPSS under its respective category. For example, under the category CRTTs, each teacher response (with a numerical value of one through five) was added to find the total individual teacher points for that particular construct. Each teacher had a total calculated score for culturally responsive teaching, classroom management, instructional strategies, and student engagement. Those scores were entered into SPSS under their respective categories. Tables 13-16 display the overall and individual school mean, standard deviation, and number of cases for each construct from the combined TSES and CRTT Scale.

Table 13

Cultural Teaching Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	11.86	11.67	12.43	11.50
Standard Deviation	2.053	2.376	1.830	1.972
Range	8	8	7	7
Minimum	7	7	8	8
Maximum	15	15	15	15
N	69	18	23	28

The scores in Table 13 are averaged from the individual total score each teacher was assigned based on their responses to the CRTT Scale. The scores fall into the following ranges: 1-3=nothing; 4-6=very little; 7-9=some; 10-12=quite a bit; and 13-15=a great deal. The highest possible overall score is 15; the overall mean score is 11.86,

which is 76% of the highest possible score. Madison High School had a mean score of 12.43 overall. Although Madison High School's score was higher than the overall mean, it still fell within range of Allinon and Callahan High Schools. Table 14 covers student engagement scores for each school and overall.

Table 14

Student Engagement Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	37.81	36.17	37.87	38.82
Standard Deviation	6.724	4.605	7.394	7.288
Range	44	21	38	25
Minimum	9	27	9	28
Maximum	53	48	47	53
N	69	18	23	28

The scores for student engagement scale were calculated as follows: 1-10.8=nothing; 10.9-21.6=very little; 21.7-32.4=some influence; 32.5- 43.2=quite a bit; and 43.3-54=a great deal. The highest possible score for this construct was 54. The overall mean was 37.81 (70%). Each of the three high schools were squarely within the *quite a bit* range (32.5-43.2); this suggests there is a moderately high level of student engagement perceived by teacher respondents at each of the three high schools. Allinon High School had the lowest mean score at 36.17, which represented 67% of the highest possible score. Madison and Callahan High Schools' scores demonstrate a higher level of student engagement perception. Table 15 includes teacher overall and school response scores for the construct of instructional strategies.

Table 15

Instructional Strategies Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	29.59	29.11	29.22	30.21
Standard Deviation	4.791	3.546	6.633	3.655
Range	31	12	31	13
Minimum	5	24	5	23
Maximum	36	36	36	36
N	69	18	23	28

The highest possible score for this construct is 36: 1-7.2=nothing; 7.3-14.4=very little; 14.5-21.6=some influence; 21.7-28.8=quite a bit; 28.9-36=a great deal. The overall mean score was 29.59, which is 82% of the highest level of instructional strategies that teachers believe they utilize in their classrooms.

Teacher respondents at Callahan High School appear to have the most confidence in their ability to utilize effective instructional strategies in their classrooms; their mean scores are in the *a great deal* range. Allinon and Madison High Schools' scores fall within the *quite a bit* range, which still suggests a strong belief in using instructional strategies effectively in their classrooms. Classroom management overall and mean scores were also analyzed. The scores are reflected in Table 16.

Table 16

Classroom Management Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	57.72	58.11	56.83	58.21
Standard Deviation	9.567	7.851	11.304	9.303
Range	57	32	57	38
Minimum	15	38	15	34
Maximum	72	70	72	72
N	69	18	23	28

Classroom management included the highest number of questions. The highest possible score was 72: calculations for responses were 1-14=nothing; 15-29=very little; 30-43=some influence; 44-58=quite a bit; and 59-72=a great deal. The overall mean score was 57.72; this score indicates that 80% of teacher respondents believe in their ability to manage their classrooms. The mean scores for each of the three high schools were in the *quite a bit* range of 44-58. The overall response rate was 100% in each of the four categories.

Research Question 1. What is the PTE and GTE of high school teachers as measured by the TES? The first research question guiding this study looked at the personal and general efficacy of teachers at three high schools.

PTE. In the context of this study, PTE relates to a teacher's feeling of confidence in their personal teaching abilities (Hoy, 2000). The scale used to measure this construct was Woolfolk and Hoy's (1990) TES, which scores personal efficacy based on levels of agreement with items on the scale. Table 17 reviews the percentages of teacher agreement with PTE statements from the TES.

Table 17

Overall PTE Responses from TES

Question	N (%)
When a student in my school is having difficulty with an assignment, I am usually able to adjust it to his/her level.	52 (75)
When I really try, I can get through to most difficult students.	57 (83)
If student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.	63 (91)
If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	65 (94)
My teacher training program and/or experience has given me the necessary skills to be an effective teacher.	60 (83)

Table 17 indicates that over 90% of the 69 teachers who responded felt confident in their ability to know the necessary steps to teach a specific concept and accurately assess whether an assignment was at the correct level of difficulty for their students. However, when asked specifically about their ability to adjust an assignment to meet the level of a student who is having difficulty, only 75% of those teachers expressed confidence in their ability to make adjustments. More than 82% of teachers expressed confidence in their ability to get through to difficult or unmotivated students, and 80-88% of teachers attributed their students' academic success to their personal ability to exert extra effort and find better ways of teaching concepts. When asked about the role of training and experience in attaining the necessary skills to be an effective teacher, 87% felt their training and experience gave them the skills they needed to effectively teach; in

addition, 75% felt their training contributed to their ability to deal with almost any learning problem in their school.

Personal efficacy items were reversed for analysis in this study so that 6="strongly agree," thereby indicating very high PTE. For the purposes of analysis, the closer the mean score is to 6, the higher the level personal efficacy of respondents. Table 18 contains the overall and individual school PTE mean scores.

Table 18

PTE Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	4.57	4.35	4.69	4.61
Standard Deviation	1.089	1.153	1.003	1.073
Range	5	5	5	5

The overall PTE mean score for all three high schools involved in the study was 4.57; the highest possible score was 6. All of the scores exhibited no less than 75% agreement with statements that are consistent with teachers who possess a strong sense of personal efficacy. Madison High School teacher participants displayed the highest degree of personal efficacy; the mean score of 4.69 is higher than the average for all three schools.

GTE. In this study, GTE relates to a teacher's general belief about the power of teaching to reach difficult children (Hoy, 2000). Woolfolk and Hoy's (1990) TES was also employed to measure this construct. General efficacy items were based on levels of disagreement with items on the scale. The general efficacy item scores do not require reversal to indicate a strong sense of efficacy with a high score. For the following

questions, a strong sense of efficacy is indicated by the disagreement with the statements on the scale. For example, a "strongly disagree" response to the statement, "When it comes right down to it, a teacher really can't do much because most of student's motivation and performance," received a score of 6 rather than 1. Table 19 lists the percentages of disagreement with GTE statements from the TES.

Table 19

Overall GTE Responses from TES

Question	N (%)
The hours in my class have little influence compared to the influence of their home environment.	26 (38)
If students aren't disciplined at home, they aren't likely to accept any discipline.	16 (23)
If parents would do more for their children, I could do more.	12 (17)
When it comes right down to it, a teacher really can't do much because most of student's motivation and performance depends on his or her home environment.	43 (62)

An area of teacher concern, as shown in Table 19, was the influence of students' home environments. Of the 69 teachers who responded, 38% expressed the belief that the hours spent in their classrooms have an influence on students compared to the influence of home environment; 62% believe the hours in the classroom cannot compensate for a student's home environment. Discipline at home was a concern for 77% of teachers; those teachers felt that students should learn discipline at home. Twenty-three percent of teacher participants felt their students would accept discipline in school regardless of any discipline they might receive at home. More than 80% of

teachers surveyed felt they could do more for their students with additional parental support; 17% believe they have the ability to reach their students regardless of what parents do at home. Overall, 62% of teachers who participated felt they had a powerful influence on student achievement when all things were considered.

General efficacy items were not reversed for analysis in this study; this means that 6="strongly disagree," thereby indicating very high GTE. For the purposes of analysis, the closer the mean score is to 6, the higher the level of GTE of respondents. Table 20 shows the overall and individual school GTE mean scores.

Table 20

GTE Scores Overall and by School

	Overall	Allinon H.S.	Madison H.S.	Callahan H.S.
Mean	3.49	3.27	3.47	3.64
Standard Deviation	1.579	1.256	1.195	1.268
Range	5	5	5	5

The overall GTE mean score for the three high schools involved in the study was 3.86; the highest possible score was 6. The scores ranged from 54% to 61% disagreement, which indicates a slightly low sense of GTE. Because PTE and GTE are independent constructs, it is possible for a teacher to have confidence in his or her personal teaching ability while lacking faith in the general ability of teachers to reach difficult children (Protheroe, 2008).

Research Question2. What is the relationship between teacher efficacy, and CRTTs as measured by the TES and the CRTT Scale? The second research question guiding this study addressed the relationship between GTE and PTE and CRTTs.

Spearman's correlation was run to assess the relationship; Spearman's correlation is a measure of the monotonic direction and strength relationship between two variables (Laerd Statistics, 2013d). According to Laerd Statistics (2013d) a monotonic relationship is a relationship where a variable increases as another one does or a variable decreases as another one increases. The magnitude of the Spearman's correlation coefficient was used to determine the strength of the correlation. A Spearman's correlation coefficient (r_s) of +1 indicates a perfect association, an r_s of zero indicates no association, and an r_s of -1 indicates a perfect negative association. The closer r_s is to zero, the weaker the association (Laerd Statistics, 2013d). According to Creswell (2015), Spearman's correlation coefficients of .20 through .35 indicate a "slight" relationship, and "may be valuable to explore the interconnection of variables" (Creswell, 2015, p. 348). Coefficients of .35 through .65 demonstrate a "moderate" relationship and are used "to identify variable membership in the intercorrelation of variables with a scale" (Creswell, 2015, p. 348). Coefficients of .66 through .85 "would be considered very good" (Creswell, 2015, p. 348) and indicate a strong relationship. Coefficients of .86 and above are very strong correlations. The Spearman's correlation coefficient values for GTE, PTE, and CRTTs are shown in Table 21.

Table 21

Spearman's Correlations TE and CRTTs

	General Efficacy	Personal Efficacy	Cultural Teaching
General Efficacy	1.00	.152	.119
Personal Efficacy		1.00	.266*
Cultural Teaching			1.00

*. Correlation is significant at the 0.05 level (2-tailed).

There were 69 responses in this analysis. The data in Table 21 reveal a very slight correlation between GTE and culturally responsive teaching. The closer r_s is to zero, the weaker the association between the ranks (Laerd Statistics, 2013d). The correlation coefficient value, r_s=.119, between cultural teaching and general efficacy is close to 0; therefore, there is very slight relationship between GTE and culturally responsive teaching. The scatterplot in Figure 2 highlights the very slight correlation between GTE and culturally responsive teaching.

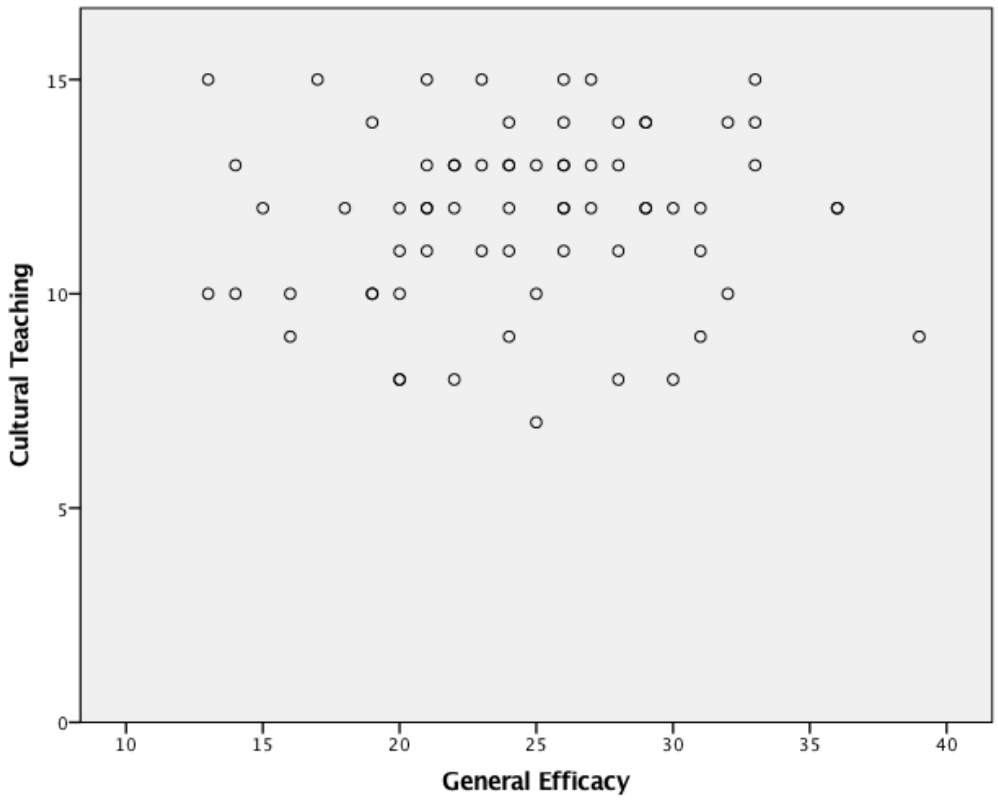

Figure 2. GTE and CRTTs Scatterplot.

The data points in Figure 2 are very loosely clustered at the top of the scatterplot. The configuration of data points does not indicate a significant relationship between general efficacy and cultural teaching. The correlation coefficients in Table 21 display a slight statistically significant correlation between PTE and culturally responsive teaching. Figure 3 displays a visual representation of the correlation.

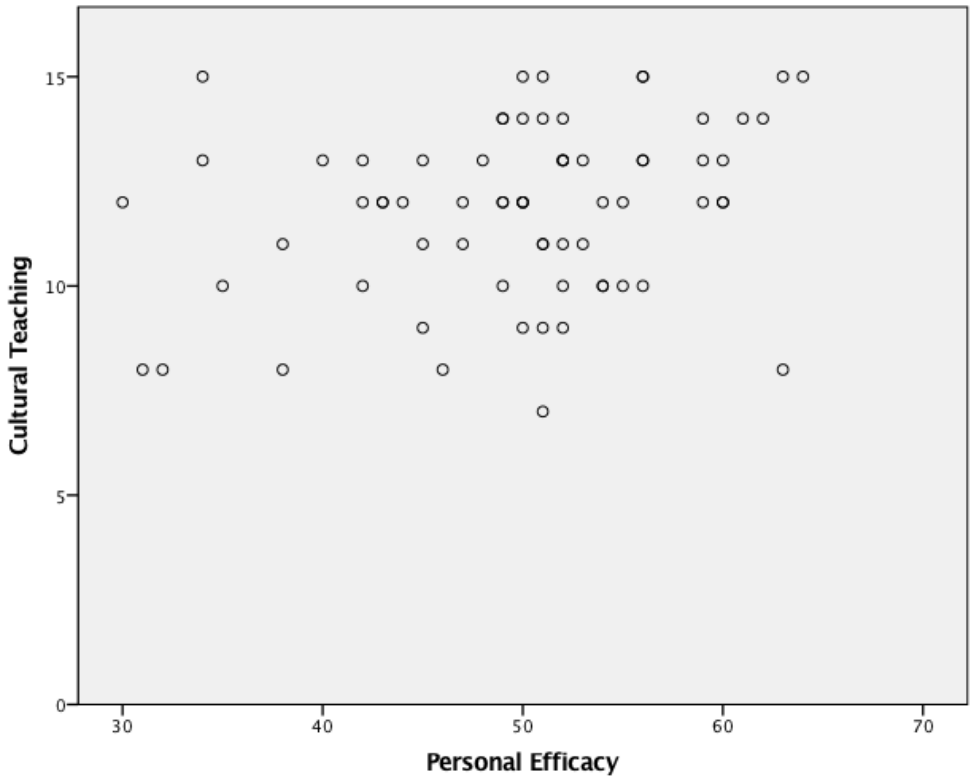

Figure 3. PTE and CRTTs Scatterplot.

The data points on the scatterplot in Figure 3 are loosely clustered and demonstrate a slight statistically significant positive correlation. The loose cluster of data points in the upper middle portion of the scatterplot represents the Spearman's correlation coefficient, $r_s(67)=.266$, $p<.05$ listed in Table 21.

Research Question 3. What is the relationship between teacher efficacy and student engagement in high school classrooms as measured by the TSES, CRTT Scale, and TES? The third research question guiding this study explored the relationship between teacher efficacy, cultural teaching, and student engagement; Spearman's correlation coefficients were used to assess the relationships. The Spearman's correlation coefficients for GTE, PTE, CRTTs, and student engagement are listed in Table 22.

Table 22

Spearman's Correlations GTE, PTE/CRTTs and Student Engagement

	General Efficacy	Personal Efficacy	Cultural Teaching	Student Engagement
General Efficacy	1.00	.152	.119	.398**
Personal Efficacy		1.00	.266*	.373**
Cultural Teaching			1.00	.319**
Student Engagement				1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 22 highlights a moderate, positive, statistically significant correlation between teacher efficacy and student engagement, (r_s (67)=.398, p<.01 and (r_s (67)=.373, p<.01. In addition, a slight, positive, statistically significant correlation was found to exist between cultural teaching and student engagement (r_s (67)=.319, p<.01. Figure 4 provides a scatterplot containing data points that represent the correlations between GTE, PTE, CRTTs, and student engagement.

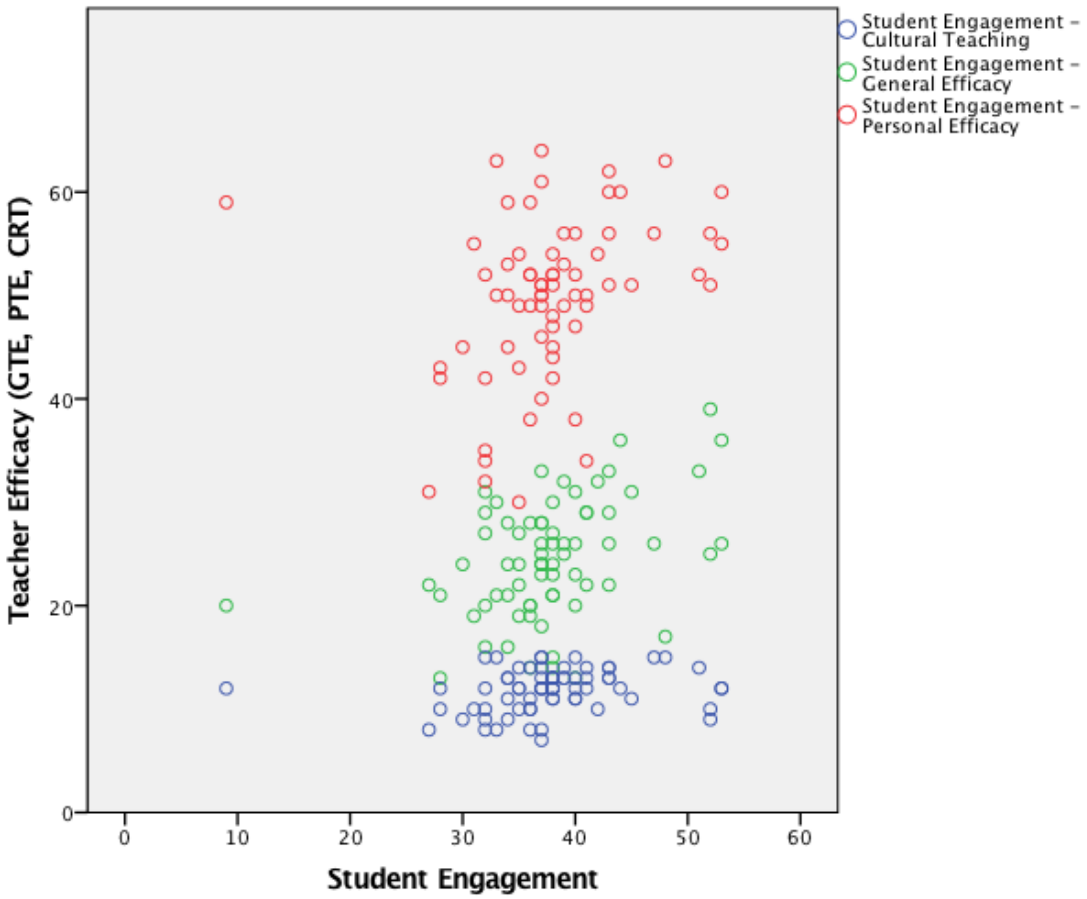

Figure 4. GTE, PTE, CRTTs, and Student Engagement Correlation Scatterplot.

The scatterplot in Figure 4 illustrates three clusters of data points which show relationships between student engagement and each of the three constructs. Cultural teaching displays the most concentrated area of data points, but the positive direction is slight. GTE and student engagement data points line up in the same general positive direction. The red data points representing PTE and student engagement are also clustered and following a loose linear positive direction pattern.

Research Question 4. What is the relationship between teacher efficacy, CRTTs, instructional strategies, student engagement, and classroom management as measured by the TES, TSES and the CRTT Scale? Responses to the combined 29-item CRTT Scale and TSES were analyzed using Principal Component Analysis (PCA).

During that analysis four independent dimensions of teacher efficacy were indicated: classroom management, instructional strategies, student engagement, and CRTTs. The PCA also included the TES; two independent dimensions of teacher efficacy were identified: *general* and *personal.* The final research question guiding this study examined the relationship between all of the variables. Table 23 contains the Spearman's correlation coefficient values (r_s) for each of the six variables.

Table 23

Spearman's Correlation GTE, PTE, CRTTs, Instructional Strategies, Student Engagement, and Classroom Management

	General Efficacy	Personal Efficacy	Cultural Teaching	Instructional Strategies	Student Engagement	Classroom Management
General Efficacy	1.00	.152	.119	.235	.398**	.367**
Personal Efficacy		1.00	.266*	.331**	.373**	.311**
Cultural Teaching			1.00	.368**	.319**	.214
Instructional Strategies				1.00	.371**	.467**
Student Engagement					1.00	.439**
Classroom Management						1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 23 highlights several moderate, positive, statistically significant relationships: specifically instructional strategies and classroom management, $r_s(67)=.467, p<.01$. Student engagement also moderately correlates with classroom

management, r_s (67)=.439, p<.01. Several other variables moderately correlated with one another. For example, general efficacy had a moderately statistically significant correlation with student engagement, r_s (67)=.398, p<.01. Personal efficacy had a statistically significant correlation with student engagement; this correlation was moderate in strength, r_s (67)=.373, p<.01. Other moderate correlations that were statistically significant include instructional strategies and student engagement, r_s (67)=.371, p<.01; and cultural teaching and instructional strategies, r_s (67)=.368, p<.01.

There were a few correlations that were statistically significant, positive, and slight in strength; they included personal efficacy and instructional strategies, r_s (67)=.331, p<.01; student engagement and cultural teaching, r_s (67)=.319, p<.01; and PTE and classroom management, r_s (67)=.311, p<.01. There was also a slight statistically significant correlation between personal efficacy and cultural teaching. Based on the findings, there is a slight to moderate statistically significant relationship between teacher efficacy, CRTTs, instructional strategies, student engagement, and classroom management. Figure 5 gives a visual representation of the correlations between the variables.

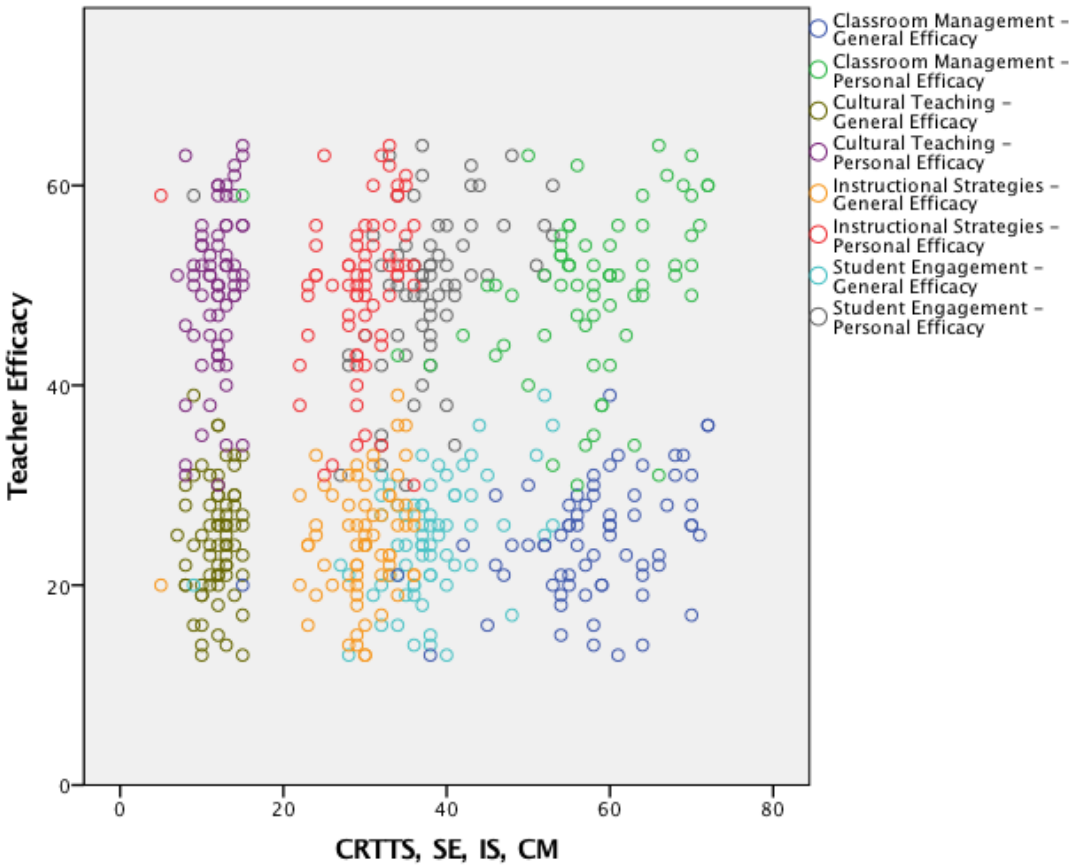

Figure 5. PTE and Instructional Strategies Correlation Scatterplot.

In Figure 5, student engagement is shown to have a moderate, positive relationship with general efficacy as well as personal efficacy as indicated by the light blue and dark gray clusters in the middle of the scatterplot. General efficacy is also shown to have a moderate, positive relationship with classroom management; the dark blue dots on the lower right position of the scatterplot are loosely clustered and following a positive directional pattern. The green cluster of dots on the scatterplot show a slight, positive relationship between classroom management and PTE. The clustered, slightly positive pattern of red dots representing instructional strategies and personal efficacy also stand out on the scatterplot as having a slight, positive relationship.

Instrument Reliability

Measures of internal reliability were performed on each of the three scales used for data collection in this study. Internal consistency refers to the extent to which tests or procedures assess the same characteristic, skill, or quality (Tavakol & Dennick, 2011). In other words, if a respondent expressed agreement with the statement "I like to eat cake" and disagreed with the statement "I hate cake" within the same instrument, good internal consistency is indicated.

Cronbach's alpha. Cronbach's alpha statistic was calculated to determine the reliability of each item on each of the three scales. The item-to-scale correlations were compared to assess how each item "fits" within the scale. According to Laerd Statistics (2013a), the "Corrected Item-Total Correlation" is the Pearson correlation between the specific item and the sum of all other items. If the items are all measuring the same underlying construct, the correlation coefficient should be relatively high. Items with correlation values of 0.30 or greater are considered to display internal consistency (Laerd Statistics, 2013a).

Table 24 lists the values of the item to scale correlations for each item in the TES.

Table 24

Item to Scale Correlations for TES

	Corrected Item–Total Correlation	Squared Multiple Correlation
1	.020	.500
2	.397	.597
3	.326	.549
4	.352	.431
5	.435	.594
6	.502	.680
7	.313	.600
8	.520	.827
9	.255	.631
10	.404	.506
11	.423	.705
12	.208	.537
13	.122	.537
14	.482	.644
15	.279	.543
16	.298	.600
17	.248	.311
18	.427	.626
19	.709	.866
20	.566	.649
21	.059	.415
22	.327	.672

In Table 24, items 1, 13, and 21 in the "Corrected Item–Total Correlation" column have Pearson correlation coefficient values that are below the acceptable limit of 0.3 (.020, .122, and .059 respectively).

The "Squared Multiple Correlation" is the r^2 value in a multiple regression with the dependent variable as the specific item and the predictors as the other items (Laerd Statistics, 2013a). If the items are measuring the same latent construct, then the items should be able to explain the variation in the other items (Tavakol & Dennick, 2011). The "Squared Multiple Correlation" column should be large to ensure that the item can

be explained well by the other items. The value in the "Squared Multiple Correlation" column for item 1 is .500, and for item 13 the value is .537. Because the items had unacceptable values in the "Corrected Item Total Correlation" column, these items were watched during subsequent analysis to determine if they should be deleted. In addition, there were unacceptable values in the "Corrected Item–Total Correlation" column for item 21 in Table 24, which indicates it may not measure anything of importance to the study (Laerd Statistics, 2013a). It was later found that item 21 was not measuring any of the constructs in the study; as a result, item 21 was deleted from analysis. Table 25 shows the item to scale correlations for the TSES.

Table 25

Item to Scale Correlations for TSES

	Corrected Item–Total Correlation	Squared Multiple Correlation
1	.687	.866
2	.804	.863
3	.825	.921
4	.697	.902
5	.792	.910
6	.770	.926
7	.854	.930
8	.793	.928
9	.797	.914
10	.691	.807
11	.790	.930
12	.680	.878
13	.820	.938
14	.803	.888
15	.845	.952
16	.824	.936
17	.808	.903
18	.820	.911
19	.763	.911
20	.781	.902
21	.720	.917
22	.711	.844
23	.855	.934
24	.670	.929

The TSES has a very high degree of internal consistency. The lowest value recorded in the "Corrected Item–Total Correlation" column in Table 25 is .670, which is considerably higher than the 0.3 Pearson correlation score needed for internal consistency (Laerd Statistics, 2013a). The consistently high scores indicate all of the items in this instrument are measuring the same underlying construct. Table 26 shows the item to scale correlations for the CRTT Scale.

Table 26

Item to Scale Correlations for CRTT Scale

	Corrected Item–Total Correlation	Squared Multiple Correlation
1	.626	.569
2	.327	.165
3	.592	.596
4	.488	.333
5	.326	.275

In Table 26, the "Corrected Item–Total Correlation" column shows all items have values that are above the acceptable 0.3 Pearson's correlation score. In the "Squared Multiple Correlation" column, numbers 2 and 5 have very low values. As stated earlier, the values in the "Squared Multiple Correlation" column should be large to ensure that the item can be explained well by the other items. Further analysis was conducted prior to the ultimate removal of item 5 from analysis.

Cronbach's alpha (α) coefficients were also used to examine the reliability of each scale used in the study. Scales that obtain alpha (α) levels of 0.7 or greater are considered to be reliable (Laerd Statistics, 2013a). The Cronbach's alpha scores presented in this study are standardized to a variance of 1, allowing for direct

comparisons among the scales. The standardized alpha for the CRTT Scale was 0.708, which means the scale is a reasonably reliable measure of the integration of CRTTs. Questions 6 and 7 from the CRTT Scale were omitted because the overall Cronbach's alpha (α) with the items included was 0.518, which is lower than the 0.7 or higher threshold for a reasonable level of internal consistency within the scale (Laerd Statistics, 2013a).

The alpha (α) for the TSES was calculated as 0.975, indicating a very high level of internal consistency in measuring the three teacher efficacy subscales (instructional strategies, student engagement, and classroom management) (Tschannen-Moran & Woolfolk Hoy, 2001); Cronbach alpha scores were also calculated for each of the three subscales. The alpha (α) score for instructional strategies was 0.930; for student engagement the alpha (α) score was 0.918; and for classroom management the alpha (α) score was 0.930. The overall alpha for the TES was 0.801, indicating a high level of internal consistency for the measurement of GTE and PTE. Alpha scores were calculated for both subscales; the alpha score for general efficacy was 0.732 (reasonable) and for personal efficacy was 0.839 (high).

PCA. Although PCA is conceptually different from factor analysis, it is often used interchangeably with factor analysis (Laerd Statistics, 2013b). PCA is designed to reduce the number of variables without losing the information the original variables provide. In the context of this research, the variables are the degree of agreement with statements about personal and general teaching beliefs. The underlying assumption is that there are a number of unobserved latent variables that account for the correlations among observed variables (Punch, 2014).

According to Punch (2014), "In factor analysis, we begin with observed variables,

and we end with unobserved or extracted factors. The variables are at a lower level of abstraction or generality than the factors" (p. 267). This concept is illustrated in Figure 6 below.

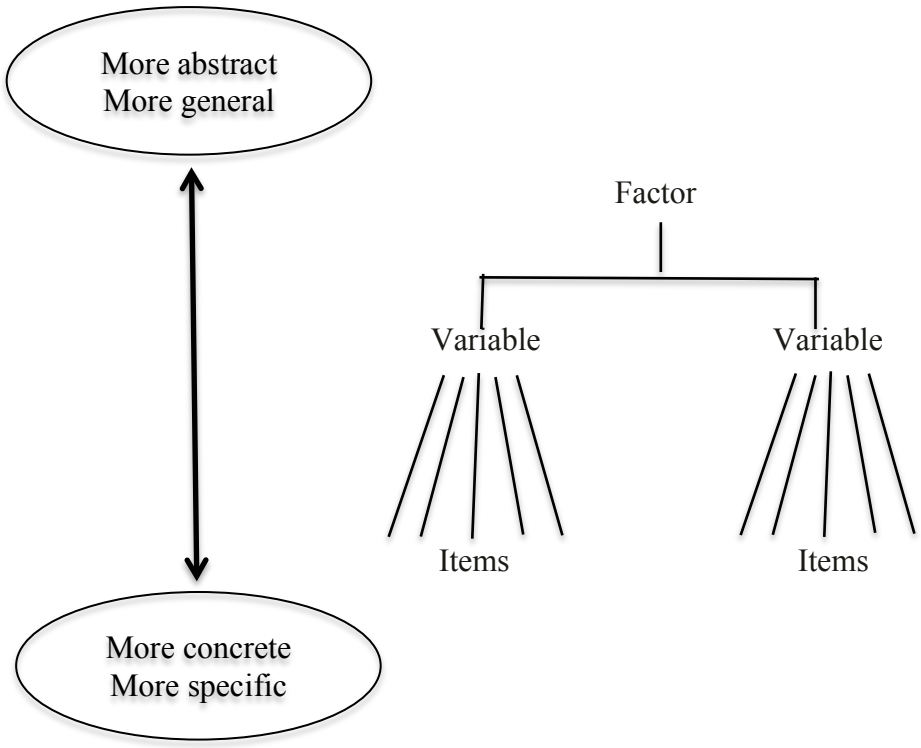

Figure 6. Levels of Abstraction in Data Analysis (Punch, 2014).

This study combined the CRTT Scale with the TSES to explore the possibility of uncovering a factor not present in the TSES when analyzed alone. The combined survey questions were designed to incorporate CRTTs as a subscale of teacher efficacy (Oyerinde, 2008). The determination of the number of factors to extract was guided by the extraction of different numbers of factors to determine which number of factors yielded the most interpretable results. In the individual analysis of the TSES, Tschannen-Moran and Woolfolk Hoy (2001) used "principal-axis factoring with varimax rotation to consistently reveal three strong factors" (p. 799). The factors were labeled "efficacy for

student engagement," "efficacy for classroom management," and "efficacy for instructional strategies" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 800).

TSES and CRTT Scale analysis. Earlier item-to-scale correlations suggested the deletion of CRTT Scale items 2 and 5. CRTT Scale item 2 appeared to measure CRTTs during PCA; it was therefore retained in the analysis process. CRTT Scale item 5 was deleted from analysis because it did not appear to measure any of the four subscales of teacher efficacy (student engagement, instructional strategies, classroom management, or CRTTs).

The determinant of the correlation matrix generated by SPSS for these data was 1.045E-12, which showed there would be no computational problems with these data (Appendix G: Correlation Matrix for the combined TSES and CRTT Scale). The KMO and Bartlett's Test of Sphericity provide a minimum standard that should be passed before a PCA should be conducted (UCLA: Statistical Consulting Group, 2015). The KMO measures show adequacy of sampling, and the Bartlett's test shows statistical significance. The KMO measures should be as close to 1 as possible, with values above 0.5 an absolute minimum and greater than 0.8 considered good. Table 27 displays the KMO and Bartlett's test value for the combined TSES and CRTT Scale.

Table 27

KMO Statistics and Bartlett's Test: Combined TSES and CRTT Scale

KMO Measure of Sampling Adequacy		.869
Bartlett's Test of Sphericity	Approximate Chi-Square	960.939
	df	378
	Sig.	.000

On Kaiser's (1974) evaluation of levels of factorial simplicity, values "in the .80s" are considered "meritorious" (p. 35). The .869 value for these data in Table 27 is well above the minimum requirement for sampling adequacy. The Bartlett's Test of Sphericity results for these data show a significance value (i.e., *P* value) of .000 which indicates a high level of statistical significance. Based on the results of these tests, PCA was appropriate for these data.

Communalities are "the proportion of each variable's variance that is accounted for by the principal components analysis and can also be expressed as a percentage" (Laerd Statistics, 2013b, p. 15). Before extraction, the communalities for these data are all one, which means that 100% of the variance is explained (see "Initial" column in Table 28). After extraction, when only some of the components are retained, the communalities are less than one because all of the components are not accounted for. Table 28 shows the communalities before and after extraction.

Table 28

Communalities of the Combined TSES and CRTT Scale

	Initial	h^2
1[a]	1.000	.701
2[a]	1.000	.557
3[a]	1.000	.777
4[a]	1.000	.397
1[b]	1.000	.630
2[b]	1.000	.641
3[b]	1.000	.795
4[b]	1.000	.713
5[b]	1.000	.704
6[b]	1.000	.684
7[b]	1.000	.750
8[b]	1.000	.773
9[b]	1.000	.716
10[b]	1.000	.706
11[b]	1.000	.780
12[b]	1.000	.720
13[b]	1.000	.777
14[b]	1.000	.632
15[b]	1.000	.791
16[b]	1.000	.645
17[b]	1.000	.630
18[b]	1.000	.626
19[b]	1.000	.668
20[b]	1.000	.748
21[b]	1.000	.742
22[b]	1.000	.639
23[b]	1.000	.662
24[b]	1.000	.676

Extraction method: PCA.
[a]CRTT Scale, [b]TSES.

The column labeled "h^2" in Table 28 contains the actual common variance after factors have been extracted. The values in the h^2 column indicate the proportion of each variable's variance that can be explained by the retained factors. "Variables with high values are well represented in the common factor space, while variables with low values

are not well represented" (UCLA: Statistical Consulting Group, 2015, p. 3). All of the values in Table 28 are well represented in the common factor space.

Because the purpose of PCA is to explain as much of the variance as possible using as few components as possible, the first few components will explain the greatest amount of total variance with each subsequent component accounting for relatively less of the total variance. Before extraction, SPSS identified 28 linear components within the data set. The eigenvalues represent the variance explained by each linear component; an eigenvalue is a "measure of the variance that is accounted for by a component" (Laerd Statistics, 2013b). The amount of variance each component accounts for plus its contribution towards total variance is presented in Table 29 under the "Initial Eigenvalues" columns.

Table 29

Total Variance Explained (combined TSES and CRTT Scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Com-ponent	Total	% of Vari-anc	Cumu-lative %	Total	% of Vari-ance	Cumu-lative %	Total	Total % of Vari-ance	Cumula-tive %
1	13.170	47.035	47.035	13.170	47.035	47.035	7.207	25.739	25.739
2	2.503	8.939	55.974	2.503	8.939	55.974	4.816	17.199	42.938
3	1.979	7.069	63.043	1.979	7.069	63.043	4.771	17.038	59.976
4	1.627	5.809	68.852	1.627	5.809	68.852	2.485	8.876	68.852
5	1.123	4.012	72.864						
6	.882	3.149	76.013						
7	.780	2.786	78.799						
8	.773	2.761	81.560						
9	.631	2.252	83.812						
10	.594	2.121	85.933						
11	.466	1.665	87.598						
12	.438	1.566	89.164						
13	.402	1.435	90.599						
14	.349	1.247	91.845						
15	.328	1.170	93.015						
16	.262	.936	93.951						
17	.241	.859	94.811						
18	.228	.815	95.626						
19	.195	.696	96.322						
20	.181	.645	96.967						
21	.174	.620	97.587						
22	.144	.514	98.100						
23	.135	.481	98.581						
24	.099	.353	98.934						
25	.092	.330	99.264						
26	.085	.304	99.568						
27	.071	.255	99.822						
28	.050	.178	100.000						

Extraction method: PCA.

An eigenvalue of one represents the variance of one variable. In this data set, there is a total of 28 eigenvalues of variance. In order to explain the total variance between all 28 components, the eigenvalue of each component is calculated by starting with the number in the "total" column, dividing that number by the total number of variables, and multiplying the result by 100 (because 100% of the variance is being

explained; Laerd Statistics, 2013b). For example, component number one from Table 29 lists 13.170 eigenvalues of variance (in the "Total" column), which is calculated 13.170/28 x 100=47% of the total variance, as reported in the "% of Variance" column. Each successive percentage of variance is calculated in the same way until 100% of variance is explained (bottom of cumulative column).

SPSS then extracted all factors with eigenvalues greater than one, which left four factors. It has been suggested, according to Laerd Statistics (2013b), that a component should only be retained if it explains at least 5% to 10% of the total variance or if it is positioned before the (last) inflection point. The inflection point represents the point where subsequent components add little to the total variance (Laerd Statistics, 2013b). The retained components are indicated on the Scree Plot in Figure 7.

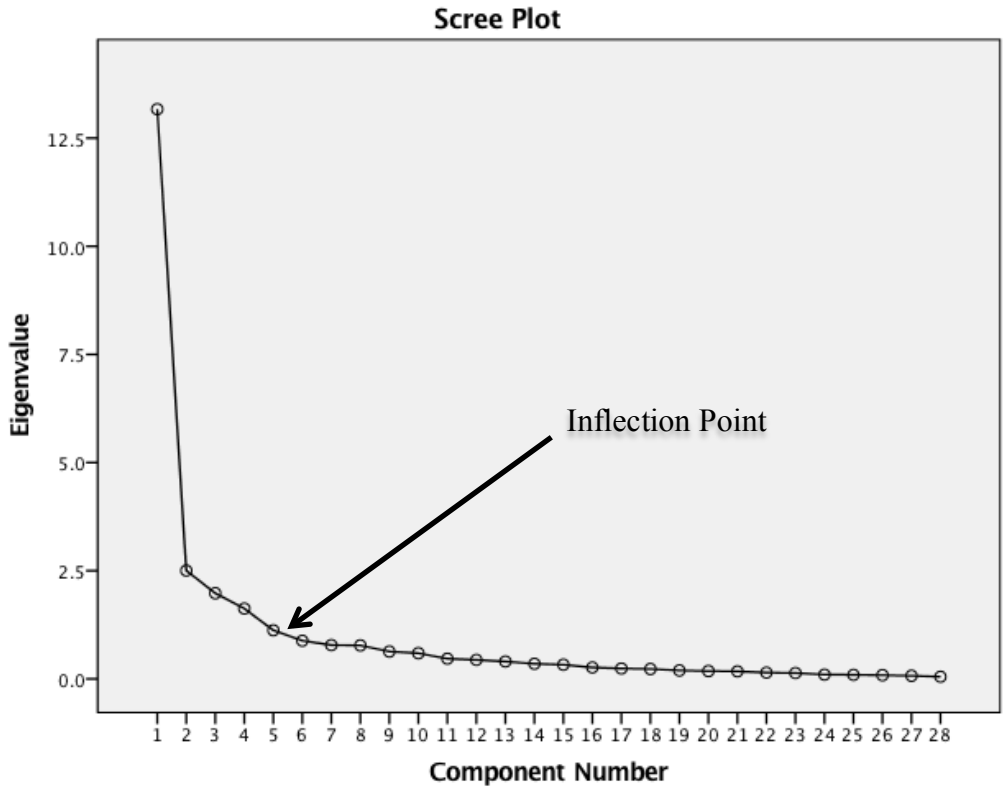

Figure 7. TSES and CRTT Scale Retained Components.

Table 30 demonstrates how the rotated components loaded on to each variable. PCA was conducted using varimax rotation and suppressing all coefficients less than .05. Four factors were identified before the last inflection point. The researcher examined the content of the variables that loaded on the same factor to identify common themes.

Table 30

Rotated Component Matrix[a] for combined TSES and CRTT Scale

	Component			
	Classroom Management	Instructional Strategies	Student Engagement	CRTTs
13 TSES	.815			
21 TSES	.795			
15 TSES	.794			
3 TSES	.763			
19 TSES	.757			
8 TSES	.725			
16 TSES	.672			
5 TSES	.613			
11 TSES		.768		
24 TSES		.746		
18 TSES		.681		
20 TSES		.616		
4 TSES			.785	
22 TSES			.762	
9 TSES			.698	
6 TSES			.695	
1 TSES			.646	
14 TSES			.643	
3 CRTT Scale				.843
1 CRTT Scale				.804
2 CRTT Scale				.688

Extraction Method: PCA.
Rotation Method: Varimax with Kaiser Normalization.
[a.] Rotation converged in 11 iterations.

Eight questions loaded highly on Component 1; they were consistent with

Tschannen-Moran and Woolfolk Hoy's (2001) questions that measure the construct of classroom management and were labeled as such. The four questions that loaded highly on Component 2 corresponded with Tschannen-Moran and Woolfolk Hoy's instructional strategies. Six questions loaded highly on Component 3; they were labeled student engagement, which is consistent with Tschannen-Moran and Woolfolk Hoy's findings. Three questions loaded highly on Component 4; those questions were consistent with Oyerinde's (2008) culturally responsive teaching findings.

In the original analysis of the TES, Woolfolk and Hoy (1990) "replicated the two-factor solution used by Gibson and Dembo (1984)" (p. 85) and chose varimax rotation as the final solution. Two factors loaded strongly in their analysis and were labeled "Teaching Efficacy" and "Personal Efficacy" (Woolfolk & Hoy, 1990, p. 88). For this study, the factors that yielded the most interpretable results determined the number of factors to extract.

TES analysis. For these data, the determinant was 3.15E-005, which showed there would be no computational problems (Appendix H: Correlation Matrix for TES and Appendix I: Inverse of Correlation Matrix for TES). Item numbers 17 and 21 on this instrument were deleted from analysis because they did not appear to measure either GTE or PTE during preliminary PCA analysis.

As stated earlier, the KMO measures show adequacy of sampling, and the Bartlett's test shows statistical significance. The KMO measure can range from 0 to 1, with values above 0.5 suggested as a minimum requirement for sampling adequacy. The Bartlett's Test *P* value must be less than .05 (i.e., P<.05). Table 31 shows the KMO and Bartlett's test values for the TES.

Table 31

KMO Statistics and Bartlett's Test: TES

KMO Measure of Sampling Adequacy		.621
Bartlett's Test of Sphericity	Approximate Chi-Square	554.497
	Df	190
	Sig.	.000

For these data, the KMO value of 0.621 meets the minimum requirement for sampling adequacy, and the Bartlett's Test of Sphericity results show a high level of statistical significance.

As stated earlier, communalities are "the proportion of each variable's variance that is accounted for by the principal components analysis and can also be expressed as a percentage" (Laerd Statistics, 2013b, p. 15). Before extraction, 100% of the variance is explained. After extraction, the communalities are less than one because all of the components are not accounted for. Table 32 shows the communalities before and after extraction.

Table 32

Communalities of the TES

Item	Initial	h^2
1	1.000	.343
2	1.000	.318
3	1.000	.405
4	1.000	.467
5	1.000	.363
6	1.000	.599
7	1.000	.447
8	1.000	.487
9	1.000	.559
10	1.000	.300
11	1.000	.567
12	1.000	.263
13	1.000	.366
14	1.000	.437
15	1.000	.216
16	1.000	.144
18	1.000	.313
19	1.000	.773
20	1.000	.589
22	1.000	.267

Extraction method: PCA.

The values in the h^2 column indicate the proportion of each variable's variance that can be explained by the retained factors. For these data, the value of numbers 15 and 16 in Table 32 are very low; those variables are not well represented in the common factor space and were eliminated from further analysis. Numbers 12 and 22 are moderately represented in the common factor space and were therefore retained for further analysis.

Before extraction and after the exclusion of items 15 and 16, SPSS identified 20 linear components within the data set. The eigenvalues represent the variance explained by each linear component. The amount of variance each component accounts for and its

contribution towards total variance is presented in Table 33 under the "Initial Eigenvalues" column.

Table 33

Total Variance Explained (TES)

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Compo-nent	Total	% of Variance	Cumu-lative %	Total	% of Vari-ance	Cumu-lative %	Total	Total % of Variance	Cumu-lative %
1	4.915	24.577	24.577	4.915	24.577	24.577	4.732	23.660	23.660
2	3.308	16.542	41.118	3.308	16.542	41.118	3.492	17.458	41.118
3	1.624	8.119	49.237						
4	1.413	7.066	56.303						
5	1.245	6.223	62.526						
6	1.068	5.341	67.867						
7	.968	4.838	72.705						
8	.920	4.602	77.307						
9	.868	4.339	81.645						
10	.689	3.444	85.089						
11	.530	2.648	87.737						
12	.500	2.501	90.238						
13	.420	2.100	92.338						
14	.380	1.901	94.239						
15	.307	1.535	95.774						
16	.259	1.295	97.069						
17	.221	1.104	98.173						
18	.165	.823	98.996						
19	.118	.589	99.586						
20	.083	.414	100.000						

Note. *E*xtraction method: PCA.

In the data set above, there are a total of 20 eigenvalues of variance. In order to explain the total variance between all 20 components, the eigenvalue of each component is calculated by starting with the number in the "total" column, dividing that number by the total number of variables, and multiplying the result by 100 (because 100% of the variance is being explained) (Laerd Statistics, 2013b). For example, component 1 from Table 33 lists 4.915 eigenvalues of variance (in the "Total" column) which is calculated

4.915/20 x 100=24.5% of the total variance as reported in the "% of Variance" column. Each successive percentage of variance is calculated in the same way. SPSS then extracted all factors with eigenvalues greater than 1, which left two factors. The Scree Plot in Figure 8 shows the inflection point representing the point where two components were retained.

Figure 8. TES Retained Components.

Table 34 illustrates how the rotated components loaded on to each variable. A PCA was conducted using varimax rotation and suppressing all coefficients less than .04. The researcher then examined the content of the variables that loaded on the same factor to identify common themes. Eleven questions loaded highly on to component 1 of the SPSS output. The questions were consistent with Woolfolk and Hoy's (1990) findings

for the construct of PTE and were labeled as such. The seven questions that loaded highly on component 2 were consistent with Woolfolk and Hoy's study as measuring GTE.

Table 34

Factor Loadings (TES)[a]

	Component	
Item	PTE 1	GTE 2
19	.822	
06	.774	
11	.745	
08	.680	
07	.653	
14	.641	
05	.593	
22	.512	
12	.481	
01	.440	
18	.441	
20		.743
09		.722
04		.679
03		.636
02		.558
13		.550
10		.512

Extraction method: PCA; rotation method: varimax with Kaiser Normalization.
[a]Rotation converged in 3 interactions.

Summary

Chapter 4 presented the compilation and analysis of the data collected for this research study. There were moderately high levels of PTE and relatively low levels of GTE among the high school teachers who participated in the study. A significant

relationship between GTE and cultural teaching was not found; however, a weak positive statistically significant relationship was found to exist between cultural teaching and PTE. A moderate statistically significant relationship was discovered between student engagement, cultural teaching, and both PTE and GTE. In addition, a slight to moderate statistically significant relationship was found between teacher efficacy, culturally responsive teaching, instructional strategies, student engagement, and classroom management. Finally, culturally responsive teaching was identified as a subscale of teacher efficacy. Chapter 5 discusses these findings and provides implications for further study.

Chapter 5: Discussion

Introduction

The purpose of this study was to determine the impact of teacher efficacy on culturally responsive teaching, instructional strategies, student engagement, and classroom management. Educators are currently being confronted with increasing numbers of minority students in their classrooms; in order to engage these students, issues of diversity need to be a central part of instruction (Villegas & Lucas, 2002). Classroom instruction needs to be redesigned in order to increase students' academic achievement levels and eliminate performance gaps (American Psychological Association, 2012; Balls et al., 2011; Oyerinde, 2008). Teachers need to see themselves "as both responsible for and capable of" reducing the existing achievement gap (Villegas & Lucas, 2002, p. 21). Chapter 5 draws conclusions from the data analyzed in this study and discusses implications for the educational field and further research.

This chapter uses the data analyzed in Chapter 4 to answer each of the following research questions.

1. What is the PTE and GTE of high school teachers as measured by the TES?
2. What is the relationship between teacher efficacy and CRTTs as measured by the TSES and the CRTT Scale?
3. What is the relationship between teacher efficacy and student engagement in high school classrooms as measured by the TSES and the CRTT Scale?
4. What is the relationship between teacher efficacy, CRTTs, instructional strategies, student engagement, and classroom management as measured by the TSES and the CRTT Scale?

In order to answer the first research question guiding this study, descriptive

statistics were used to determine the levels of PTE and GTE of the high school teachers who participated in the study. Spearman's correlation coefficients were used to determine the strength and direction of relationships between variables to answer each of the remaining research questions.

Teacher Efficacy

The TES analysis in Chapter 4 examined personal and general efficacy separately in an effort to better understand the efficacy levels of the teachers in the study. The first research question guiding this study investigated general (GTE) and personal (PTE) teacher efficacy levels of teachers in three high schools. Previous research has found that teachers with a strong sense of efficacy are more persistent and resilient when things do not go smoothly, tend to set attainable goals for students, are less afraid of student conflict, and are more likely to take greater intellectual and interpersonal risks in the classroom (Moseley & Utley, 2006; Protheroe, 2008; Silverman & Davis, 2009; Vesely et al., 2013).

PTE. Previous research has shown that teachers with a strong sense of efficacy are more persistent and resilient when things do not go smoothly, tend to set attainable goals for students, are less afraid of student conflict, and are more likely to take greater intellectual and interpersonal risks in the classroom (Moseley & Utley, 2006; Protheroe, 2008; Silverman & Davis, 2009; Vesely et al., 2013).

In this study, the overall mean score for PTE was 4.57 of a possible 6. The score supports the statement that teachers who participated in the study appear to possess a strong sense of personal efficacy. Analyses of specific personal efficacy items also support the notion that participants were confident in their own abilities as teachers. For example, 94% of the 69 teachers who participated in the study agreed with the statement

"If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty" (Appendix B). The high level of agreement with this item implies teacher willingness to set realistic, attainable goals for their students. It also indicates teachers' abilities to be persistent and flexible in setting learning goals for their students. A majority of teacher respondents (83%) expressed confidence in their ability to get through to most difficult students; the high agreement with this item shows that teachers are more likely to be resilient in the face of student conflict and may take intellectual and interpersonal risks in the classroom to ensure that students' learning needs are met (Protheroe, 2008; Silverman & Davis, 2009). Research also confirms the idea that teachers who are confident in their ability to influence how well students learn often take personal responsibility for student achievement (Bandura, 1977; Guskey, 1981; Tschannen-Moran & Woolfolk Hoy, 2001). Ninety-one percent of teacher participants in this study agreed with the statement, "If a student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept" (Appendix B). The level of confidence and personal responsibility for student mastery support the assumption that a high level of PTE exists among the teachers in this study.

GTE. When teachers attribute student outcomes to their own actions, they tend to use improved educational practices more often than teachers who attribute student outcomes to external factors (Armor et al., 1976; Berman, et al., 1977; Fives, 2003; Gibson & Dembo, 1984; Rotter, 1966; Tschannen-Moran & Woolfolk Hoy, 2001). Researchers have found that teachers with a strong sense of general efficacy believe student learning outcomes are within their control and based on their behavior rather than outside influences. Based on Rotter's (1966) locus of control theory, if a teacher believes

student academic achievement is contingent upon the home environment, a student's home environment could have the ability to supersede anything he or she could do in the classroom.

The overall general efficacy score of the teacher respondents was 3.49 of a possible 6 (58%). The mean score implies a moderate to low level of general efficacy in the three high schools as measured by Woolfolk and Hoy's (1990) TES. Teacher responses to four particular items contributed to the overall general efficacy level; specifically, the statement "If parents would do more for their children, I could do more" (Appendix B), garnered 83% agreement. The high level of agreement with this item seems to indicate teachers' belief in the pivotal role parents play in a teacher's ability to support student achievement in school. The second item, "If students aren't disciplined at home, they aren't likely to accept any discipline" (Appendix B), resulted in 77% teacher agreement; this supports the idea that teachers feel powerless when it comes to control of student learning outcomes (Rose & Medway, 1981). The item "the hours in my class have little influence compared to the influence of their home environment" (Appendix B) represented 62% teacher agreement. The higher level of agreement with this item shows teacher perception that outside influences play a greater part in student achievement than classroom activities. Teacher agreement to "when it comes right down to it, a teacher really can't do much because most of student's motivation and performance depends on his or her home environment" (Appendix B) was 38%; the level of teacher agreement with this item shows that overall more than half of the teachers in the study believe school has as much influence on student performance and motivation as a child's home environment.

Prior research has identified important relationships between teacher efficacy and

a teacher's ability to take into account students' prior experiences, community settings, cultural backgrounds, and ethnic identities (Banks, 2010; Edwards, 2014; Gay, 2010; Glickman et al., 2014; Sanacore, 2004). In addition to a strong sense of teacher efficacy, a teacher should also have confidence in his/her ability to create a dynamic, culturally complex learning environment (Paris & Ball, 2009; Villegas & Lucas, 2002). A teacher who has a strong sense of cultural efficacy has confidence in his/her ability to assist all students in the process of generating meaning in response to new ideas and experiences they encounter in the classroom (Edwards, 2014; Ladson-Billings, 2009; Villegas & Lucas, 2002).

Cultural teaching. The second research question guiding this study addressed the relationship between teacher efficacy and cultural teaching. Teachers possess lifelong experiences that result in beliefs and perceptions which influence their teaching efficacy (Gallavan, 2007). Previous research has found a connection between teachers' sense of efficacy, culturally responsive pedagogy, and student achievement (Oyerinde 2008; Tschannen-Moran & Woolfolk Hoy, 2001; Tucker et al., 2005).

Although no significant relationship was found to exist between GTE and culturally responsive teaching, data analysis in Chapter 4 uncovered a positive statistically significant relationship between culturally responsive teaching and PTE. Table 35 compares PTE and culturally responsive teaching mean scores; percentages are included to show the level of personal efficacy and usage of culturally responsive strategies.

Table 35

PTE/CRTTs Mean Scores and Percentages Overall and by School

	PTE (%)	CRTTs (%)
Madison H.S.	4.69 (78)	12.43 (83)
Allinon H.S.	4.35 (73)	11.67 (78)
Callahan H.S.	4.61 (77)	11.50 (77)
Overall	4.57 (76)	11.86 (79)

Overall, teachers in the study possess a high level (76%) of PTE coupled with an equally high (79%) use of culturally responsive teaching strategies. The results support previous research showing teachers with a strong sense of efficacy are more likely to incorporate culturally responsive techniques into their instruction (Oyerinde, 2008; Silverman & Davis, 2009).

Student engagement. The third research question guiding this study explored the relationship between teacher efficacy and student engagement in high school classrooms. Because cultural teaching was identified as a subscale of teacher efficacy during PCA in this study, the construct was combined with GTE and PTE and then analyzed to determine the relationship between teacher efficacy, cultural teaching, and student engagement.

Positive, statistically significant relationships were discovered between teacher efficacy (personal and general), cultural teaching, and student engagement. Research confirms student engagement improves when teachers are confident in their ability to include relevant, personalized, culturally connected learning experiences in their

classroom instruction (Edwards, 2014; Gay, 2010; Ladson-Billings, 2009; Oyerinde, 2008). Table 36 lists the mean scores and percentages of each of the four constructs analyzed. Overall results are displayed as well as individual school percentages.

Table 36

GTE/PTE/CRTTs and Student Engagement Mean Scores and Percentages Overall and by School

	GTE (%)	PTE (%)	CRTTs (%)	Student Engagement (%)
Madison H.S.	3.47 (58)	4.69 (78)	12.43 (83)	37.87 (70)
Allinon H.S.	3.27 (55)	4.35 (73)	11.67 (78)	36.17 (67)
Callahan H.S.	3.64 (61)	4.61 (77)	11.50 (77)	38.82 (72)
Overall	3.49 (58)	4.57 (76)	11.86 (79)	37.81 (70)

As shown in Table 36, earlier analysis established a high level (76%) of PTE in addition to an equally high (79%) culturally responsive teaching level among participants in the study. Overall student engagement in the classrooms of these teachers is moderately high (70%). The high reported use of cultural teaching by the teacher participants in each of the schools appears to show that they understand and consider student culture. Cultural understanding and consideration encourages the development of teacher-student relationships and improves the quality of teaching and learning (Elias, 2009; Gay, 2010; Glickman et al., 2014; Ladson-Billings, 2009). Teachers who have confidence in their ability to create meaningful learning experiences for their students are extremely important to the future success of those students (Dembo & Gibson, 1985; Fives, 2003; Moseley et al., 2014; Siwatu, 2011). Teachers need to believe they have the ability to engage students (Nadelson et al., 2012; Siwatu et al., 2011; Villegas & Lucas,

2002). The high level of personal efficacy discovered among the teachers in this study appears to confirm that these teachers believe in their ability to engage their students. When the influence of the environment overwhelms teachers' abilities to have an impact on student learning, they are less likely to use multiple strategies to effectively engage students in the process of learning (Edwards, 2014; Ladson-Billings, 2009; Villegas & Lucas, 2002). Teachers in this study were found to have a moderately low level of general efficacy; that finding could explain the overall reduced student engagement level recorded for the participants.

Instructional strategies and classroom management. The final research question guiding this study examined the relationship between teacher efficacy, cultural teaching, instructional strategies, student engagement, and classroom management. Earlier analysis revealed a statistically significant relationship between cultural teaching, PTE, student engagement, and classroom management.

Analysis of the Spearman's correlation results in Chapter 4 show statistically significant relationships between PTE and each of the four remaining constructs (cultural teaching, instructional strategies, student engagement, and classroom management). Numerous studies suggest a relationship between elevated levels of personal efficacy and the use of instructional strategies that are relevant and intellectually rigorous for students (Moseley & Utley, 2006; Oyerinde, 2008; Protheroe, 2008; Vesely et al., 2013). When students are given opportunities to explore topics of interest to them, they engage more readily in classroom activities; the classroom then becomes a self-managing, culturally complex, dynamic learning community (Gay, 2010; Ladson-Billings, 2009; Paris & Ball, 2009). Teachers in this study indicated confidence in their ability to get through to difficult students; they reported using a variety of strategies to reflect different cultures in

their instruction. They believe that they have the ability to craft good questions which challenge even the most capable students and expressed the ability to exert the extra effort needed to clear confusion by providing alternative explanations and examples for their students.

A positive, slight to moderate, statistically significant relationship was also found to exist between classroom management and GTE, PTE, instructional strategies, and student engagement; a slight relationship was found between classroom management and cultural teaching, but it was not significant. Instructional strategies and student engagement exhibited the strongest relationships with classroom management: r_s (67)=.467, p<.01, and r_s (67)=.439, p<.01. According to research, the goal of classroom management is to create an environment in which teachers provide all students with equitable opportunities for learning (Weinstein et al., 2003). The most effective way to accomplish that goal is to use relevant, personalized, collaborative, and connected strategies with which students can engage (Edwards, 2014). The positive, moderate, statistically significant relationship between classroom management and instructional strategies demonstrates teachers' beliefs in their abilities to use strategies that create equitable learning opportunities for their students.

Moderate statistically significant relationships were discovered to exist between instructional strategies, GTE, PTE, cultural teaching, and student engagement. In order to ensure that students engage intently in their learning, teachers should consider student culture, motivation, enjoyment, and curiosity when planning classroom activities (Ladson-Billings, 2009; Loveless, 2015; Richards, Brown, & Ford, 2007). According to Ladson-Billings (2000), when teachers combine high efficacy levels with the use of effective, culturally sensitive instructional strategies, student engagement increases

dramatically. The results of the analysis in Chapter 4 confirm a high level of personal efficacy among the teachers in the study (76%), a high amount of culturally responsive strategies used in the classrooms of those teachers (79%), and a high level of student engagement in the classrooms of the participants (70%). The process of engaging students in the classroom involves elevated teacher efficacy and culturally sensitive instructional strategies; teachers are an important part of that process. In fact, Eury et al. (2011) cited teachers as the most critical "ingredient" in the maximization of student academic growth and achievement.

Discussion

Teachers who participated in the study appear to possess a strong sense of personal efficacy and a moderately low sense of general efficacy. PTE and GTE are important parts of the intricate combination of qualities a teacher should possess in order to engage their students intellectually (Bandura, 1977, 1997; Gibson & Dembo, 1984; Protheroe, 2008; Silverman & Davis, 2009). Personal efficacy is a teacher's sense of personal responsibility in student learning (Ashton, 1984; Gibson & Dembo, 1984; Moseley et al., 2014). Teachers in this study exhibited the abilities described as generally practiced by teachers who take personal responsibility for the level of student engagement which ultimately improves student achievement. General efficacy concerns a teacher's belief about the general relationship between teaching and learning (Ashton, 1984; Gibson & Dembo, 1984). Although teacher respondents expressed a general feeling that their students' home environments had a discernable impact on student engagement in the classroom, they also expressed a general belief that they could overcome some of those influences. Researchers have found that it is possible for a teacher to have confidence in his or her teaching ability yet feel as though outside

influences have more of an impact on student learning than personal teaching abilities (Moseley et al., 2014; Protheroe, 2008; Tracz & Gibson, 1986; Woolfolk & Hoy, 1990). The teachers who participated in this study appear to fall into that category.

There was a positive statistically significant relationship found between culturally responsive teaching and PTE. In addition to the high level of personal efficacy exhibited by the teachers from each of the three high schools, all of the teachers expressed the ability to incorporate culturally sensitive strategies into their instruction. It is important for teachers to believe students from culturally diverse backgrounds want to learn (Brown, 2007; Gallavan, 2007; Gay, 2002). It is just as important to authentically and holistically use in-depth information from multiple viewpoints and perspectives about our interdependent, multicultural, international, and global society to assure student engagement and achievement in the classroom (Brown, 2007; Gallavan, 2007; Gay, 2010; Glickman et al., 2014; Ladson-Billings, 2009; Villegas & Lucas, 2002). Overall, teachers in the study felt very confident in their ability to use a variety of teaching strategies to meet the needs of their students. The student minority population within the classrooms of the teachers involved in the study ranged from 66% to 89%. The level of confidence among the teachers together with the percentage of minority students that they teach supports research that suggests when teachers possess elevated levels of personal efficacy, they are more likely to use culturally responsive teaching strategies in their classrooms (Moseley & Utley, 2006; Oyerinde, 2008; Protheroe, 2008; Vesely et al., 2013).

The relationship between PTE and GTE, cultural teaching, and student engagement was found to be positive and statistically significant. The teaching behaviors and instructional strategies used by a teacher can engage students and lead to improved

academic achievement (Brown, 2007; Gay, 2010; Glickman et al., 2014; Oyerinde, 2008). Teachers with a strong sense of cultural teaching efficacy tend to make decisions that are in the best interest of their students. They give all students opportunities to explore topics that are relevant and interesting to them; the result is a classroom that represents a safe space for student risk taking and learning for teachers as well as students (Ball, 2009; Paris & Ball, 2009; Villegas & Lucas, 2002). Teacher participants expressed belief in their ability to craft questions for their difficult or unmotivated students and provide alternate explanations when those students are confused. Research has shown when teachers possess the ability to adjust their plans of action to meet students' needs while simultaneously building on their strengths, students are more likely to engage in learning (Edwards, 2014; Glickman et al., 2014; Ladson-Billings, 2009; Villegas & Lucas, 2002).

Statistically significant relationships were uncovered between teacher efficacy, culturally responsive teaching, student engagement, instructional strategies, and classroom management. Teachers in the study indicated the belief that they possess the necessary skills to effectively identify the challenge level of tasks. They also indicated the ability to break down complex, challenging tasks into something more manageable for their students (Silverman & Davis, 2009). Teachers believe they have the ability to craft questions which reflect different cultures other than their own and provide alternate explanations when students are confused using cultural examples and materials. Students who are engaged in the classroom tend to push themselves to meet their teacher's expectations (Ladson-Billings, 2009; Villegas & Lucas, 2002); as a result, student engagement and achievement improve (Edwards, 2014).

Cultural teaching emerged as an unintended facet of teacher efficacy. The perceived ability to work with diverse students is related to teachers' racial attitudes

(American Psychological Association, 2012; Soodak & Podell, 1994; Tucker et al., 2005). Most teachers tend to view their beliefs and perceptions as commonly assumed and shared ways of believing and acting (Gallavan, 2007). In order to enhance efficacy, teachers must ensure that they become proficient in valuing cultural diversity in the classroom by creating an unbiased climate to facilitate learning for diverse students (Gallavan, 2007; Gay, 2010; Kitsantas, 2012: Oyerinde, 2008; Tucker et al., 2005). When classroom instruction is delivered to students through their own cultural and experiential filters, academic achievement of ethnically diverse students improves (Brown, 2007).

There is an overall moderately low belief by the teachers in the study in the ability to overcome outside influences when it comes to teaching students. Personal confidence in the ability to teach is generally high among this group. The overall high level of personal efficacy manifests itself in generally high uses of cultural teaching and instructional strategies which appear to engage students in all of the schools studied. As a result, there are high levels of classroom management within each of the three schools involved in this study.

Limitations of the Study

This study had several limitations that may have had a potential impact on the quality of findings pertaining to the relationship between teacher efficacy and CRTTs. The limitation that had the most potential impact on the findings was the selection process for the individuals in the study. Creswell (2014) recommended selecting "a *random sample,* in which each individual in the population has an equal probability of being selected" (p. 158). The sample used in this study was a nonprobability sample (or convenience sample) because the respondents were "chosen based on their convenience

and availability" (Creswell, 2014, p. 158); as such, there was no certainty that the probability selection was equal among the potential participants. According to Laerd Statistics (2012), the failure to use a probability sampling technique significantly limits the ability to make broader generalizations from the sample to the population being studied.

Access to participants created another limitation in this study. The original study design planned for face-to-face data collection. Fowler (2014) stated that there are advantages to this type of data collection: high cooperation rates and the opportunity to clarify questions (if needed). The face-to-face response rate in this study was 55%. Eighty-four surveys were returned; 46 of those surveys were administered face-to-face, and the remaining 38 online responses contained 15 surveys that could not be used due to a response rate of 6% or less.

An additional limitation to this study was the dependence on teachers to read and honestly answer each of the 65 questions contained in the combined survey instrument. The TES, CRTT Scale, and TSES were used to collect data for this study. The three instruments were combined to form a 65-question instrument consisting of 58 survey questions and seven demographic questions. All of the data collected were self-reported. Fowler (2014) stated that answers collected from surveys can be "affected by factors other than the facts on which the answer should be based" (p. 12). Due to the length of the survey, it is possible teachers may not have taken the time to answer each question based on a true assessment of behaviors in the classroom. In this study, the researcher cannot verify the true beliefs and behaviors of the teachers participating in the study.

Recommendations for Further Study

Researchers conducting studies in this area may examine whether teachers' race

or teaching experiences have an influence on the use of culturally responsive pedagogy. A mixed-method approach could be used to study the association between cultural teaching, student engagement, and student achievement. The exclusive use in this study of quantitative data to study the relationship between cultural teaching and student engagement gave a one dimensional aspect of the relationship; classroom observations could add a dimension to the results that is not possible when using survey data alone.

Future studies could also examine the role of culturally responsive school settings and the impact of administrative support on teachers' abilities to engage culturally diverse students in the classroom. In addition, cultural professional development, mentoring, and support efforts could be examined to determine the effect on teachers' abilities to practice culturally responsive, differentiated instruction in the classroom.

Summary

The conversation surrounding teacher efficacy and cultural awareness in classrooms is ongoing. Rotter (1966) began the conversation, and Bandura expanded on it in 1977. Gibson and Dembo continued the conversation in1984; and more recently, Delpit and Ladson-Billings made contributions in 1995. Tschannen-Moran and Woolfolk Hoy contributed in 2001; Villegas and Lucas (2002), Oyerinde (2008), Ball (2009), Gay (2010), and Glickman (2014) made contributions as well. In addition, a host of other authors and researchers contributed to the conversation by calling for awareness and understanding of the elements needed to effectively create a culturally diverse learning environment (Brown & Wheeler, 2009; Cholewa et al., 2012; Esposito & Swain, 2009; Greenwood, 2011; Lopez, 2011; Milner et al., 2003; Nadelson et al., 2012; Siwatu et al., 2011; Tharp, 1989). A substantial body of research supports the use of culturally responsive teaching, yet there is much more to learn and do with regard to culturally

responsive pedagogy. This study sought to examine the impact of teacher efficacy on CRTTs, instructional strategies, student engagement, and classroom management. This study found that teacher efficacy and culturally responsive teaching are positively related; the finding supports numerous studies in their contention that teachers who possess high levels of efficacy are more likely to use higher levels of culturally responsive pedagogy (Ball, 2009; Delpit, 1995; Glickman et al., 2014; Ladson-Billings, 1995; Oyerinde, 2008; Villegas & Lucas, 2002).

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Appendix A

Teachers' Sense of Efficacy Scale (TSES)

Teachers' Sense of Efficacy Scale[1] (long form)

Teacher Beliefs	How much can you do?								
Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.	Nothing		Very Little		Some Influence		Quite A Bit		A Great Deal
1. How much can you do to get through to the most difficult students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2. How much can you do to help your students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3. How much can you do to control disruptive behavior in the classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4. How much can you do to motivate students who show low interest in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. To what extent can you make your expectations clear about student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6. How much can you do to get students to believe they can do well in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7. How well can you respond to difficult questions from your students ?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
8. How well can you establish routines to keep activities running smoothly?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9. How much can you do to help your students value learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10. How much can you gauge student comprehension of what you have taught?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
11. To what extent can you craft good questions for your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12. How much can you do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
13. How much can you do to get children to follow classroom rules?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14. How much can you do to improve the understanding of a student who is failing?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15. How much can you do to calm a student who is disruptive or noisy?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16. How well can you establish a classroom management system with each group of students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
17. How much can you do to adjust your lessons to the proper level for individual students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
18. How much can you use a variety of assessment strategies?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
19. How well can you keep a few problem students form ruining an entire lesson?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20. To what extent can you provide an alternative explanation or example when students are confused?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
21. How well can you respond to defiant students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
22. How much can you assist families in helping their children do well in school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
23. How well can you implement alternative strategies in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
24. How well can you provide appropriate challenges for very capable students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing and elusive construct. *Teaching and Teacher Education, 17,* 783-805.

Appendix B

Teacher Efficacy Scale (TES)

Teacher Efficacy Scale[1]

	Directions: Please answer the following questions as they relate to your teaching students in your present school.	Strongly Agree	Moderately Agree	Agree slightly	Disagree Slightly	Moderately Disagree	Strongly Disagree
1.	When a student attending my class does better than usual, many times it is because I exert a little extra effort.	1	2	3	4	5	6
2.	The hours in my class have little influence on the students compared to the influence of their home environment.	1	2	3	4	5	6
3.	The amount students attending my school can learn are primarily related to family background.	1	2	3	4	5	6
4.	If students aren't disciplined at home, they aren't likely to accept any discipline.	1	2	3	4	5	6
5.	I have enough training to deal with almost any learning problem in my school.	1	2	3	4	5	6
6.	When a student in my school is having difficulty with an assignment, I am usually able to adjust it to his/her level.	1	2	3	4	5	6
7.	When student gets a better grade than he/she usually gets, it is usually because I found better ways of teaching that student.	1	2	3	4	5	6
8.	When I really try, I can get through to most difficult students.	1	2	3	4	5	6
9.	A teacher is very limited in what he/she can achieve because student's home environment is a large influence on his/her achievement.	1	2	3	4	5	6
10.	Teachers are not a very powerful influence on student achievement when all factors are considered.	1	2	3	4	5	6
11.	When the grades of my students improve, it is usually because I found more effective approaches.	1	2	3	4	5	6
12.	If student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.	1	2	3	4	5	6
13.	If parents would do more for their children, I could do more.	1	2	3	4	5	6
14.	If student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	1	2	3	4	5	6
15.	The influences of student's home experiences can be overcome by good teaching.	1	2	3	4	5	6
16.	If student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	1	2	3	4	5	6
17.	Even a teacher with good teaching abilities may not reach many students.	1	2	3	4	5	6
18.	If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	1	2	3	4	5	6
19.	When I really try hard, I can get through to even the most difficult or unmotivated students.	1	2	3	4	5	6
20.	When it comes right down to it, a teacher really can't do much because most of student's motivation and performance depends on his or her home environment.	1	2	3	4	5	6
21.	Some students need to be placed in slower groups so they are not subjected to unrealistic expectations.	1	2	3	4	5	6
22.	My teacher training program and/or experience has given me the necessary skills to be an effective teacher.	1	2	3	4	5	6

[1]Adapted from Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology, 82*, 81-91. Originally based on the Teacher Efficacy Scale developed by S. Gibson & M. Dembo (1984). Teacher Efficacy: a construct validation. *Journal of Educational Psychology, 76*, 569-582.

Appendix C

Culturally Responsive Teaching Techniques Scale (CRTT Scale) Part I

Part I

Culturally Responsive Teaching Techniques Scale (CRTTS) [1]

Directions: Please answer the following questions as they relate to your teaching students in your present school.

Course You Teach: _____
(Example: Mathematics)

		Nothing	Very Little	Some	Quite A Bit	A Great Deal
1.	In this course, I provide students with examples and materials, which reflect different cultures other than their own.	1	2	3	4	5
2.	In this course, I employ a variety of teaching styles to meet the learning needs of all students.	1	2	3	4	5
3.	My teaching techniques help students to view concepts, issues, themes, and problems from diverse ethnic and cultural perspectives.	1	2	3	4	5
4.	I have a system in place to help students develop more positive racial attitudes and values.	1	2	3	4	5
5.	I support restructuring of the culture and organization of my school so that students from diverse racial, ethnic, and gender groups will experience equality.	1	2	3	4	5

Appendix D

Culturally Responsive Teaching Techniques Scale (CRTT Scale) Part II

Part II: CRTTS: Instructional Methods & Factors Affecting Personal Teaching Efficacy

	Nothing	Very Little	Some	Quite A Bit	A Great Deal
6. To what extent do you use the following teaching methods? **(Check all that apply)**					
Lecture	1	2	3	4	5
Group discussion	1	2	3	4	5
Cooperative learning or Small Group	1	2	3	4	5
Team Teaching with other teacher	1	2	3	4	5
Videos or DVDs	1	2	3	4	5
Textbook	1	2	3	4	5
Others:_____	1	2	3	4	5
7. To what degree do you think the following affect your teaching? **(Check all that apply)**					
Student teaching experience	1	2	3	4	5
Staff development workshops	1	2	3	4	5
New teaching technique while monitoring a class	1	2	3	4	5
Feedbacks from administrators	1	2	3	4	5
Access to instructional resources	1	2	3	4	5
Others:_____	1	2	3	4	5

[1]The items above were developed from the works of various scholars cited in Table 1.

Part III

Demographic Information

Grade Level(s) You Currently Teach: _____ (example 6th, 6th and 7th)

How many years have you been teaching? _____ Years

How many years have you taught at this school? _____ Years

What is your gender? ____ Male ____ Female (check only one)

Are you: (check all that apply) _____White _____African American or Black ___Native American _____Asian-American/Oriental _____Mexican-American/Chicano _____Puerto Rican-American _____Other

Highest Degree Attained (check only one)

____ Bachelors Degree ___ Bachelors Degree (in Education) ___ Masters Degree ___ Ed. S. Degree ___ Ed.D. __PhD ___ Vocational Certification

Please indicate the percentage of your students that are: (Percentage must add up to 100%)

_____White _____African American or Black ___Native American _____Asian-American/Oriental _____Mexican-American/Chicano _____Puerto Rican-American _____Other

Appendix E

District Letter of Approval

[redacted]

Department of Assessment, Research & Accountability

October 5, 2015

Ms. Roberta Callaway
Doctoral candidate, Gardner-Webb University
[redacted]

Approval is granted to conduct the proposed study, *A Correlational Study of Teacher Efficacy and Culturally Responsive Teaching Techniques in a Southeastern Urban School District,* in fulfillment of requirements for the degree of Doctor of Educational Leadership from Gardner-Webb University. The proposed study meets the technical criteria following the [redacted] Research and Survey Policy [redacted] and must follow the stipulations below:

- Voluntary participation allows each participant—principal to decide individually whether to participate or withdraw at any time, without question, consequence, or follow-up.
- All participants and schools will remain anonymous in data and survey collection, and reporting results. Identifiable characteristics or linkage to the identity of any individual or school is prohibited.
- Approval does not constitute commitment of resources or the endorsement of the study or its findings by the school district or the School Board.
- Data collected and results will not become part of any principal, school, or district record. All research records must be locked in a secured location.
- The researcher will email a copy of the final report for the school district, and report any changes or problems while conducting the study, to [redacted]

We look forward to your findings and contribution to instructional practice, program services, and achievement for *ALL* students.

Sincerely,

[redacted]

[redacted]
Assessment, Research & Accountability
Office: [redacted]
email: [redacted]

Appendix F

Participant Letter of Consent

CONSENT FOR PARTICIPATION IN A RESEARCH STUDY

Dear Teacher:

Your school has been selected as one of the schools in the district to participate in a study of teacher efficacy. The purpose of this study is to investigate the relationship between teacher efficacy and school performance in an urban setting. The following information is being provided to help you decide whether you wish to participate in the present study.

Participation in this study is voluntary. You may choose not to participate or to withdraw your participation at any time. Deciding not to participate will not affect your relationship with this school, district, or researcher.

Data collection will consist of the completion of a survey, which should take approximately 15 minutes. There are no correct or incorrect answers. We are interested in your honest opinions. Your responses will remain confidential. The researcher will collect all data using the number codes attached to the survey in lieu of your name. Any digital data will be password protected.

Please do not hesitate to ask questions about the study before or during participation in the study. Upon completion of the study, data will be forwarded to each school as a means to share the research findings. Your name and school will not be associated with the research findings in any way.

There are no known risks and/or discomforts associated with this study. The expected benefits associated with your participation are the information about the relationship between teacher efficacy, culturally responsive pedagogy, student engagement, instructional strategies, and classroom management. You will be entered into a drawing for a chance to win one of five $20 MasterCard gift cards at the end of data collection as a thank you for your participation.

Please sign this consent form. You are signing it with the full knowledge of the nature and purpose of the procedures. A copy of this form will be given to you to keep.

Signature Date

Roberta Callaway, Doctoral Student, Gardner-Webb University
[redacted]

Appendix G

Correlation Matrix for combined Teacher Sense of Efficacy Scale (TSES) and Culturally Responsive Teaching Techniques Scale (CRTT Scale)

TSES & CRTT Scale (Combined) Correlation Matrix[a]

	1C	2C	3C	4C	1T	2T	3T	4T	5T	6T	7T	8T	9T	10T	11T	12T	13T	14T	15T	16T	17T	18T	19T	20T	21T	22T	23T	24T
1C	1.	.369	.711	.329	.156	.223	.055	.042	.111	.206	.224	.090	.225	.122	.235	.368	-.044	.235	.143	.173	.172	.295	.045	.193	.073	.124	.067	.230
2C	.369	1	.401	.172	.153	.044	.054	-.083	.046	.089	.009	.088	.030	.194	.028	.072	-.022	.126	.180	.131	.157	.194	.187	.144	.249	.104	.075	.034
3C	.711	.401	1	.437	.070	.206	.185	.140	.179	.231	.301	.253	.307	.320	.237	.480	.153	.294	.167	.207	.215	.335	.237	.255	.239	.144	.214	.212
4C	.329	.172	.437	1	.069	.181	.055	.064	.137	.211	.084	.089	.188	.039	.194	.379	.049	.135	.091	.080	.203	.062	.007	.027	.088	.309	.095	.147
1T	.156	.153	.070	.069	1	.608	.595	.589	.451	.567	.404	.367	.477	.317	.430	.321	.507	.579	.647	.438	.597	.337	.485	.433	.479	.469	.489	.321
2T	.223	.044	.206	.181	.608	1	.533	.480	.611	.653	.597	.465	.659	.483	.659	.630	.521	.503	.599	.568	.492	.506	.574	.600	.412	.452	.588	.456
3T	.055	.054	.185	.055	.595	.533	1	.583	.621	.616	.593	.698	.547	.583	.474	.351	.774	.617	.764	.700	.639	.417	.630	.521	.699	.304	.627	.350
4T	.042	-.083	.140	.064	.589	.480	.583	1	.380	.637	.418	.318	.679	.258	.350	.413	.446	.610	.471	.395	.571	.446	.394	.362	.392	.514	.374	.365
5T	.111	.046	.179	.137	.451	.611	.621	.380	1	.555	.799	.794	.509	.600	.680	.493	.606	.451	.624	.697	.545	.482	.489	.621	.498	.213	.579	.438
6T	.206	.089	.231	.211	.567	.653	.616	.637	.555	1	.512	.458	.776	.447	.509	.583	.554	.576	.521	.434	.603	.375	.433	.382	.442	.501	.451	.350
7T	.224	.009	.301	.084	.404	.597	.593	.418	.799	.512	1	.802	.568	.626	.627	.570	.624	.491	.656	.681	.522	.513	.587	.689	.521	.260	.631	.498
8T	.090	.088	.253	.089	.367	.465	.698	.318	.794	.458	.802	1	.474	.696	.602	.455	.675	.423	.607	.698	.569	.462	.577	.649	.598	.173	.601	.478
9T	.225	.030	.307	.188	.477	.659	.547	.679	.509	.776	.568	.474	1	.404	.511	.639	.475	.572	.482	.543	.616	.422	.450	.395	.409	.566	.492	.471
10T	.122	.194	.320	.039	.317	.483	.583	.258	.600	.447	.626	.696	.404	1	.600	.482	.624	.336	.505	.490	.484	.411	.595	.725	.562	.113	.668	.408
11T	.235	.028	.237	.194	.430	.659	.474	.350	.680	.509	.627	.602	.511	.600	1	.632	.427	.379	.490	.628	.610	.606	.480	.757	.388	.343	.651	.635
12T	.368	.072	.480	.379	.321	.630	.351	.413	.493	.583	.570	.455	.639	.482	.632	1	.343	.420	.341	.379	.457	.593	.415	.457	.235	.423	.513	.520
13T	-.044	-.022	.153	.049	.507	.521	.774	.446	.606	.554	.624	.675	.475	.624	.427	.343	1	.477	.716	.624	.515	.285	.695	.554	.715	.280	.647	.233
14T	.235	.126	.294	.135	.579	.503	.617	.610	.451	.576	.491	.423	.572	.336	.379	.420	.477	1	.587	.500	.588	.484	.436	.412	.537	.491	.597	.522
15T	.143	.180	.167	.091	.647	.599	.764	.471	.624	.521	.656	.607	.482	.505	.490	.341	.716	.587	1	.714	.666	.386	.719	.577	.679	.278	.614	.288
16T	.173	.131	.207	.080	.438	.568	.700	.395	.697	.434	.681	.698	.543	.490	.628	.379	.624	.500	.714	1	.581	.495	.610	.590	.527	.246	.500	.390
17T	.172	.157	.215	.203	.597	.492	.639	.571	.545	.603	.522	.569	.616	.484	.610	.457	.515	.588	.666	.581	1	.489	.448	.495	.521	.448	.583	.533
18T	.295	.194	.335	.062	.337	.506	.417	.446	.482	.375	.513	.462	.422	.411	.606	.593	.285	.484	.386	.495	.489	1	.361	.554	.249	.460	.536	.677
19T	.045	.187	.237	.007	.483	.574	.630	.394	.489	.433	.587	.577	.450	.595	.480	.415	.695	.436	.719	.610	.448	.361	1	.638	.702	.315	.579	.328
20T	.193	.144	.255	.027	.433	.600	.521	.362	.621	.382	.689	.649	.395	.725	.757	.457	.554	.412	.577	.590	.495	.554	.638	1	.534	.222	.661	.589
21T	.073	.249	.239	.088	.479	.412	.699	.392	.498	.442	.521	.598	.409	.562	.388	.235	.715	.537	.679	.527	.521	.249	.702	.534	1	.405	.600	.284
22T	.124	.104	.144	.309	.469	.452	.304	.514	.213	.501	.260	.173	.566	.113	.343	.423	.280	.491	.278	.246	.448	.460	.315	.222	.405	1	.370	.464
23T	.067	.075	.214	.095	.489	.588	.627	.374	.579	.451	.631	.601	.492	.668	.651	.513	.647	.597	.614	.500	.583	.536	.579	.661	.600	.370	1	.613
	.230	.034	.212	.147	.321	.456	.350	.365	.438	.350	.498	.478	.471	.408	.635	.520	.233	.522	.288	.390	.533	.677	.328	.589	.284	.464	.613	1.000
1C		.001	.000	.004	.105	.036	.330	.369	.187	.048	.035	.235	.035	.164	.029	.001	.364	.029	.126	.082	.083	.008	.360	.061	.280	.160	.298	.032
2C	.001		.000	.084	.110	.362	.333	.253	.358	.239	.472	.240	.406	.060	.413	.282	.430	.158	.074	.148	.104	.059	.067	.125	.022	.202	.276	.394
3C	.000	.000		.009	.288	.049	.069	.130	.076	.031	.007	.020	.006	.004	.028	.000	110	.008	.090	.048	.042	.003	.028	.019	.026	.125	.042	.044
4C	.004	.084	.000		.291	.073	.331	.304	.137	.044	.251	.238	.065	.377	.059	.001	.349	.140	.235	.262	.051	.310	.478	.416	.241	.006	.223	.119
1T	.105	.110	.288	.291		.000	.000	.000	.000	.000	.001	.002	.000	.008	.000	.007	.000	.000	.000	.000	.000	.005	.000	.000	.000	.000	.000	.007
2T	.036	.362	.049	.073	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000
3T	.330	.333	.069	.331	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.009	.000	.003
4T	.369	.253	.130	.304	.000	.000	.000		.002	.000	.001	.009	.000	.030	.005	.001	.000	.000	.000	.002	.000	.000	.002	.004	.002	.000	.003	.003
5T	.187	.358	.076	.137	.000	.000	.000	.002		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.056	.000	.000
6T	.048	.239	.031	.044	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002	.000	.002	.000	.000	.000	.004

7T	.035	.472	.007	.251	.001	.000	.000	.001	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.024	.000	.000
8T	.235	.240	.020	.238	.002	.000	.000	.009	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.089	.000	.000
9T	.035	.406	.006	.065	.000	.000	.000	.000	.000	.000	.000	.000		.001	.000	.000	.000	.000	.000	.000	.001	.000	.001	.001	.000	.000	.000
10T	.164	.060	.004	.377	.008	.000	.000	.030	.000	.000	.000	.000	.001		.000	.000	.000	.005	.000	.000	.000	.001	.000	.000	.000	.198	.000	.001
11T	.029	.413	.028	.059	.000	.000	.000	.005	.000	.000	.000	.000	.000	.000		.000	.000	.002	.000	.000	.000	.000	.000	.000	.091	.005	.000	.000
12T	.001	.282	.000	.001	.007	.000	.003	.001	.000	.000	.000	.000	.000	.000	.000		.005	.001	.005	.002	.000	.000	.001	.000	.040	.001	.000	.000
13T	.364	.430	.110	.349	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005		.000	.000	.000	.000	.014	.000	.000	.000	.015	.000	.036
14T	.029	.158	.008	.140	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005	.002	.001	.000		.000	.000	.000	.000	.000	.001	.000	.000	.000	.000
15T	.126	.074	.090	.235	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005	.000	.000		.000	.000	.001	.000	.000	.000	.016	.000	.013
16T	.082	.148	.048	.262	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.000		.000	.000	.000	.000	.000	.034	.000	.001
17T	.083	.104	.042	.051	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
18T	.008	.059	.003	.310	.005	.000	.000	.000	.000	.002	.000	.000	.001	.001	.000	.000	.014	.000	.001	.000	.000		.002	.000	.029	.000	.000	.000
19T	.360	.067	.028	.478	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.002		.000	.000	.008	.000	.006
20T	.061	.125	.019	.416	.000	.000	.000	.004	.000	.002	.000	.000	.001	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000		.000	.047	.000	.000
21T	.280	.022	.026	.241	.000	.001	.000	.002	.000	.000	.000	.000	.001	.000	.001	.040	.000	.000	.000	.000	.000	.029	.000	.000		.001	.000	.019
22T	.160	.202	.125	.066	.000	.000	.009	.000	.056	.000	.024	.089	.000	.198	.005	.001	.015	.000	.016	.034	.000	.000	.008	.047	.001		.002	.000
23T	.298	.276	.042	.223	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002			.000
24T	.032	.394	.044	.119	.007	.000	.003	.003	.000	.004	.000	.000	.000	.001	.000	.000	.036	.000	.013	.001	.000	.000	.006	.000	.019	.000	.000	

a. Determinant=1.045E-12
C=Culturally Responsive Teaching Techniques Scale.
T=Teachers' Sense of Efficacy Scale.

Appendix H

Correlation Matrix for Teacher Efficacy Scale (TES)

Correlation Matrix for TES

	2	3	4	9	10	13	15	20	1	5	6	7	8	11	12	14	16	18	19	22
2	1.000	.384	.177	.397	.373	.179	.109	.514	.022	-.009	-.113	-.054	.056	.213	.135	.061	.189	.016	.192	.155
3	.384	1.000	.312	.429	.129	.227	.220	.324	-.372	.239	.067	-.116	.053	-.045	-.004	.076	.077	.161	.152	.177
4	.177	.312	1.000	.425	.241	.344	.240	.449	-.201	.061	.081	-.026	.161	-.046	-.066	.175	.103	.346	.269	.043
9	.397	.429	.425	1.000	.194	.355	.255	.475	-.207	-.091	-.137	-.153	-.008	-.108	-.194	.148	-.085	.101	.001	-.216
10	.373	.129	.241	.194	1.000	.217	.138	.363	-.077	.108	.166	.040	.349	.042	-.191	.091	.171	.178	.342	.161
13	.179	.227	.344	.355	.217	1.000	-.146	.366	-.282	-.027	-.077	-.256	.008	-.267	-.086	-.089	-.042	.105	-.096	.012
15	.109	.220	.240	.255	.138	-.146	1.000	.299	-.082	.027	.160	.150	.159	.175	.030	.412	-.056	.329	.351	.013
20	.514	.324	.449	.475	.363	.366	.299	1.000	-.043	.120	.072	.085	.141	.168	.010	.145	.231	.308	.365	.111
1	.022	-.372	-.201	-.207	-.077	-.282	-.082	-.043	1.000	.124	.331	.275	.137	.361	.236	.261	.075	.002	.147	.186
5	-.009	.239	.061	-.091	.108	-.027	.027	.120	.124	1.000	.523	.204	.382	.252	.164	.357	.517	.238	.474	.316
6	-.113	.067	.081	-.137	.166	-.077	.160	.072	.331	.523	1.000	.490	.656	.427	.170	.428	.163	.310	.629	.308
7	-.054	-.116	-.026	-.153	.040	-.256	.150	.085	.275	.204	.490	1.000	.481	.553	.251	.259	.165	.303	.436	.043
8	.056	.053	.161	-.008	.349	.008	.159	.141	.137	.382	.656	.481	1.000	.426	.151	.314	-.010	.231	.748	.112
11	.213	-.045	-.046	-.108	.042	-.267	.175	.168	.361	.252	.427	.553	.426	1.000	.547	.463	.192	.049	.482	.394
12	.135	-.004	-.066	-.194	-.191	-.086	.030	.010	.236	.164	.170	.251	.151	.547	1.000	.224	.208	.038	.275	.391
14	.061	.076	.175	.148	.091	-.089	.412	.145	.261	.357	.428	.259	.314	.463	.224	1.000	.285	.222	.503	.394
16	.189	.077	.103	-.085	.171	-.042	-.056	.231	.075	.517	.163	.165	-.010	.192	.208	.285	1.000	.083	.232	.150
18	.016	.161	.346	.101	.178	.105	.329	.308	.002	.238	.310	.303	.231	.049	.038	.222	.083	1.000	.529	.312
19	.192	.152	.269	.001	.342	-.096	.351	.365	.147	.474	.629	.436	.748	.482	.275	.503	.232	.529	1.000	.371
22	.155	.177	.043	-.216	.161	.012	.013	.111	.186	.316	.308	.043	.112	.394	.391	.394	.150	.312	.371	1.000

Appendix I

Inverse of Correlation Matrix for Teacher Efficacy Scale (TES)

Inverse of Correlation Matrix for TES

	2	3	4	9	10	13	15	20	1	5	6	7	8	11	12	14	16	18	19	22
2	2.347	-.801	.251	-.552	-.539	-.139	.007	-.400	-.587	.436	.710	.176	.013	-.518	-.098	.415	-.449	.286	-.653	-.178
3	-.801	2.183	-.183	-.705	.371	.130	-.323	.005	.830	-.601	-.505	-.117	-.006	.419	-.037	.282	.101	.163	.213	-.674
4	.251	-.183	1.653	-.379	.007	-.233	-.052	-.315	.084	.310	.020	.194	-.266	.038	.023	-.079	-.309	-.325	-.152	-.009
9	-.552	-.705	-.379	2.632	-.244	-.090	.257	-.767	.053	-.080	.059	.319	-.007	-.160	-.036	-1.166	.681	-.461	.750	1.200
10	-.529	.371	.007	-.244	1.951	-.214	-.382	-.022	.103	.322	.005	.006	-.971	.215	.718	.419	-.678	.142	-.084	-.796
13	-.139	.130	-.233	-.090	-.214	2.146	.692	-1.055	.548	-.034	-.401	.409	-.857	.576	-.541	-.505	.255	-.508	1.489	-.032
15	.007	-.323	-.052	.257	-.382	.692	2.061	-.663	.392	.073	-.228	.206	.392	-.102	-.337	-1.140	.691	-.580	-.002	.835
20	-.400	.005	-.315	-.767	-.022	-1.055	-.663	2.766	-.401	.012	.263	-.327	.839	-.551	.491	.875	-.506	.232	-1.544	-.205
1	-.587	.830	.084	.053	.103	.548	.392	-.401	1.883	-.175	-.822	-.010	.042	.052	-.259	-.528	.314	-.184	.627	-.012
5	.436	-.601	.310	-.080	.322	-.034	.073	.012	-.175	2.443	-.457	.397	-.799	-.048	.218	.040	-1.322	-.175	-.173	-.336
6	.710	-.505	.020	.059	.005	-.401	-.228	.263	-.822	-.457	3.004	-.503	-.915	-.198	.368	.024	-.145	.113	-.676	-.373
7	.176	-.117	.194	.319	.006	.409	.206	-.327	-.010	.397	-.503	2.497	-.908	-1.189	-.106	-.152	-.375	-1.124	.804	.787
8	.013	-.006	-.266	-.007	-.971	-.857	.392	.839	.042	-.799	-.915	-.908	5.184	-.517	-.060	.105	1.443	1.039	-3.732	1.093
11	-.518	.419	.038	-.160	.215	.576	-.102	-.551	.052	-.048	-.198	-1.189	-.517	3.285	-.866	-.498	.145	.822	.057	-.894
12	-.098	-.037	.023	-.036	.718	-.541	-.337	.491	-.259	.218	.368	-.106	-.060	-.866	2.014	.499	-.557	.241	-.692	-.646
14	.415	.282	-.079	-1.166	.419	-.505	-1.140	.875	-.528	.040	.024	-.152	.105	-.498	.499	2.807	-.922	.624	-1.175	-1.157
16	-.449	.101	-.309	.681	-.678	.255	.691	-.506	.314	-1.322	-.145	-.375	1.443	.145	-.557	-.922	2.491	.089	-.285	.852
18	.286	.163	-.325	-.461	.142	-.508	-.580	.232	-.184	-.175	.113	-1.124	1.039	.822	.241	.624	.089	2.547	-2.017	-.931
19	-.653	.213	-.152	.750	-.084	1.489	-.002	-1.544	.627	-.173	-.676	.804	-3.732	.057	-.692	-1.175	-.285	-2.017	6.673	-.166
22	-.178	-.674	-.009	1.200	-.796	-.032	.835	-.205	-.012	-.336	-.373	.787	1.093	-.894	-.646	-1.157	.852	-.931	-.166	2.898