

TEACHERS' INTERPRETATIONS OF EXIT EXAM SCORES AND COLLEGE  
READINESS

by

Shelby McIntosh  
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## **DEDICATION**

To Miles. I hope you always dream big dreams.

And to Sarah. What would *you* do if you weren't afraid?

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## **ABSTRACT**

### **TEACHERS' INTERPRETATIONS OF EXIT EXAM SCORES AND COLLEGE READINESS**

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This study examined teachers' interpretations of Virginia's high school exit exam policy through the teachers' responses to a survey. The survey was administered to teachers from one school district in Northern Virginia. The teachers selected for the survey taught a subject in which students must pass a Standards of Learning (SOL) test in order to receive a high school diploma. The purpose of the study was to better understand how teachers interpret their students' performance on SOL tests related to college readiness, as well as to better understand how teachers thought their students interpret their own performance on SOL tests related to their college readiness. The study findings show that only 34% of survey respondents said they interpret an advanced score on the SOL test in the subject they teach to mean a student is prepared for college. However, 52% of the responding teachers said that they think their students interpret an advanced SOL test score to mean they are prepared for college. Implications of these findings for both policy and practice are discussed, as well as suggestions for future research.

## **CHAPTER ONE: BACKGROUND FOR THE STUDY**

A high school exit exam (as defined for the purposes of this research) is an assessment that a state requires students to pass, not just take, in order to receive a high school diploma. Students are required to pass these assessments even if they have completed the necessary coursework required to receive a diploma with satisfactory grades. In some instances, students may be allowed to substitute a different assessment for the exit exam; however, students must still meet a passing standard set by the state on that assessment. Exit exam policies, as used in this research, are a state mandate rather than a local option. In other words, the state requires students in all school districts to pass exit exams, rather than allowing districts to decide whether or not to make the exams a condition of graduation. In many states, these assessments have existed in one form or another for more than twenty years.

### **History of High School Exit Exam Policies**

In 1983, the National Commission on Excellence in Education published *A Nation at Risk* through which it urged states to adopt rigorous learning standards for their students and to administer yearly standardized assessments to assess the extent to which students were meeting these standards. The Commission believed more rigorous standards and assessments would lead to increases in what students learned in schools as

a response to what they felt was a weakened condition of the American education system (National Commission on Excellence in Education, 1983). The report contributed to a growing nationwide concern regarding public education in America, and as a result, forty-nine states set standards in at least three core subjects and thirty-seven states were administering assessments to check those standards by 2002 (Center on Education Policy, 2002).

Further, the Commission suggested that states attach high stakes to the new state assessments to hold schools and students accountable for meeting these more rigorous standards (National Commission on Excellence in Education, 1983). High school exit exams became “the assessments with the highest, most visible, and most controversial stakes yet,” (Amrein & Berliner, 2002, p.8). This push for exit exams from the Commission was not an entirely new idea, however. During the 1970’s and 1980’s, a movement inspired by state policymakers and grassroots reformers (rather than from teachers or school administrators) led to states adopting what became known as “minimum competency tests.” These tests typically focused on basic reading and math skills targeted toward an eighth or ninth grade level of difficulty, and supporters felt the tests would solve the problem of relaxed academic standards and an unfocused academic mission by getting “back to basics” (Center on Education Policy, 2002). Between 1973 and 1983, the number of states with some form of minimum competency test increased from two to thirty-nine, and nineteen of these states tied the exams to graduation requirements (Holme, Richards, Jimerson, & Cohen, 2010; Linn, 2000)

However, *A Nation at Risk* called for more rigorous assessments than the previous minimum competency versions and the writers urged states to require students to demonstrate mastery on these tests in order to receive a high school diploma (National Commission on Excellence in Education, 1983). In 2013, three decades later, twenty-five states required that all students pass an assessment (or series of assessments) aligned to high school standards to receive a high school diploma, and an additional state (Rhode Island) planned to implement this requirement for the graduating class of 2014 (Center on Education Policy, 2012). Many of these states have held students to this more rigorous graduation requirement for a number of years.

At their core, state high school exit exam policies are intended to improve student learning. Holme, Richards, Jimerson, and Cohen (2010) explain that these state policies are intended to “generate improvements in student achievement by establishing a concrete hurdle that students must clear to graduate... and to spur achievement by improving the way schools educate their lowest achieving students” (p. 478). However, state education officials have said that these policies also serve a number of other purposes. In a survey of state education officials by the Center on Education Policy (2012), thirteen of the twenty-two respondents from states with high school exit exam policies said that their state administers state exit exams to assess the extent to which their students have attained the knowledge and skills necessary to succeed in postsecondary education. Further, twelve of the twenty-two respondents from states with high school exit exams said that the high stakes attached to these assessments (requiring

students to pass these exams in order to receive a diploma) were implemented in order to ensure students who receive a high school diploma are ready for college and/or a career. The number of state officials citing purposes related to college and career readiness for their high school exit exam policies shows that the motivation behind these policies has shifted at least in some states, from high school competency to college and/or career readiness. Brown and Conley (2007) explained that “an increasing number of states are beginning to consider the relationship between their exams and college admission, placement decisions, and financial aid” (p. 138).

### **Importance of Further Study of High School Exit Exams**

As the number of states with high school exit exams increased in the years following *A Nation at Risk*, so then did the number of students impacted by these policies. The twenty-six states with existing or planned exit exam policies in 2012 enrolled 69% of the nation’s students. Further, these states enrolled a majority of the nation’s students of color (71% of black students and 85% of Hispanic students), low-income students (71%), and students who are English language learners (83%), based on the most recent year of enrollment data from the National Center on Education Statistics (Center on Education Policy, 2012). Amrein and Berliner explained in 2002, as high school exit exam policies were becoming more and more popular, that these policies are more likely to be implemented in states that have lower levels of student achievement, and low levels of student achievement are often correlated with minority and poor student populations. Although these policies were originally promoted under the notion of high

standards and accountability for all students, Amrein and Berliner (2002) felt that schools that already perform well on these tests were not the targets for these policies: poor, urban, under-performing schools were. Support for these policies has not waned since Amrein and Berliner drew these conclusions, possibly because these policies often receive support from both kinds of communities, as the scores on the tests merely confirm the expectations of a high-performing community and at the same time instill hope that the tests will raise standards in a low-performing community.

Considering the number of students and especially the number of potentially at-risk students impacted by state high school exit exams, it is important to understand how successful these policies are at fulfilling their intended purposes. Unfortunately, research has found that state high school exit exam policies do little in the way of improving student achievement (Amrein & Berliner, 2002; Grodsky, Santibanez, & Daley, 2009; Reardon, Arshan, Atteberry, & Kurlaender, 2010). Even more discouraging, neither do the low-achieving students often targeted by high school exit exam policies appear to experience achievement gains as a result of these policies. Amrein and Berliner (2002) concluded from their research that if the intended purpose of high school exit exams is to increase student learning, then the policies are not working. They further explained that increases in student performance on state exit exams may only be evidence of improved test preparation and possibly even the exclusion of certain students from the testing process.

If high school exit exams have not resulted in increased student achievement, the question then becomes are they able to accurately assess college and career readiness, which, as previously discussed, appeared to be a new purpose of these policies by 2012 for many states with these exams. At the time of this study, research attempting to answer that question had, for the most part, focused on the alignment between what exit exams assess and college expectations. For example, Brown and Conley (2007) evaluated the level of alignment between test questions from sixty different math and English high school assessments and the Knowledge and Skills for University Success (KSUS). The KSUS are a set of standards designed to define what college students should know and be able to do in entry-level college courses and were designed by more than 400 faculty members from the Association of American Universities. From this work, Brown and Conley found that overall state assessments were not well aligned with the KSUS. Further, they found that high school exit exams covered only a portion of the KSUS and were poorly aligned with more complex skills. Achieve (2004) evaluated items from six state high school exit exams in English and math based on their rigor and compared them to college and career benchmarks that were developed for Achieve's American Diploma Project. In this study, items from the exit exams were found to measure only a portion of the knowledge expected for college and career readiness.

D'Agostino and Bonner (2009) believe that fully evaluating whether or not exit exam scores indicate college readiness is complex and demands an array of studies that employ a variety of methodological approaches. Regardless of whether or not state high

school exit exams are appropriately aligned with college and career expectations, it is also important to understand what these exams mean to the teachers and students impacted by them. What researchers have not yet adequately addressed is how teachers and students interpret the signals that are sent when students pass or fail an exit exam. D'Agostino and Bonner explain that it is important to study how students and teachers interpret these signals because it is likely that the most prominent signals that students receive regarding their level of college readiness come from their actual test scores, such as the performance levels they attain on high school state tests.

Brown and Conley (2007) observe that as the number of students attending college continues to increase each year, and as college remediation rates remain stubbornly high, particularly at community colleges, “the signals that state high school exit exams send to students and teachers become increasingly important” (p. 138). According to signaling theory, students receive signals about what they need to learn and teachers receive signals about the services their students need from assessments like exit exams (Brown & Conley, 2007; Venezia & Kirst, 2005). If the signals are unclear or incorrect, students and schools cannot properly interpret them nor respond to them with productive behavior, so students are left unprepared for the next step after high school and the assessments become meaningless. In other words, in order for high school exit exams to achieve their intended purpose, passing or failing an exit exam must not only send the correct signal to students and schools, students and schools must *interpret* these signals as accurate indicators of college readiness and then respond to the signals with the

action needed to better prepare students for college. As explained by Conley and Goldman (2000), even if signaling is not an explicit goal in policymaking, the ways in which students and schools interpret signals appears to be a critical factor in the eventual success or failure of state policies.

### **Purpose of This Study**

The purpose of this research is twofold. The first purpose is to better understand how teachers from one school division in Northern Virginia interpret their students' performance on a high school exit exam related to college readiness. The second purpose is to better understand how teachers think their students interpret their own performance on the exam related to their college readiness. Studying teachers' interpretations of their students' performance is especially important for two reasons. First, because of their direct relationship with students, teachers are in the best position to witness how students interpret their own performance on the exit exam. Second, the ways that teachers themselves interpret their students' performance is important to understand, as teachers serve as gatekeepers between students and additional services they need to prepare them for life after high school.

Though many policymakers view preparedness for college and preparedness for career as one and the same, there is still much debate on this topic. The purpose of this research is not to settle the argument; rather, this study focuses solely on the relationship between exit exams and academic preparedness for credit-bearing college courses. This

study uses the Virginia Department of Education's definition of college readiness for the purposes of this study, which is further explained below.

In 2004, Virginia implemented a state policy requiring that all students, in order to receive a standard high school diploma, must meet a proficiency standard on end-of-course assessments in reading and writing; at least one course in math, science, *and* history and social science; and at least one additional course in mathematics, science, *or* history and social science. The individual courses that students may take to meet this requirement are as follows:

- Math- Algebra I, Algebra II, or geometry
- Science- biology, earth science, or chemistry
- Social Science- world history and geography to 1500 A.D., world history and geography: 1500 A.D. to the present, Virginia and United States history, or world geography

These end-of-course assessments are known as the Standards of Learning (SOL) tests and were originally designed to assess student mastery of the state's content standards in English, math, science, and social science. Passing scores were established based on whether a student met the minimum level of achievement needed to pass the course or class associated with those standards (Virginia Department of Education, 2010). However, the Virginia State Board of Education (VDOE) adopted new, more rigorous standards and expectations in 2009 for math and in 2010 for English that meet national and international benchmarks for college and career readiness. The Virginia

College and Career Ready Performance Expectations were developed in collaboration with leaders from the Virginia Community College System (VCCS), the State Council of Higher Education for Virginia (SCHEV), the career and technical education community, and high school educators (Virginia Department of Education, 2010). The new standards were implemented in the 2011-12 school year for math and in the 2012-13 school year for English and science.

With the adoption of these new college and career readiness standards, the VDOE has developed new tests that assess students' mastery of the new standards. The new assessments are administered online and utilize technology-enhanced test items that require students to demonstrate mastery in certain skills in ways that were not possible with traditional multiple choice tests. The result of these changes is that students are now required to demonstrate mastery of more rigorous content in order to pass the new SOL tests and receive a high school diploma (Virginia Department of Education, 2010).

The VDOE explained that the new test development process was informed by previous research focused on the associations between student achievement on the SOL assessments and college enrollment and persistence, as well as a survey in which higher education faculty identified the Standards of Learning in math and English they felt were essential for student success in introductory, credit-bearing English and math courses. For these new assessments, the VDOE adopted cut scores that indicate proficiency and are used to verify course credit in addition to cut scores that indicate readiness for success in introductory, credit-bearing English and math courses in college. The college readiness

achievement level replaced the advanced proficiency level in these courses (Virginia Department of Education, 2010). The VDOE implemented these new tests in Algebra I, geometry, and Algebra II in the 2011-12 school year, and an “advanced/college path” cut score was adopted on the Algebra II test that replaced the “advanced” achievement level and indicates college readiness in this subject (Center on Education Policy, 2012).

This study explores the following research questions within the context of Virginia’s exit exam policy:

- How do high school teachers of SOL subjects interpret a proficient and/or advanced student performance on an exit-level SOL test related to academic preparedness for college?
- How do high school teachers of SOL subjects think their students interpret their own proficient and/or advanced performance on an exit-level SOL test related to academic preparedness for college?
- In what ways do the teachers’ interpretations vary depending on their years of experience, the subject they teach, or the percentage of low-income and minority students they teach, if at all?

### **Definition of Terms**

**High school exit exam.** A high school exit exam is an assessment that the state requires students to pass, not just take, in order to receive a high school diploma. Students are required to pass these assessments even if students have completed the necessary

coursework with satisfactory grades. In some instances, students may be allowed to substitute a different assessment for the exit exam; however, students must still meet a passing standard set by the state on that assessment. Exit exams, as used in this research, are a state mandate rather than a local option. In other words, the state requires students in all school districts to pass exit exams, rather than allowing districts to decide whether or not to make the exams a condition of graduation.

**College readiness.** As defined by the Virginia Department of Education (2010) for its College and Career Readiness Initiative, college readiness (in the context of this research) refers to a student’s level of academic preparedness to enter and successfully complete credit-bearing college courses.

**School division.** For the purpose of this research, the term “school division” will be used to describe a local education agency<sup>1</sup>, which the Elementary and Secondary Education Act defines as:

...a public board of education or other public authority legally constituted within a state for either administrative control or direction of, or to perform a service function for, public elementary schools or secondary schools in a city, county, township, school district, or other political subdivision of a state, or for a combination of school districts or counties that is recognized in a state as an

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<sup>1</sup> In Virginia, local education agencies are referred to as school divisions.

administrative agency for its public elementary schools or secondary schools (U.S. Department of Education, 2012).

**Standards of Learning (SOLs).** The Virginia Department of Education (2010) defines its Standards of Learning as standards that establish minimum expectations for what students should know and be able to do at the end of each grade or course in English, mathematics, science, history/social science, technology, the fine arts, foreign language, health/physical education and driver education. The annual SOL tests provide information on individual student achievement including those with special needs.

### **Theoretical Framework**

Venezia and Kirst's (2005) signaling theory as applied to the high school to college transition process by Brown and Conley (2007) informs the framework for exploring teachers' interpretations of the signals received by both students and teachers from students' performance on the high school exit exam. According to signaling theory and as shown by Figure 1, policymakers first construct the signals that high school exit exams are meant to send regarding students' readiness for college, which is represented by the first level of Figure 1. Next, teachers and students interpret students' performance on an exit exam as it relates to students' readiness for college in one of two ways, as shown by the second level of Figure 1. One, teachers and students can interpret the exit exam as an *accurate* assessment of college readiness. Or two, teachers and students can interpret the exit exam as an *inaccurate* or *incomplete* assessment of college readiness.

These interpretations then lead to different teacher and student behaviors, as shown by the third (or orange) level of Figure 1.

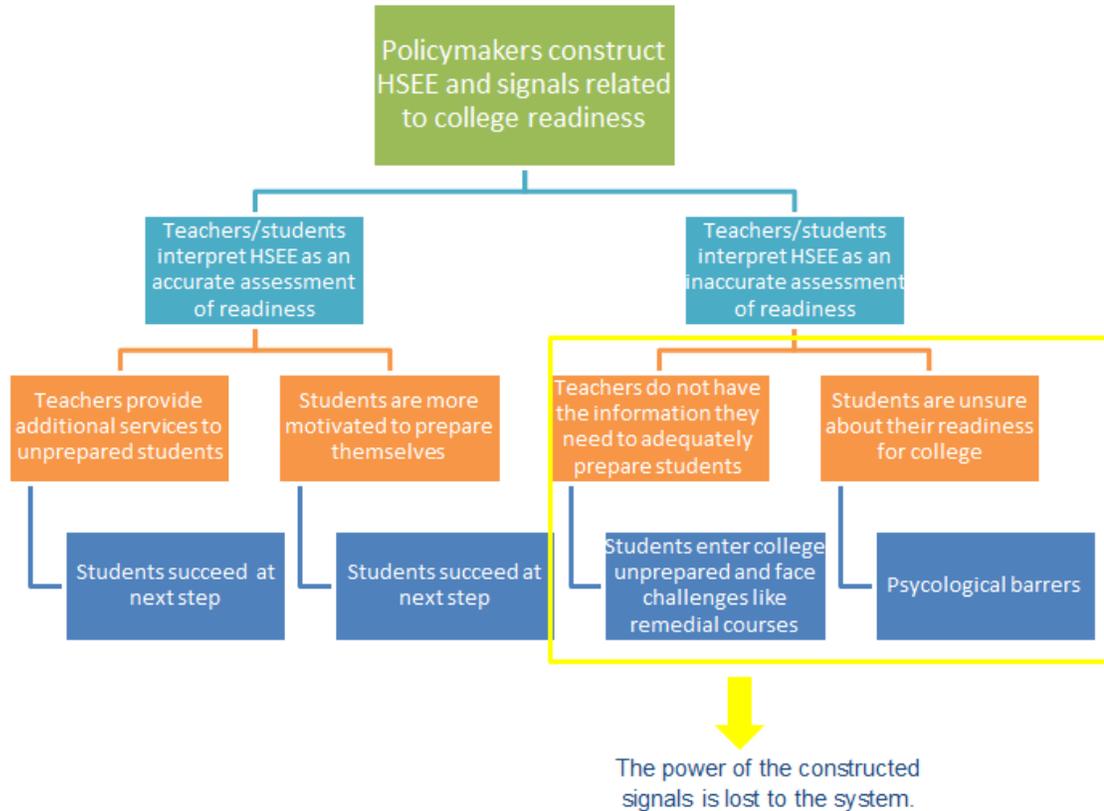


Figure 1. Signaling Theory as Applied to High School Exit Exams

Theoretically, if teachers and/or students interpret exit exam results as an accurate assessment of college academic preparedness, then they believe that those who are correctly labeled as prepared will likely go on to succeed in their college endeavors and those students who are correctly labeled as not prepared can now be targeted for

interventions aimed at increasing their preparedness. In this case, teachers can respond to this interpretation by providing students who are not yet prepared for college with additional services aimed at increasing their readiness for college prior to high school graduation. Some policymakers also feel that labeling students as not prepared for college by an exit exam will motivate students to work harder at preparing themselves (though, as previously explained, researchers have refuted this claim). Either way, when teachers and students interpret the exit exam as an inaccurate or incomplete assessment of college readiness, they may respond with inappropriate behavior or with no behavior at all.

Finally, the behaviors of teachers and students in response to their interpretations of student performance on the state exit exams determine the benefits or ramifications that students experience when pursuing their college endeavors, as shown by the fourth (or blue) level of Figure 1. For example, when a student is incorrectly perceived as prepared for college, teachers may interpret this information in a way that prevents them from providing the student with any additional school services he may need to succeed in college. When ill-prepared students enter college under the impression that they are prepared for this next step, they often enter a frustrating system of remedial, non-credit bearing courses. Though it is difficult to estimate how many students are affected by remediation in college, Attewell, Lavin, Domina, and Levy (2006) estimated that at least forty percent of college students take at least one remediation course. The U.S. Department of Education (2013) reported that in the 2007-2008 school year, about twenty-three percent of undergraduate students at a public institution of higher education

considered to be in their first year of college reported taking a remedial college course. The percentage was the highest among students pursuing an associate's degree as twenty-six percent of those students reported taking a remedial course compared to twenty percent of students pursuing bachelor's degrees. This report is quick to point out, however, that these data are self-reported and may not represent the full extent of the need for remediation among first-year undergraduate students. The authors explain that prior research documents a gap between those who need remediation, those who enroll in remediation, and those who complete remediation. In some situations, a remedial course is required if a student is missing a certain course on the high school transcript—such as calculus. In other cases, students are directed to remediation when their performance on a college placement class does not meet an established cut score. The problem of remediation is burdensome for both students and institutions, as remedial coursework most likely leads to increased costs, more time needed to complete required college coursework, and decreased chances of completing college.

It is also possible that a student can be inaccurately labeled as not prepared for college because of his performance on an exit exam, when in reality he *is* prepared for this next step after high school. This outcome is especially likely immediately following a policy change like that in Virginia, where the state adopts new, more rigorous academic standards and implements new assessments. Incorrectly labeling students as not prepared for college imposes obvious consequences on the students impacted. Research has shown that failing an exit exam can lead to a number of adverse emotional reactions, such as

decreases in self-esteem and increases in feelings of depression, embarrassment, anxiety, apprehension, and doubts about the prospect of graduating high school (Catterall, 1989; Cornell, Krosnick, & Chang, 2006; Richman, Brown, & Clark, 1987). These effects would be an unfortunate consequence for any student but especially for one who is, in fact, prepared to enter college.

As shown by the square and arrow in Figure 1, the consequences of teachers and students interpreting an exit exam as an inaccurate or incomplete assessment of college readiness impacts the ability for the exit exam policy to serve its intended purpose. As previously discussed, Brown and Conley (2007) explain that if students or teachers *interpret* the signals sent by an exit exam to be inaccurate, the signals either lead to nonproductive behavior or are ignored altogether. In either situation, the ability of a high school exit exam policy to impact students' readiness for college is lost.

Figure 2 is taken from Domaleski's (2011) policy brief on end-of-course testing policies, which he prepared for the Council of Chief State School Officers (CCSSO). Though state end-of-course tests are not always exit exams (as defined for the purposes of this study), Domaleski's depiction of the "theory of action" behind these testing programs further explains why appropriate signaling is important to the success of these programs. The circles in Figure 2 highlight the elements of this theory of action that are only possible if teachers and students interpret the signals in the same way policymakers intended when they constructed them. For example, the exams must be a "trustworthy indicator" of readiness, or in other words, must be interpreted by teachers and students as

providing accurate information. This then leads to educators using the assessments to “support student success” by changing their behavior based on their interpretations, which ultimately leads to “more students exit(ing) high school prepared for success in college or a career” (p. 3).

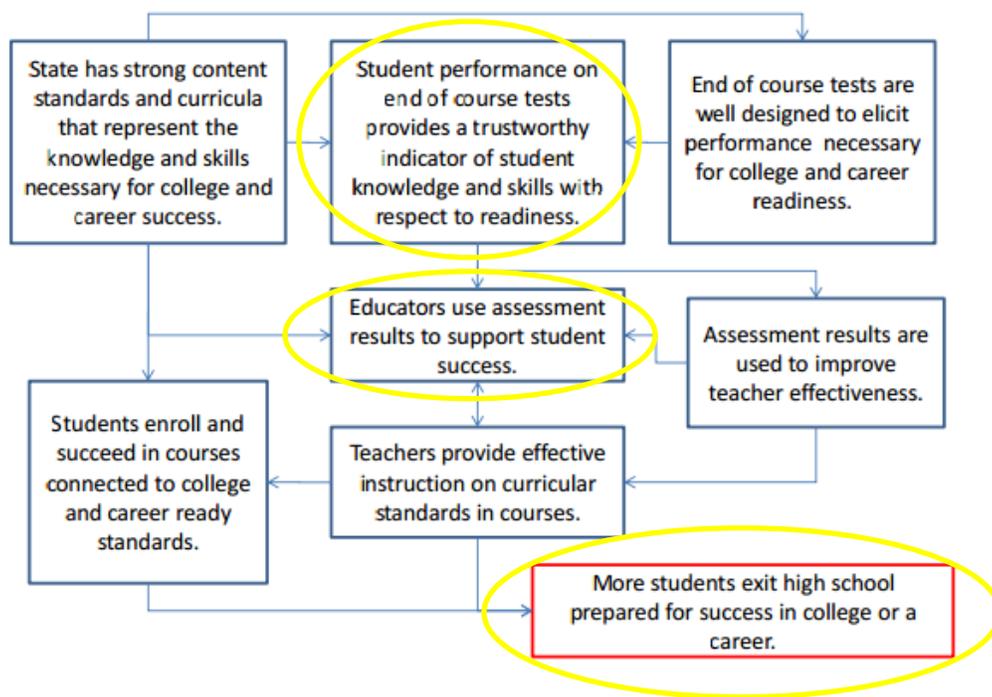


Figure 2. End-of-Course Testing Program Theory of Action

## **CHAPTER TWO: LITERATURE REIVEW**

Research on the relationship between high school exit exams and college readiness has neglected to specifically address how teachers and students interpret the signals they receive from student performance on these exams. However, a body of research exists that is closely related to this topic, which can be organized into three categories. First, some of the studies included in this review examine the ability of high school exit exams to predict college success. Studies in this category approach this purpose either by studying the alignment between the standards high school exit exams assess and postsecondary expectations or by following student data longitudinally from high school through college. The second category of research includes those studies that seek to better understand teacher perceptions of state-mandated assessments. Most of these studies focus on how teacher perceptions of these assessments impact their instructional practices; however, others include how teachers perceive the consequences of these assessments on their students. Finally, the third category of research explores the signals that teachers and/or students receive regarding students' college and/or career readiness. The research in this final category is rather thin, further justifying the need for this study.

## **Research on the Ability of High School Exit Exams to Predict College Success**

Brown and Conley (2007) sought to better understand the linkage between state high school tests and postsecondary education expectations. They explain that this research is important given the wide-ranging use of high school exams across the country claiming to assess college readiness. Their study analyzed the content of state tests relative to a set of standards that identify knowledge and skills necessary for success in entry-level university courses, known as the Knowledge and Skills for University Success (KSUS) developed by the Standards for Success project (Conley, 2003). Brown and Conley explain that the “KSUS standards are derived as directly as possible from actual college classroom practices, not a theoretical knowledge domain that encompasses all ‘desirable’ skills for incoming students” (p. 141). Further, they argue for comparing the KSUS to state assessments rather than state standards because prior research has shown that teachers focus their instructional efforts more on state tests than on state standards.

For their study, Brown and Conley (2007) analyzed a total of sixty math and English assessments from twenty states along a number of alignment dimensions. They found state exams to be moderately aligned with a subset of the university standards, but in an uneven fashion. The range of knowledge covered on state tests was better in mathematics than in English, in part because there are more assessment items on state mathematics tests than on English tests. The researchers also found that state math assessments did not align as well with the KSUS standards in trigonometry and statistics,

and that alignment of English tests with KSUS standards was poorest in the areas of critical thinking and research skills. Brown and Conley conclude from these findings that:

State high school assessments and the knowledge and skills necessary for university readiness align in areas that might be characterized as more basic and do not align as well in areas requiring more sophisticated cognitive functioning. The conclusion is that high school exams cover only a portion of what is necessary for college readiness and that, from a criterion validity perspective, the results from these tests should be interpreted with caution if used for postsecondary decisions. (p. 153)

Other studies seek to evaluate the ability of state exit exams to predict college success by analyzing longitudinal data. For example, Bishop and Mane (2001) argued that minimum competency exams were associated with increased rates of college enrollment among high school graduates, particularly for what they classified as low-achieving and average students. This conclusion was based on their analysis of data from the National Education Longitudinal Study (NELS-88), a nationally representative sample of 8<sup>th</sup> grade students in 1988 followed through the year 1994. The researchers constructed two variables from this data set. The first indicated whether or not the student was enrolled in a state that required passage of a minimum competency exam (MCE) for graduation and the second indicated the difference between the student's 8<sup>th</sup> grade GPA and the overall mean GPA of the students included in the data set. The researchers also attempted to control for variables related to student characteristics and the community

they come from. Bishop and Mane conducted logistical regressions to predict college enrollment of 8<sup>th</sup> graders in their sample and found that the probability of 8<sup>th</sup> graders attending college 5 years later was not affected by their resident in a state with a required MCE. However, students with high GPAs were more likely to attend college if they were enrolled in an MCE state and students with low GPAs were less likely to attend college if they were enrolled in an MCE. These results were different when Bishop and Mane analyzed the same data but predicting college enrollment one year later. The researchers found that students in an MCE state were 3 to 4 percentage points more likely to enroll in college, regardless of their 8<sup>th</sup> grade GPA. They concluded from these findings that MCEs might delay the high school graduation of some 8<sup>th</sup> graders with low GPAs, resulting in delayed college enrollment, but that the overall enrollment rates are higher in states with MCEs, particular among low achieving students.

More recent work using longitudinal data to assess the ability of state exit exams to predict college success has been based on the newer wave of more rigorous high school assessments. Dee and Jacob (2006) developed regression models to analyze how exit exam requirements affected educational attainment and market outcomes. Their analyses found no significant impact, positive or negative, of either more or less difficult state exit exams on the probability of attending college using PUMS Census self-reported data. They noted one exception to their findings—Hispanic females were more likely to attend college if they lived in a state with a more difficult exit exam. Warren, Grododsky, and Lee (2008) also used PUMS data from 1980-2000, but analyzed it in conjunction with

the census CPS Outgoing Rotation Group (ORG) survey from 1984-2002, which is a monthly survey of the civilian, noninstitutionalized population. These researchers controlled for state- and student-level covariates as well as covariates related to the state and national policy environments, and found no association between exit exams (whether they be more or less rigorous) and college attendance. These findings also held when they analyzed their data across racial and ethnic groups.

D'Agostino and Bonner (2009) examined whether the cut score set by the state of Arizona on its exit exam was predictive of first-year college grade point average (GPA). The researchers used data from students at the University of Arizona who had taken the state's exit exam as sophomores in 2000. At the time, students were required to pass the exit exam in order to graduate high school, but the state ultimately delayed this requirement until 2004. This means not all of the students in the sample passed the exit exam, which allowed the researchers to examine college GPAs for students who both passed and failed Arizona's exit exam in 2000. D'Agostino and Bonner analyzed the proportion of students with varying college GPAs who performed far below, approached, met, or exceeded the performance expectations on Arizona's exit exam. They also conducted multiple regression analyses to examine whether or not the cut scores used in 2000 to determine these performance levels predicted first year college GPA, as well as whether or not cut scores adjusted ten points higher or ten points lower were better predictors. The researchers found that the cut scores on the writing and math sections of the high school exit test were accurate predictors of composite GPAs among students in

the sample. Specifically, their analyses indicate that a student who met or exceeded expectations on the high school exit exam in math or writing had a 90% or greater chance of earning a GPA of a C or better. However, they found that the cut score on the reading test to be too low to be a useful predictor of college GPA. The authors concluded that more rigorous exit exams may provide an accurate signal of college preparedness.

Similar to D'Agostino and Bonner (2009), Cimetta (2012) sought to better understand and interpret the messages students receive based on their performance on Arizona's state exit exam. Though D'Agostino and Bonner's work focused on the relationship between exit exam performance and first year college GPA, Cimetta goes further by exploring exit exam performance and college graduation. She sought to answer the following questions: What is the relationship between math scores on the exit exam and college math performance defined by the University of Arizona math requirement and college graduation; to what degree do math scores on the state exit exam predict college math performance; and third, what is the average math score and performance level on the state exit exam for students who choose certain majors? To answer these questions, Cimetta obtained data from the Arizona State Department of Education containing exit exam results for in-state members of the 2002-2003 freshman class at the University of Arizona (UA). Most of the 2002-2003 UA freshmen took the the exit exam while they were enrolled as sophomores in Arizona high schools during the spring of 2000. As previously explained, though the state eventually delayed the exit exam graduation requirement, students who took the exam in 2000 were under the impression

that they would be required to pass it to earn a diploma. Cimetta explains that only those students with valid exit exam math scores and who entered the UA as freshman in the fall of 2002 were included in the analyses, which amounted to 2,734 students. She used these data to conduct a one-way ANOVA and logistic regression analysis to answer the first research question and a linear regression analysis to answer the second and third questions.

Through her analysis, Cimetta (2012) found that higher math scores on the Arizona's exit exam correlated with increased students' chances of meeting the UA's math requirement and graduating college within six years. Students meeting the UA math requirement had mean exit exam math scores above the passing level for the test while a greater number of students who failed the exit exam math test did not meet the UA math requirement. Cimetta concluded that passing the state exit exam in math was a good indicator of college success defined as meeting the UA math requirement and college graduation in six years. Though the researcher acknowledges that her study is limited in terms of generalizability because data come from one university in one state, she concludes that the findings in this study repeatedly showed that signals sent to students by Arizona's exit exam in math can provide useful information regarding college readiness.

### **Research on Teacher Perceptions of State-Mandated Assessments**

Much of the early research on teacher perceptions of state-mandated assessments focused on how these tests either failed to lead to improved teaching practices or

worsened teaching practices by encouraging teachers to teach to the test. For example, Shepard and Dougherty (1991) studied the effects of testing on teacher behaviors in two school districts with high-stakes testing. They surveyed a random sample of third-, fifth-, and sixth-grade teachers in each district in order to learn more about what these teachers perceive to be the influences of high-stakes testing on their teaching. The researchers reported that the teachers felt pressure from district administrators and the media that caused them to shift the emphasis in their instruction to basic skills and to minimize curriculum not on the test. In open-ended survey responses, teachers questioned the benefits of standardized tests, which they viewed were far out measured by the drawbacks. Lomax et al. (1995) administered a survey to 2,229 math and science teachers of high- and low-minority classes and conducted interviews with 289 urban educators in six large urban center school districts. The researchers found that teachers of high minority classes were more likely to say they spent more time on basic skills and teaching to the test. They also felt more pressure from their districts to raise scores and teach to the test. In other words, these teachers felt that the tests led to more “test prep” style teaching and more test-focused learning on behalf of the students. Finally, in Fickel’s (2000) ethnographic case study of Wilson County High School, a participant in the Kentucky Education Reform Act (KERA), he spent forty full school days observing and interviewing teachers and attending meetings. He found that teachers felt a renewed sense of purpose because KERA’s focus was on critical thinking and meaningful learning, but the teachers also felt that the reform was potentially limiting because of the

pressure to teach to the test. As a result, Fickel concluded that teachers actually felt that KERA curtailed the use of authentic learning activities.

Later studies focused on how teachers were interpreting more rigorous state assessments, and how their perceptions were or were not leading to changes in teachers' instructional behaviors. Henning (2006) sought to better understand how teacher leaders analyzed standardized achievement test scores for the purpose of improving instruction and hence student achievement. Seventeen elementary teachers and seven middle school teachers, all enrolled in a graduate program for teachers leaders, participated in the study. All of the participants were veteran teachers, many serving as leaders on building teams, as grade level leaders, or as participants on district wide initiatives. Henning found that the teacher leaders in his study typically analyzed a limited number of years of data, so achievement test scores were rarely analyzed across trend lines. He concluded that this may indicate that student achievement data were not yet accessible enough for teachers at the time of the study, an explanation informally confirmed by the teacher leaders. However, Henning did note that the participants in this study did make effective use of only a single year of data by disaggregating and correlating the data.

McMillan (2005) studied the relationships between teachers' receipt of high-stakes test score results of their students and subsequent changes in their instructional and classroom assessment practices the following year. For this study, McMillan surveyed 722 elementary, middle, and high school teachers from one school district located in

Richmond, Virginia and found that most teachers in his study believed they have used results on high-stakes tests to make instructional and assessment changes, and, for the most part, these teachers view these changes to be positive. These teacher-reported changes specifically included increasing the emphasis on depth and advanced cognitive processes rather than breadth and rote memorization, and also included using more formative assessment. McMillan also found that elementary teachers tended to report more change in their behavior than secondary teachers. He felt a possible explanation for this difference was that teachers at the elementary level view the test specifications as more directly related to what they emphasize in their teaching, and teachers at the secondary level perceive the test specifications to be less specific and useful. However, one limitation to this study is that the data include only self-reported teacher perceptions, and it is unclear if school administrators shared these perceptions. McMillan concludes that much more can be learned about why teachers either do or do not use the scores of these tests with further investigation.

Other studies have focused on how and why teachers change their instructional behaviors based on student performance on state assessments. For example, Grogan and Roland (2003) conducted a qualitative study in which they interviewed nine teachers and seven principals as well as conducted classroom observations of the nine teachers in high schools in Virginia. The teachers included in the study were selected by the principals as successful teachers based on an 80% or better passing rate among their students on at least two administrations on Virginia's state-mandated testing program, known as the

Standards of Learning assessments or SOLs. Grogan and Roland identified through their research specific behaviors they believed led to student success on the SOLs. They also concluded that these teachers had an internalized desire for students to excel on the tests, so they maintained a professional attitude even if they opposed the test. The researchers believed that successful teachers and their principals invested in the SOL tests through their beliefs, values, and directed efforts which yielded successful results on the tests.

Similarly, Vogler (2002) sought to determine if public release of student results on Massachusetts' high school exit exam, also known as the Massachusetts Comprehensive Assessment System (MCAS), influenced instructional practices, and if so, in what way. He surveyed a random sample of 257 teachers of tenth grade English, math, or science in a public school in Massachusetts. Vogler found that teachers did make changes in their instructional practices after they received their students' scores on the MCAS. He determined that teachers made these changes mostly because they had an interest in helping their students get the MCAS scores they needed to graduate and because they wanted to help their school improve their overall MCAS scores. Large percentages of respondents to the survey also reported a personal desire to make changes (72.2%), the belief that changes would benefit students (68.3%), and the staff development that the teacher participated in (66.3%) as motivating factors for changing their instructional practices.

Some studies have looked more generally at teachers' perceptions of high-stakes testing. For example, Grant (2000) used focus group interview data collected over two

years to examine how groups of elementary and secondary New York State (NYS) teachers teaching various subjects changed their classroom practices in response to state-level testing. His first focus group included seven elementary school teachers and counselors, and the second focus group was composed of twelve high school teachers. The participants were drawn from urban, suburban, and rural school districts across New York state and represent a wide range of teaching experience (2-25 years) and school subjects (language arts, math, science, and social studies). Grant's data analysis focused on three issues: the nature and substance of the tests, the professional development opportunities available to teachers, and the rationales for and consequences of the state exams. Grant concluded from this research that teachers see the new NYS tests as a mixed bag. He explained that the potential of tests to closely mirror and support thoughtful instruction and closer collaboration with colleagues is offset by the uncertainty among the teachers of about the rationale for and consequences of the new tests. Grant also found an unevenness in the opportunities teachers have to learn about and respond to changes in the tests. In short, he explained that teachers across grade levels and subject matters expressed "an uneasy combination of hope and fear, anticipation and dread" (pg. 7).

One weakness of Grant's (2000) study is the timing of his work. When Grant collected his data, the NYS department of education was in the process of phasing in new state tests over a period of four years. Consequently, most of the teachers he interviewed had not seen final versions of the tests they would administer, let alone begun to

administer them. All had received preliminary materials from state, district, and professional organization sources and so most felt that they had a fair sense of what the new exams would be like. Most believed the tests would be an improvement over past assessments, but their lack of exposure to the new tests no doubt limited their knowledge of the nature and substance of the tests and their perceived consequences of the tests can only be interpreted as speculative.

Nonetheless, it is interesting that teachers from varying grade levels (secondary vs. elementary) and subject areas in Grant's (2000) study had differing opinions of the new state tests. Many teachers praised state efforts to bring standardized assessments into closer alignment with the kind of ambitious instruction they believed was important, but others focused on the continuing heavy presence of generally low-level multiple-choice questions, arguing that the test had changed little overall from its previous versions. Grant concluded from his data analysis that having informal sources of information and support might have helped teachers navigate some of the challenges the new state tests posed, but they did little to help teachers with the problems of mixed messages and unanswered questions. Common across teachers of all grade levels and subject matters was a frustration with incomplete and conflicting information about the new tests.

Teachers across grade levels and school subjects in Grant's (2000) were also frustrated by the feeling that, though they were the professionals on whom the tests will have the most impact, their voices were not well reflected in important discussions about the nature, import, and design of new state tests. The teachers in his study also discussed

their uncertainty about whether the state's intention was to change the teachers' behavior or the students' and the burden they felt of both preparing students to take the exam and of being held accountable for their students' performance. Grant found that overall, the focus group teachers were not opposed to improving teaching and learning, but they were uncertain about the rationale for standardized tests as a vehicle.

Researchers of two studies conducted in two different states (Virginia and Arizona) found more positive perspectives of state-mandated assessments among the teachers included in their studies. Kaplan and Owings (2001) surveyed 700 randomly selected teachers in Virginia about the state's SOL testing program. The researchers in this study sought to discover the effect teachers believed the SOLs had on classroom instructional best practices. When the researchers asked if the SOL testing program was taking Virginia schools in the right direction, they received no clear consensus among teachers. The researchers concluded from this that the teachers' ambivalence about the SOL tests may be a result of the newness of the program at that time. Kaplan and Owings also concluded that under certain conditions, teachers do support high-stakes testing. However, they found this support to be waning among teachers who value the principal as an instructional leader, who have more years of experience and advanced degrees, and who believe curriculum ensures meaningful applications to students' real-life experiences. Miller (2001) conducted a similar study for her dissertation, but focused on teacher attitudes, opinions and preparation related to Arizona's high school exit exam in math. Using a mixed methods research design, Miller surveyed teachers from sixteen

public high schools from four different school districts, two non-unified and two unified, and interviewed each district's math coordinator on similar topics covered in the survey. Miller found few differences among the attitudes, opinions, and preparation related to the exit exam when comparing teachers from unified and non-unified districts. In general, the teachers in this study supported requiring students to pass a math test prior to graduation. They also agreed that there was a need for the state department of education to partner with teachers when deciding math curriculum and what would be tested on the math exit exam. More specifically, Miller's study revealed six common beliefs among teachers in the study: a) the exit exam should be given during the school day, b) the exit exam should not be a comprehensive test that incorporates two years of math instruction tested during the tenth grade year, c) students should be allowed to use calculators on the exit exam, d) parents must be actively involved in the educational process of their children, e) teachers have not been involved enough in the development of the exit exam, and f) teachers should be held accountable collectively for their students' exit exam results.

Though many of the previous studies were conducted on a state or local level, Clark et al. (2003) conducted a national survey of classroom teachers to better understand their perceived value of the mandated testing programs in their respective states and were able to draw conclusions across states. They specifically wanted to know how teachers perceived the accuracy of inferences that can be made from high-stakes tests about quality of instruction, student learning, school effectiveness, and differences among various groups; the adequacy and appropriateness of media coverage of test results; and the cost/benefit

ratio of the testing program. The researchers found that elementary teachers felt to a greater degree than either middle or high school teachers that their state-mandated tests measured achievement of high standards and that middle school teachers more often agreed with this item than did high school teachers. They also found that more elementary teachers than middle or high school teachers thought that the test did not accurately measure what minority students know. Across all stakes levels (from high-stakes tests to tests with relatively low-stakes), ninety percent of the teachers in the survey did not regard the state test as an accurate measure of what ESL students know and can do, and forty percent of the teachers reported that teachers in their school could raise test scores without improving learning. Finally, about three-quarters of all teachers, regardless of stakes or grade level, found that the benefits of the testing program were not worth the time and money required of the testing program. Clark et al. concluded that

Only by listening to what teachers tell us is happening as a result of these testing programs can we be confident that these programs are having the intended effect. Teachers are on the front line every day. Their voice on this issue must be heard; their opinions must enter into the formation of sound testing policy. (p. 9)

Pedulla et al. (2003) conducted a national survey of teachers to determine how the consequences of state-mandated testing programs affect instruction and learning. They asked teachers about a number of issues related to student learning and high stakes testing, including their perceptions of the effects of the state mandated tests. To do so, they developed an 80-item survey based on surveys that had been used in other studies. The

survey was made up of statements and questions that related to standards based education reform and a Likert response scale was used to determine the teachers' intensity of their opinions. The sample of teachers surveyed was designed by categorizing the states based on the consequences for the assessment, including consequences against the school district or teachers and those against the students. The stakes within each category were determined to be high, medium, or low based on the severity of the consequences. After categorizing, the sample of teachers was further reduced based on low volume in the category leaving five states in which 12,000 teachers were randomly selected to participate in the study. Pedulla et al. removed teachers from the sample who taught electives or physical education, as it was assumed that they were not involved in standards based education. The researchers received "4,195 useable surveys, yielding a response rate of 35%" (p. 18).

Pedulla et al. (2003) found that teachers' perceptions of the tests differed significantly when analyzed by the severity of the stakes attached to the test results and by elementary, middle, and high school teachers. For example, they found that in general, teachers in high-stakes states reported feeling more pressure to improve test scores, to limit teaching to what is tested, and/or to change their teaching methods in ways they felt would not be beneficial to their students. The researchers also found that elementary teachers appeared to feel more pressure from statewide testing programs than secondary teachers. Pedulla et al. concluded that based on the findings of their study, policy makers

need to be aware of these effects as stated by teachers and that teachers should be consulted about the state's high-stakes assessments.

Though somewhat dated, Cimbricz's (2002) review of studies from 1992 to 2002 that examine the relationship between state-mandated testing and teachers' beliefs and practice summarizes why further research in this area is needed. She explained that based on the studies included in her analysis, the existence of a relationship between state-mandated testing and teacher beliefs and practice is consistently confirmed. Cimbricz found that state-mandated tests do matter and do influence what teachers say and do in their classrooms. However, though there is overall agreement that a relationship between the two does exist, the nature of that relationship is neither simple nor easy to articulate and requires further exploration. For example, she explained that some researchers find that teachers' beliefs about state-mandated tests are mostly negative, whereas others say teacher beliefs are mixed. Furthermore, Cimbricz argues there are those who believe state-mandated testing has a significant and wide-ranging influence on teachers' curricular and instructional practices, and those who believe the influence of state-mandated testing has been overstated and limited. She concluded that "studies that provide a richer, more in-depth understanding of the relationship between state-mandated testing and teaching in actual school settings, therefore, not only point toward important directions for future research in this area, but are greatly needed" (p. 15).

## **Research on the Signals Teachers and/or Students Receive Regarding Students' College and Career Readiness**

Though the Virginia Department of Education defines college readiness as a student's level of academic preparedness to enter and successfully complete credit-bearing college courses, some of the important scholarship in this area uses a broader definition of college and/or career readiness when studying the signals teachers and/or students receive from various aspects of their high school experience. For example, LaFever (1999) studied the alignment between workforce skills outlined by the Secretary's Commission on Achieving Necessary Skills (SCANS), formed by the U.S. Departments of Labor and Education, and New York's Regents exams (the state's high school exit exams) from 1995 to 1997. It should be noted that SCANS did not limit their recommendations to competencies needed for college, but included aspects of workforce readiness as well. By surveying forty-six teachers and thirty-three employers from across the state, LaFever sought to determine whether teachers and employers perceived student performance on the Regents exams to be appropriate signals of workforce readiness. He surveyed teachers who taught one of the four academic areas covered by the state's high school exit exam policy: English, math, science, or social studies. The participating teachers were identified by school districts' curriculum coordinators as willing to participate. Employers were identified to participate in one of three ways. Some were identified using a database of the Private Industry Council in Buffalo, NY. Others were recruited through a newsletter distributed by Chamber of

Commerce in Tonawanda, NY. Finally, employers were also recruited at a presentation to the Western New York Human Resource Association of Buffalo, NY. All of the employers chosen to participate had previous knowledge of the SCANS skills and experience identifying SCANS skills in the workplace. LaFever found that both the teachers and employers saw little relationship between SCANS and the skills tested on the Regents exams except in basic reading skills. He concluded from his research that teacher and employer perceptions of the signals provided by the Regents exams provide little evidence to support the idea that requiring students to pass the Regents exit exams will enhance their success in college or a career.

Hay (2005) took a different approach to this topic by using both quantitative and qualitative methods to analyze a group of students' transition from high school to a small, rural community college. Hay conducted regression analyses of 224 community college students' high school records and found that those who tested out of developmental courses at the community college level had higher GPAs in high school and took more mathematics during high school. She also interviewed fifteen students about their own perceptions of their college preparedness. Hay explained that data from the interviews indicated that these students believed that less leniency on assignments and more academic rigor in high school would have better prepared students for community college. Although this was a small study at one Midwestern community college, it does suggest implications for indicators that may provide more accurate signals than high school assessments regarding college readiness.

Perna and Thomas (2009) drew data from case study analyses of fifteen high schools in five states to determine the effects of state-mandated high school exit exams on key factors in college enrollment, such as students' academic achievement and high school graduation. The researchers collected and analyzed data both on the state level (for the five states selected for the study) and at the school level (for the three schools selected in each state). The states (California, Florida, Georgia, Maryland, and Pennsylvania) were purposely selected to represent a variety of demographic, economic, political, and educational characteristics, but most importantly a variety of state-mandated high school assessment policies. Four of the states require high school students to pass exit exams before graduation, but the exit exam policies vary a great deal state to state. The fifth state, Pennsylvania, does not require a specific exit exam but does require that students show high school proficiency on the state exam or an alternative method offered by local school districts. To select the three high schools in each state, the researchers identified demographic and academic indicators based on the U.S. Department of Education's Common Core of Data, the U.S. Census Bureau, and each state's department of education. Once these indicators were identified, the researchers located school districts with at least three high schools that represented variation among these indicators. They chose to select schools from one school district to control for observed differences across schools that could be explained by variations across school districts.

Data were collected from each school from interviews with focus groups consisting of 9<sup>th</sup> grade students, 9<sup>th</sup> grade parents, 11<sup>th</sup> grade students, and 11<sup>th</sup> grade parents. The researchers also conducted semi-structured interviews with teachers and counselors. Between twenty and fifty-eight students, parents, teachers, and counselors participated at each school, for a total of 596 participants. The results of this case study indicated that students perceived low test scores as a barrier to college enrollment and that passing the high school exit exams did not ensure students were prepared for college because tested curriculum was not rigorous. The researchers concluded from these findings that:

High school exit exams shape college enrollment by limiting high school graduation; diverting attention away from ensuring that students are academically prepared for college toward ensuring that students obtain the minimum academic requirements for graduating from high school; reducing time for college counseling; and reducing students' real and perceived academic qualifications for college. (p. 472)

Venezia and Kirst (2005) conducted one of most extensive recent studies on this topic, known as Stanford University's Bridge Project, in which they sought to better understand why access to information about college preparation in high school typically follows racial, ethnic, income, and curricular tracking lines. To do so, the researchers reviewed policies and practices related to the transition from high school to college as well as student, parent, teacher, counselor, and administrator understandings of those

policies and practices in regions of California, Illinois, Georgia, Maryland, Oregon, and Texas. Specifically, they focused on the concept of policy signals—namely the amount and consistency of information high school students receive about preparing to take college-level classes. Venezia and Kirst explain that they believe this research is important because the system is fractured to a point that it sends students, their parents, and their educators “conflicting and vague messages about what students need to know and be able to do to enter and succeed in college” (p. 284). The researchers paid particular attention to placement exams, as they argue that most attention in high school is given to postsecondary admission, not on postsecondary preparation and success, and that few high school students and educators are informed about college standards, placement exams, or how to prepare for them.

In order to better understand how admissions and placement-related standards and policies established by state education agencies and postsecondary education institutions are understood, acted on, and interpreted by parents, students, and secondary school personnel, Venezia and Kirst (2005) collected data from state education agencies and postsecondary institutions in the six states included in the study on issues related to the transition from high school to college, such as high school exit-level exams and standards, college entrance exams and standards, college course placement exams and standards, policy connections between high school and college, outreach efforts, data collection and usage, K-16 accountability efforts, and related topics. Next, they surveyed nearly 2,000 students in the ninth through eleventh grades who were enrolled in at least

one honors and one non-honors class. They also interviewed parents from twenty-three schools about students' post-high school aspirations and their knowledge of issues related to students' preparation for college including tuition, admission criteria, and placement criteria.

Venezia and Kirst (2005) found that most of the students surveyed, especially those in non-honors classes, lacked the knowledge they need to successfully transition from high school to college. For example, they found that less than twelve percent of the students they surveyed knew all the subject areas required for admission to the universities included in the study (students were surveyed about only the institutions in their region). They also found that the students interviewed often wrongly believed that their high school graduation requirements are sufficient for postsecondary credit-level work and rarely knew about college placement exams, including what was tested on them and what happens if students do not perform well on them. Further, the study concluded that high school assessments often stress different knowledge and skills than do college entrance and placement requirements.

Venezia and Kirst (2005) focused part of their research on how policy signals lead to increases or decreases in student motivation to prepare for postsecondary education. The researchers argue that simple, clear, and consistent signals have a positive impact on student learning and achievement, but that mixed signals have the opposite effect. They confirm the role that high school educators and counselors play as purveyors of information (or signals) about what students need to know and do to succeed in

postsecondary education. Venezia and Kirst found that many teachers play important roles in improving signals, especially for students in honors courses. For example, the aggregated data across the sampled states showed that a greater proportion of students spoke with a teacher about college admissions policies than with a counselor. Further, students in honors courses spoke with a teacher or counselor about these issues more so than their non-honors peers. Venezia and Kirst explained that this could lead to mixed signals for students, as teachers in every state in the study except California believed that the admission and placement policies in their state and region were too complex and were rarely knowledgeable of college placement exams and policies.

Vang (2009) also studied students' perceptions of policy signals in his dissertation, but focused his study on the signals students in California receive from the California High School Exit Examination (CAHSEE). Vang used student level data from the 476,948 students who took the English language arts CAHSEE and the 477,556 students who took the math CAHSEE during the tenth grade in the 2005-06 school year. Some of his data came from a questionnaire that students responded to after taking each section of the exam about their perceptions and attitudes regarding the importance of the test, graduation expectations, and plans after high school. Vang also used descriptive statistical analysis to compare responses of students who failed the CAHSEE to their responses after the first retake opportunity in the 2006-07 school year.

Vang (2009) found that most tenth grade students in the study (ninety-six percent) viewed the CAHSEE to be important, and most students (over eighty-three percent)

reported that they did well on the test. Though about eighty-four percent of students surveyed expected to graduate high school, one-third of the students who reported that they may not graduate felt the the CAHSEE was the main reason why they may not graduate. Over seventy percent of the tenth grade students planned to graduate, and about eighty-eight percent were sure about their high school plans. When analyzing the data from the first retake opportunity, Vang found that fewer than thirty percent of the students who took it passed. Though most of the students' perceptions and attitudes remained positive, Vang reported that English learners and students with disabilities expressed lack of motivation, doubts about graduating from high school, and uncertainty of their post-high school plans. Vang concluded from his work that students appear to understand the importance of passing the CAHSEE in order to pursue goals beyond high school, but that students who failed the exam after their first attempt were more likely to express doubts about graduating high school. Further, Vang explains that students who are not white or Asian, who are English language learners, or who have a disability were among the groups most affected by the CAHSEE policy, whether through their actual scores on the test or by their perceptions and attitudes from the test. Though Vang's research provides interesting insight to how students perceive the role of an exit exam in their potential to graduate high school, it stops short of addressing what they feel this assessment says about their ability to succeed in postsecondary education.

## Summary

The first group of studies in this review focuses on the ability of state exit exams to predict student attendance or success in postsecondary education. Brown and Conley (2007) addressed this issue by studying the alignment between what state exit exams test and the ideal standards students should meet in order to succeed in college. They found that the content of state exit exams aligns with only the most basic of these college academic expectations. Other researchers analyzed longitudinal data to evaluate exit exams' predictive power of college attendance and/or success. Early studies on minimum competency exams yielded mixed results, depending on which data the researchers used. However, when D'Agostino and Bonner (2009) and Cimetta (2012) looked specifically at Arizona's exit exam and its relationship with student success in college, they found more promising results. D'Agostino and Bonner found that cut scores on Arizona's math test were predictive of students' first year grade point averages at the University of Arizona (however, reading cut scores were not as predictive). Cimetta concluded that passing Arizona's exit exam in math sends accurate signals to students about the college readiness in math, as a passing score on this exam predicted successful college graduation within six years.

Though these studies offer important insight into the predictive power of high school exit exams and college success, they ignore an important voice in the high school to college transition—that of the high school classroom teacher. Though not all specifically related to exit exams, this second group of studies in this review includes a

number of studies that focus on teachers' perceptions of state mandated exams. Early research on this topic agreed that minimum competency exams either led to no improvements in teachers' instructional practices or actually led to worsened teaching practices, such as focusing only on basic skills and/or "teaching to the test" (Fickel, 2000; Lomax et al., 1995; Shepard & Dougherty, 1991). However, more recent studies on the more rigorous exams now in use in most states have found that teachers believe these assessments *have* led to improved instructional practices (Grogan & Roland, 2003; McMillan, 2005; Vogler, 2002). Other studies that focused on a broader range of teacher perceptions about tests have found that the higher the stakes associated with a state-mandated test, the more pressure teachers feel to increase test scores, the more they worry they will be held accountable for their students' test scores, and the more fear and anticipation they associate with these tests (Grant, 2000; Pedulla, 2003). A common theme reaching across all of these studies is that teachers believe they should be consulted during the development of these exams and that policymakers have much to gain from listening to teacher perspectives of these exams (Clark, 2003; Grant, 2000; Miller, 2001; Pedulla, 2003).

Earlier research has documented teacher perceptions of state assessments; however, none have focused solely on how teachers perceive the relationship between state exit exams and college readiness, possibly because using these exams to assess college readiness is a rather new trend in state policy. However, this review did include studies that have focused on the signals teachers and/or students receive in high school

regarding college readiness. For example, Perna and Thomas (2009) found that high school exit exam results were not indicative of college readiness because of the lack of rigor on the assessments; meanwhile, Hay (2005) found that students with higher high school grade point averages and who took more math courses in high school were more likely to test out of remedial courses at community colleges. Also, Venezia and Kirst (2005) concluded that high school students in their study, especially those not in honors classes, were ill-informed of college placement tests and policies, possibly because they get this information from teachers more often than from counselors, and teachers were also ill-informed of these policies. Finally, Vang (2009) looked specifically at student perceptions of the exit exam in California both after they took the test the first time and after a first retake attempt. Vang concluded that those students who fail the exam on the first attempt, especially those belonging to certain minority groups, were more likely to interpret their performance as an indicator that they would not graduate high school.

The goal of this study is to combine the perspectives from the research reviewed in this chapter on the relationship between high school exit exams and college readiness, teacher perspectives of assessments, and teacher and student perceptions of the power of exit exams to assess college readiness. The following chapter outlines the research methods and design that will be used to achieve this goal.

## CHAPTER THREE: METHOD

The purpose of this research is twofold. The first purpose is to understand better how teachers from one school division in Northern Virginia interpret their students' performance on SOL tests related to college readiness. The second purpose is to understand better how teachers think their students interpret their own performance on SOL tests related to their college readiness. In order to address this purpose, this study explores the following research questions:

- How do high school teachers of SOL subjects interpret a proficient and/or advanced student performance on an exit-level SOL test related to academic preparedness for college?
- How do high school teachers of SOL subjects think their students interpret their own proficient and/or advanced performance on an exit-level SOL test related to academic preparedness for college?
- In what ways do the teachers' interpretations vary depending on their years of experience, the subject they teach, or the percentage of low-income and minority students they teach, if at all?

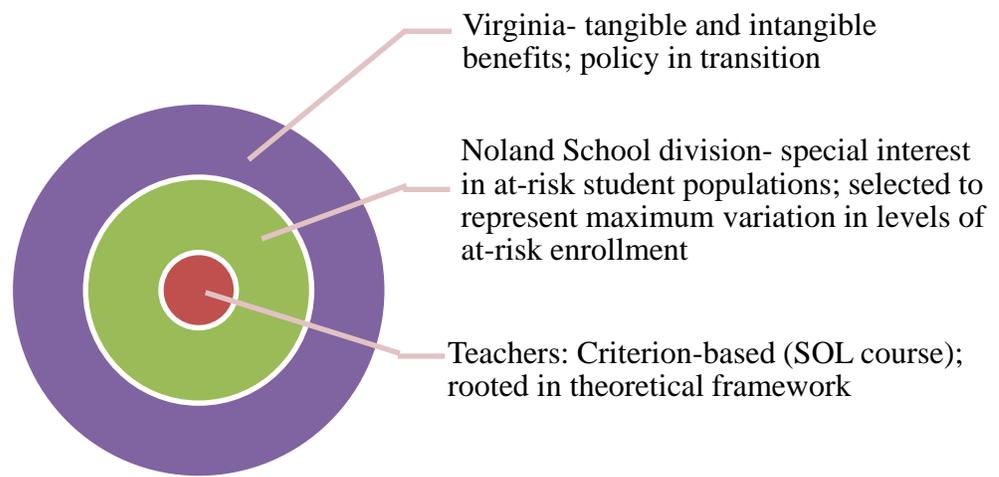
In this chapter I describe the choices I made regarding the setting for this research, the selection of participants, and the methods used to collect and analyze the

data. Finally, I discuss possible limitations associated with the chosen methods for this study.

### **Selection of the Setting and Participants**

I designed this study with two phases of research in mind. The research described in this dissertation is the first phase, during which I studied teacher perceptions through survey data. I hope to continue this work with a second phase of research, during which I will interview teachers to further explore how their perceptions impact their behavior (if at all). These two methods of data collection (survey and interview) influenced my decisions regarding the setting and selection of participants for this study. Rather than select a representative sample of teachers who fit the desired criteria, I purposely selected a population of teachers through a variety of strategies commonly found in qualitative and mixed-methods research. Those strategies are explained in this section.

Reybold, Lammert, and Stribling (2012) explain that “the complexity of selection extends beyond identification of participants...selection is an extension of one’s theoretical and conceptual framework” (p. 4). Several layers of selection have taken place to shape the methods of this study, each with its own rationale and thought process. However, each layer was informed by the theoretical framework as suggested by Reybold et al. Figure 3 serves as a graphic representation of the selection process for this study and the paragraphs that follow explain each of those layers.



*Figure 3. Selection of Setting and Participants*

As previously discussed, this research took place in Northern Virginia. Because high school exit exam policies vary a great deal from state to state, I first decided which state policy would serve as the context for this research. Reybold, Lammert and Stribling (2012) explain that “selection choices are slices of the reality around us, both in terms of tangibles (e.g. resources, physical access, participant availability) and intangibles (e.g. social and political relationships, rapport, historical timing)” (p. 4). The reality of the selection of Virginia as the setting is that it offered both tangible benefits, in that the state was geographically accessible from my home, and intangible benefits, in that I had social and professional relationships that offered me access to school divisions within this state.

As explained by Glesne (2006), this setting selection could show the phenomena being explored in this study in some lights but not in others. For example, Virginia only

recently began to use its exit exams as assessments of college readiness at the time of this research. Therefore, this study offered insight about teachers' perspectives during this time of transition. It does not, however, address how teachers may interpret student performance on exit exams related to college readiness in a state that has not yet begun to use exit exams for this purpose, nor in a setting where exit exams have been used for this purpose for an extended period of time.

Reybold et al. (2012) explain that “decisions regarding who is studied can potentially shape who we become as researchers and our expertise” (p. 13). I know that as a researcher I have a special interest in understanding how specific policies impact at-risk student populations, especially low-income students. Therefore, it was important to me as a researcher to select a school division in Virginia for this study that would represent different enrollment levels of at-risk student populations to explore how teacher perceptions vary according to the kinds of students they teach. For this reason, I purposefully selected a school division with a number of schools that represent different levels of enrollment of low-income students. As Patton (2002) explains, this kind of purposeful selection allows patterns to emerge across contexts selected for maximum variation that may be of particular interest and value in exploring the core experiences and central, shared dimensions of a setting or phenomenon. Additionally, even in the absence of these patterns, contexts selected for maximum variation allow this study to document circumstances in which the percentage of low-income students a school serves appears to impact the study's findings. Selecting the school division for the study in this

nature was important to understanding the conclusions drawn from this study because of the previously explained relationship between high school exit exam policies and low-performing students (keeping in mind that low levels of student achievement are often correlated with minority and poor student populations). Considering the nature of the problem explained in Chapter 1, it was important to me as I made selection decisions for this study to know how teacher interpretations of student performance on the state's exit exam differ between schools with varying percentages of low-income students.

The school division selected for this study, the Noland School Division, enrolled over 180,000 total students in the 2012-2013 school year, forty-three percent of whom were white, twenty-two percent Hispanic, nineteen percent Asian American, ten percent African American, and five percent multi-racial, according to the division's website. Also, twenty-six percent of the division's students qualified for free or reduced-priced meals (the measure used to indicate "low-income" for the purposes of this study). Ninety-one percent of the division's students graduated high school on time, and seventy-four percent of the division's graduates attended post-secondary programs. Finally, the class of 2013 included 229 National Merit Semifinalists. The divisions' 2012 state report card indicates that thirty percent of the division's secondary students were enrolled in at least one advance placement (AP) course in 2012, and ten percent were enrolled in at least one IB course.

I collected data for this study by administering a survey to all of the high school teachers at nineteen of the twenty-nine high schools in Noland School Division who

teach a course in which students must pass an SOL test in order to receive a standard high school diploma. This selection criterion was informed by the theoretical framework for this study as explained in Chapter 1. Because the phenomena I explore in this study are teacher interpretations of the signals that students' performance on a high school exit exam send to both them and their students, I was most interested in survey responses related to the interpretations and perceptions of teachers who were most directly connected to the required SOL subjects and tests.

The ideal number of survey participants was determined first by selecting a desired effect size. As discussed in the literature review, McMillan (2005) administered a survey on teacher perceptions and found differences among teachers of different subjects with effect sizes ranging from .56 to .65. Using the mean of those two effect sizes, .60, Cohen and Cohen's (1983) sample size formula was used to determine the idea sample sizes for this study for both the statistical power of .90 and .99. This formula indicates that a sample size of 90 would be necessary for a statistical power of .90 and a sample size of 119 is needed for a statistical power of .99.

### **Data Collection**

Data were collected from these selected participations using a survey designed to produce quantitative data to address the first two research questions:

- How do high school teachers of SOL subjects interpret a proficient and/or advanced student performance on an exit-level SOL test related to academic preparedness for college?
- How do high school teachers of SOL subjects think their students interpret their own proficient and/or advanced performance on an exit-level SOL test related to academic preparedness for college?

**Development of the survey instrument.** In order to develop the survey questions, I transformed the first two research questions into questions directed at the teachers who will be responding to the survey. In order to maximize the reliability of these survey questions or “the extent to which people in comparable situations will answer the questions in similar ways” (Fowler, 2009, p. 98), I shared the survey questions and research questions with both survey experts and policy experts with knowledge of high school exit exam policies and piloted the survey among teachers in Northern Virginia with whom I have a personal relationship (the cover letter sent to teachers who piloted the survey can be found in Appendix A). The survey questions were revised based on the feedback from the experts and the pilot administration. I learned from the pilot administration that definitions of key terms used in the survey were necessary to ensure that the questions would mean the same thing to all respondents. I decided to include definitions of the terms “college readiness” and “SOL test” at the beginning of the survey for this reason. Similarly, more than one expert suggested that I add cues within the survey to remind the participant of when the survey was asking about teacher

interpretations of students' performance and when it was asking about student interpretations of their own performance.

I attempted to increase the validity of the survey items by asking multiple questions with different question forms that measure the same subjective state. For example, one question asks if teachers interpret an advanced score on an exit-level SOL test to mean that a student is prepared for college, and another question asks if teachers interpret a less than advanced score on an exit-level SOL test to mean that a student is *unprepared* for college. Fowler (2009) explains that this strategy helps to “even out the response idiosyncrasies and improve the validity of the measurement process” (p. 111).

In order to give the participants a consistent perception of what constitutes an adequate answer for each survey item, I chose to provide them with a list of adequate responses or closed questions. As explained by Fowler (2009), the advantages of using closed questions include:

- The respondents can more reliably perform the task of answering the question when response alternatives are given.
- The researcher can more reliably perform the task of interpreting the meaning of answers when the alternatives are given to the respondent.
- Providing respondents with a constrained number of answer options increases the likelihood that there will be enough people giving any particular answer to be analytically interesting.

- Since the data will be collected electronically, it will be much easier for respondents to provide their answers by checking a provided answer than to key in narrative answers.

However, I understand that a limitation of using closed questions is that not every response offered will be a suitable answer for every survey respondent. In order to provide the most suitable responses possible, I reviewed previous research that surveyed or interviewed teachers and/or students about their perceptions of state mandated assessments, such as Clark et al. (2003), Pedulla et al. (2003), and Perna and Thomas (2009) to make sure that commonly selected responses on those surveys that also apply to this survey were included. I also asked for input from content experts that reviewed the survey as well as from the teachers that piloted it, and some possible responses were added based on their feedback. Another way I attempted to reduce the limitations caused by using closed questions is to provide participants with an option to select “other” and explain what their “other” response means.

The first iteration of the survey asked participants to indicate their level of agreement with a particular statement on an agreement/disagreement scale. However, Fowler (2009) describes a number of disadvantages to using this sort of scale, including the fact that studies have shown a tendency for some respondents to agree with a statement regardless of if it were written in the negative or positive. Fowler concludes that “researchers will have more reliable, valid, and interpretable data if they avoid the

agree-disagree question form” (p. 105). For this reason, the survey responses were revised into a different format that removes the agree-disagree type of response.

Finally, demographic questions were added to the end of the survey so that the survey results could be analyzed according to the percentage of low-income students at the school where the participant teaches, the years of teaching experience of the participant as well as the subject(s) the participant teaches. These questions were necessary in order to make any sort of meaning of the survey responses. Because these survey questions are subjective, the responses cannot be interpreted directly. Rather, the distribution of responses “only has meaning when differences between samples exposed to the same questions are compared or when patterns of association among answers are studied” (Fowler, 2009, p. 111). The survey questions and responses in their current form are provided in Appendix C.

**Procedures for data collection.** One week prior to sending the survey to teachers, I contacted the principal at each of the selected schools to explain the study and the timeline for survey administration and follow-up (see Appendix D for the contact letter I sent to principals). The following week, the surveys were distributed to teachers selected for the study via email and administered using Survey Monkey software. The survey included introductory information explaining the purpose of the study, ensuring confidentiality, and explaining that the survey is voluntary. Because the survey was administered during the last two weeks of school, a follow-up email was sent to the teachers after the last day of school to remind them of the established deadline (see

Appendix E), with the hope that those teachers who were too busy to complete the survey at the end of the school year were more able and/or willing after the school year had ended. The timing of the survey was important; working under the assumption that the intensity of teachers' interpretations would vary according to how recently the teachers received their students' SOL test scores. The survey was administered at the end of the school year because students take their SOL tests in late spring and teachers in Virginia receive student achievement data on the SOL tests almost immediately after the students take the tests.

**Incentives for participation.** Participants were given a chance to win a \$50 Visa gift card for their participation in the survey. I ensured that ethical practices of offering financial incentives were followed, such as those described by Fowler (2009). He explains that researchers should not offer incentives so great that it becomes unreasonably difficult for participants to decline and that the incentives should never “undermine the principle that research participation is a voluntary act” (p. 167). The drawing for the gift card took place the day after the survey deadline. The winner was notified and the gift card was mailed to her home.

### **Data Analysis**

The survey data were first imported into an SPSS file. This data file was cleaned, checking to make sure that there were no missing data and that the appropriate coding translations occurred. Next, nonresponse rates were analyzed in order to determine if weighting the responses was appropriate to account for an over- or under-representation

of certain demographic groups of respondents. I chose not to weight the responses because I felt I could assume with some confidence that the participants who did not respond to the survey would have answered the survey in a similar way to those respondents that shared certain demographics. In other words, I did not believe that there was an under-represented group of teachers based on the demographic information I collected.

Once the data set was ready for analysis, the number and percentage of teachers selecting each response was calculated for each survey item in order to analyze the frequency of each survey response. Next, I conducted analyses of variance in order to address the third and final research question explained in the theoretical framework for this study:

In what ways do high school teachers of SOL subjects' interpretations vary depending on their years of experience, the subject they teach, or the percentage of low-income and minority students they teach, if at all?

In order to analyze responses according to the level of teaching experience of the participants, I calculated percentiles of the years of experience among the participants as a whole. Teachers belonging to the 0-.33 percentile were coded as "less experienced", teachers belonging to the .34-.66 percentile were coded as "moderately experienced", and teachers belonging to the .67-.99 percentile were coded as "very experienced." Similarly, teachers were coded according to the subjects they teach—English 9, English 10, and English 11 teachers were coded as "English"; Algebra I, geometry, and Algebra II

teachers were coded as “math”; Earth science, biology, and chemistry teachers were coded as “science”; and all geography and history teachers were coded as “social studies.” Finally, teachers were grouped and coded according to the percentage of low-income students enrolled in the school where they teach. Using the percentage of low-income students reported on the most recent school report card, the nineteen schools selected for this study were ranked in order from highest to lowest percentage of low-income students. Then the schools were divided into three groups. Teachers who reported working at a school in the first group were coded as teaching “many low-income students”; those who reported working at a school in the second group were coded as teaching “some low-income students”; and those teachers who reported working in the third group of schools were coded as teaching “few low-income students.”

For each of the sub-questions in the survey, respondents were able to provide additional explanations of their responses to the major questions. These explanations were open-ended, in that participants could type in any explanation they wished. These open-ended responses were analyzed using a modified version of “concept mapping” as explained by Burke et al. (2005). Burke et al. describe concept mapping as “a participatory qualitative research method that yields a conceptual framework for how a group views a particular topic” and that results from this analysis “produce illustrative cluster maps depicting relationships of ideas in the form of clusters” (p. 1393). Though my data analysis did not mirror Burke et al.’s version of concept mapping perfectly (for example, participants were not involved in the analysis process), I did use several of the

steps these researchers explain as part of the concept mapping process. For example, I organized the open-ended responses into what Maxwell (2005) calls substantive and/or theoretical categories to identify any patterns and emerging themes as well as exceptions to these themes that emerged within and between data sources. This is similar to step three in Burke et al.'s concept mapping process, in which data are sorted into groups of statements based on their perceived similarity to each other. I also borrowed from this step in their process by rating each group of statements according to its usefulness in addressing the specific research questions for this study.

The fourth step in Burke et al.'s (2005) concept mapping method is to input the sorted and rated data into concept-mapping software in order to generate visual representations of the clusters of items and their importance. Though I did not use software of this sort, I developed my own visual representations of the substantive and theoretical categories (or clusters) that I identified in the previous step. First, I organized the categories of data into matrices so that I could review and analyze all of the open-ended responses visually. Next, as in the fifth step of Burke et al.'s concept mapping process, the concept maps were analyzed in order to determine how the data from the open-ended responses informed the original research questions. Finally, I transformed the matrices into visualizations for use within the text. These figures are displayed and discussed further in Chapter 4.

## CHAPTER FOUR: FINDINGS

The survey was sent to 1,433 total teachers via email. Twenty-six of those emails either hard- or soft-bounced, meaning they never reached the intended recipient. Three-hundred and ten responses were received, which results in a response rate of 22%. After survey respondents who did not complete the survey were removed from the data set, 275 survey responses remained.<sup>2</sup> Table 1 shows the distribution of the survey responses by schools grouped by the percentage of low-income students served. Among the schools included in the survey, the percentage of the student populations that qualified for free or reduced-price lunch ranged from 1.6% to 63.1%. Using this range of low-income student enrollments, the schools were divided into three groups based on the 33<sup>rd</sup> and 66<sup>th</sup> percentiles. The schools that fell into the lowest percentile were labeled as having a low proportion of low-income students (1.6% to 16.7% of their total student population), those schools that fell into the middle percentile were labeled as having a moderate proportion of low-income students (16.8% to 31.2% of their total student population), and those that fell into the highest quartile were labeled as having a large proportion of low-income students (31.3% to 63.1% of their total student population). I made the

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<sup>2</sup> If responses were only missing demographic data and all major survey questions were answered, the responses were included within the data set.

decision to divide the schools into these three groups before all of the survey responses had been collected, but because roughly the same number of teachers from each of the three school groups responded to the survey, I left these groups intact to analyze the data. The highest proportion of respondents came from schools with moderate levels of low-income students (32.4%) and the smallest proportion of respondents came from schools with many low income students (27.6%). Thirteen percent of the survey respondents did not answer this question.

Table 1

*Respondents By Low-Income Groups*

	Frequency	Percent
Few Low-Income	86	31.3
Moderate Low-Income	89	32.4
Many Low-Income	76	27.6
Total	251	91.3

*Note.* Twenty-four respondents, representing 8.7% of all respondents, did not answer this question.

Table 2 shows the distribution of survey respondents by years of teaching experience. The years of teaching experience among those who responded to the survey ranged from one year to 41 years, with the mean years of teaching experience equaling

12.6 and the median equaling 10.0. Table 3 shows the distribution of course subjects that are represented by the survey respondents. Science teachers represent the highest proportion of survey respondents at 30.2 percent, and math teachers represent the smallest proportion of respondents at 20.0 percent.

Table 2

*Respondents By Years of Teaching Experience*

	Frequency	Percent
Less Experienced	96	37.4
Moderately Experienced	80	29.1
More Experienced	81	29.5
Total	257	93.5

*Note.* Eighteen respondents, representing 6.5% of all respondents, did not answer this question.

Table 3

*Respondents By Subject*

	Frequency	Percent
English	58	21.1
Math	55	20.0
Science	83	30.2
Social Studies	61	22.2
Total	257	93.5

*Note.* Eighteen respondents, representing 6.5% of all respondents, did not answer this question.

Cronbach’s *alpha* was calculated using SPSS to determine the internal consistency reliability of the survey, or the extent to which all of the survey items measure the same construct. Cronbach’s *alpha* across all survey items is .868. Analysis of Cronbach’s *alpha* if deleted for each survey item indicated that the survey’s consistency reliability would not increase after removing any of the items, suggesting that each of the survey items measure the same construct.

### **Teachers’ Interpretations of Student Performance on SOL Tests**

Table 4 shows the number and percentages of teachers who chose each of the possible response items related to their interpretation of a student’s proficient score on the SOL test in the subject they teach. A majority of respondents (71%) said that they interpret a proficient score on the SOL test in the subject they teach to mean that this student is neither prepared nor somewhat prepared to enter and successfully complete credit-bearing college courses in this subject. Table 5 displays the number and

percentages of the teachers who chose each explanation for their “neither of the above” response from Table 4. A majority of the respondents who chose this response (73%) explained that they feel this way because the SOL test alone does not accurately indicate college readiness in the subject they teach.

Table 4

*Teachers’ Interpretations of a Proficient Score on the SOL Test in the Subject They Teach*

	Frequency	Percent
Prepared for college	5	1.8
Somewhat prepared for college	76	27.6
Neither	194	70.5
Total	275	100.0

Table 5

*Explanations for “Neither of the Above” in Table 4*

	Frequency	Percent
It depends on the student.	73	35.1
A proficient score on the SOL test alone does not accurately indicate college readiness in this subject.	152	73.1
The SOL test does not test the knowledge a student needs to be successful in this subject in college.	82	39.4
Other	45	21.6

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 5, 22% of the respondents who chose “neither of the above” in Table 4 provided an “other” explanation for their response. In order to analyze these responses, I used Burke et al.’s (2005) concept mapping as explained in chapter 3. Categories of responses that emerged from this analysis are displayed in Figure 4. Nine respondents explained they felt that a proficient score on the SOL test in the subject they teach indicates only minimum standards—not a standard indicative of college success. Examples of the phrases used to describe this minimum standard are provided in Figure 4. Five respondents explained that there is no college equivalent to the high school course they teach, which is the reason they do not believe that a proficient score on the SOL test

can indicate that a student is prepared to successfully enter and complete a college course in this subject. Many of these respondents teach a course in mathematics. Twelve respondents explained that they felt some of their students are able to earn a proficient score on the SOL test because they have other abilities not related to college readiness. Examples of these abilities, as shown in Figure 4, include test-taking skills, rote memory, and good guessing. Finally, ten respondents explained various limitations or inefficiencies to standardized testing in general as reasons they do not think that a proficient score on the SOL test can indicate college readiness. Examples of those limitations and inefficiencies are displayed in Figure 4.

The SOL test only assesses for a minimum standard.	"The SOL tests indicate that the student has a basic understanding of the course."
	"In many ways, English SOLs are minimum proficiencies."
	"The SOL is more of a minimum competency test than a test of readiness for college."
There is no college equivalent to this course.	"Basic high school math"
	Geometry
	Algebra 2
Students can be "proficient" using other abilities.	Good guessing
	Test-taking skills
	Rote memory
The SOL test is limited or inefficient.	No analytical or higher-level thinking skills
	No soft-skills, like self determination
	Students can pass without a clear understanding of curriculum.

Figure 4. Analysis of "Other" Responses to Teachers' Interpretations of Proficient SOL Test Scores

Table 6 shows the number and percentages of teachers who chose each of the possible response items related to their interpretation of a student's *below* proficient score on the SOL test in the subject they teach. The majority of the respondents said they interpret a below proficient score on the SOL tests in the subject that they teach to mean that the student is either unprepared (41%) or somewhat unprepared (20%) to

successfully enter and complete credit bearing college courses in this subject. Table 7 displays the number and percentages of the teachers who chose each explanation for their “neither of the above” response from Table 6. The most popular explanations were that it depends on the student (52%) and that a below proficient score alone cannot indicate that a student is unprepared for college (60%).

Table 6

*Teachers’ Interpretations of a Below Proficient Score on the SOL Test in the Subject They Teach*

	Frequency	Percent
Unprepared for college	112	40.7
Somewhat unprepared for college	54	19.6
Neither	109	39.6
Total	275	100.0

Table 7

*Explanations for “Neither of the Above” in Table 6*

	Frequency	Percent
It depends on the student.	60	51.7
Some students may be able to do well at some colleges in this subject even if they score below proficient on the SOL test.	32	27.6
The cut score needed to receive a proficient score on the SOL test is set unnecessarily high.	3	2.6
- A below proficient score on the SOL test alone does not indicate that a student is unprepared for college.	69	59.5
- Other	39	33.6

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 6, 34% of the respondents who chose “neither of the above” in Table 5 provided an “other” explanation for their response. After analyzing these responses using concept mapping, four categories of responses emerged as displayed by Figure 5. Fourteen respondents explained that they feel that a below proficient score on an SOL test is often a result of an issue unrelated to their knowledge of that subject area. These unrelated issues included motivation, either to perform well on the test or related to

school in general, school attendance problems, and poor test-taking skills, including anxiety. Five respondents said that they think some of their students with disabilities or students who are English language learners struggle to score proficient on the SOL in the subject they teach, but that they do not believe this is an indication that they are not prepared for college. For example, one respondent explained, “The language used on the SOL is generally too advanced or unfamiliar to students, especially those that are former ESOL students.” A similar issue cited by four additional respondents is that some students struggle to score proficient on the SOL test because of their reading level, but may actually be proficient in that subject. Examples of these responses are displayed in Figure 5, such as, “Unnecessary vocabulary can sometimes interfere with a student's success.” Finally, similar to some of the explanations displayed in Figure 4, five respondents explained that they believe the SOL test only assesses for a minimum standard, and therefore judgments about a students’ college readiness cannot be made based on their SOL scores.

Issues not related to content knowledge impact SOL scores.	Motivation
	Attendance
	Poor test-taking skills or anxiety
SOL test scores are interpreted differently for special populations	Special education students
	ESOL students
Reading proficiency impacts SOL test performance.	"Depends more on reading level"
	"Language... generally too advanced or unfamiliar"
	"Test questions not easily read"
	"Unnecessary vocabulary"
The SOL test only assesses for a minimum standard.	"Scores show basic literacy"
	"SOL test is not college level"
	"The SOL has nothing to do with college readiness... just high school completion"

*Figure 5.* Analysis of “Other” Responses to Teachers’ Interpretations of Below Proficient SOL Test Scores

Table 8 shows the number and percentages of teachers who chose each of the possible response items related to their interpretation of a student’s advanced score on the SOL test in the subject they teach. The majority of the respondents said that they interpret an advanced score on the SOL test in the subject they teach to mean that the student is either prepared (34%) or somewhat prepared (28%) to successfully enter and complete credit-bearing college courses in this subject. Another 38% said “neither of the above”

and table 9 displays the number and percentages of the teachers who chose each explanation for this response. The most popular explanation for this response (30%) was that an advanced score alone on the SOL test does not accurately indicate whether a student is prepared for college.

Table 8

*Teachers' Interpretations of an Advanced Score on the SOL Test in the Subject They Teach*

	Frequency	Percent
Prepared for college	93	33.8
Somewhat prepared for college	77	28.0
Neither	105	38.2
Total	275	100.0

Table 9

*Explanations for “Neither of the Above” in Table 8*

	Frequency	Percent
It depends on the student.	54	18.7
An advanced score on the SOL test alone does not accurately indicate college readiness in this subject.	86	29.8
The SOL test does not test the knowledge students need to be successful in this subject in college.	43	14.9
Other	20	6.9

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 8, 7% of respondents provided an “other” response to their “neither of the above” response in Table 7. Categories of these other responses, which resulted from analysis through concept mapping, are presenting in Figure 6. Five respondents explained that they feel that the SOL test in the subject they teach does not assess for non-academic skills that are necessary for success in college. Examples of these skills include writing, higher level thinking skills, time management, and critical thinking. Similar to responses in the previous question, four teachers explained that students can score advanced on the SOL test using skills unrelated to their level of

content knowledge, such as rote memorization or the ability to use a calculator. Similarly, an additional three teachers explained that students may *not* score advanced on the SOL test for reasons unrelated to their content knowledge, such as their reading ability, their work ethic, or their maturity level. Finally, six teachers pointed to limitations or inefficiencies of the SOL tests as reasons that the SOL test is not an accurate indicator of college readiness. Those limitations include arbitrary performance level settings and the test not being aligned with higher level thinking skills.

The SOL test does not assess all skills needed for success in college.	"Writing and other higher level thinking skills, organization and time management"
	"The ability to think critically and frankly a desire to be inquisitive"
	"Organizational skills"
Students can be "advanced" using other abilities.	"Students who can recall information very well"
	Rote memorization
	Calculator proficiency
Issues not related to content knowledge impact SOL scores.	Lacking work ethic
	Student maturity level
	Reading/writing abilities
The SOL test is limited or inefficient.	"NOT aligned with higher order academics"
	"Being successful in college cannot be rated by an SOL score."
	"A score of pass-advanced indicates nothing relevant to content or skill mastery. It is an arbitrary designation".

Figure 6. Analysis of “Other” Responses to Teachers’ Interpretations of Advanced SOL Test Scores

Table 10 shows the number and percentages of teachers who chose each of the possible response items related to their interpretation of a student’s *below* advanced score on the SOL test in the subject they teach. A majority of survey respondents (73%) said that they interpret a below advanced score on the SOL test in the subject they teach to mean neither that the student is unprepared nor somewhat unprepared to successfully

enter and complete credit-bearing college courses in this subject. Table 11 displays the number and percentages of the teachers who chose each explanation for their “neither of the above” response from Table 10. The most popular of these responses was that it depends on the student (45%), that a student may be able to do well at some colleges in this subject even if they score below advanced on the SOL test (45%), and that a below advanced score alone does not indicate that a student is unprepared for college (49%).

Table 10

*Teachers’ Interpretations of a Below Advanced Score on the SOL Test in the Subject They Teach*

	Frequency	Percent
Unprepared for college	10	3.6
Somewhat unprepared for college	64	23.3
Neither	201	73.1
Total	275	100.0

Table 11

*Explanations for “Neither of the Above” in Table 10*

	Frequency	Percent
It depends on the student.	46	45.1
Some students may be able to do well at some colleges in this subject even if they score below advanced on the SOL test.	46	45.1
The cut score needed to receive an advanced score on the SOL test is set unnecessarily high.	5	4.9
- A below advanced score on the SOL test alone does not indicate that a student is unprepared for college.	50	49.0
- Other	18	17.6

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 11, 18% of respondents provided “other” explanations of their “neither of the above responses in Table 10. Figure 7 displays categories that emerged from concept mapping analysis of these “other responses.” One teacher provided a new explanation when he or she said that the SOL test can only be an accurate indication of college readiness for teachers who have aligned their curriculum and grading with the

SOL test. Two categories from previous questions emerged for this question as well—two respondents said the SOL tests only assess for a minimum standard and therefore are not related to college readiness, and five respondents addressed specific limitations or inefficiencies of the SOL test.

It depends on the teacher.	"This is true only for teachers who have aligned their curriculum and grading with the SOLs."
The SOL test only assesses a minimum standard.	"The average student should have no problem passing... doesn't mean they are ready for advanced level work." "Student has learned the minimum required to meet Virginia's standards."
The SOL test is limited or inefficient.	"Taking an SOL has nothin gto do with college performance." "I don't think the SOL reflects anything." "Builds a compliant and uninquizitive generation." Language difficult to understand, poorly written questions

*Figure 7.* Analysis of “Other” Responses to Teachers’ Interpretations of Below Advanced SOL Test Scores

### **Teachers’ Perceptions of Students’ Interpretations of Their Own SOL Test Performance**

Table 12 shows the number and percentages of teachers who chose each of the possible response items related to their perception of how their students interpret their own proficient score on the SOL test in the subject they teach. The majority of respondents (54%) said that they think their students interpret their proficient score on the

SOL test neither to mean that they are prepared nor somewhat prepared to enter and successfully complete credit-bearing college courses in this subject. Table 13 displays the number and percentages of the teachers who chose each explanation for their “neither of the above” response from Table 12. The most popular explanation was that their students are not generally aware that the SOL test has any relationship to how they expect to perform in college (67%).

Table 12

*Teachers’ Perceptions about Students’ Interpretations of a Proficient SOL Test Score*

	Frequency	Percent
Prepared for college	75	27.3
Somewhat prepared for college	53	19.3
Neither	147	53.5
Total	275	100.0

Table 13

*Explanations for “Neither of the Above” in Table 12*

	Frequency	Percent
It depends on the student.	54	36.7
My students feel a proficient score on the SOL test alone does not accurately indicate college readiness in this subject.	37	25.2
My students feel that the SOL test does not test the knowledge students they will need to be successful in this subject in college.	26	17.7
-		
My students are not generally aware that the SOL test has any relationship to how they expect to perform in college.	98	66.7
-		
Other	24	16.3

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 13, 16% of the respondents who chose “neither of the above” in Table 12 provided an “other” explanation for their response. Figure 8 shows the categories of these responses that emerged from analyzing these “other” responses via concept mapping. Ten respondents said that they think their students see no relationship between their SOL test scores and their readiness for college. It is also important to note

that respondents who gave this explanation represent all four subject categories—English, math, science, and social studies. Another ten respondents said that their students are more concerned with passing the course or their grades in the course than they are about whatever their score means about their college readiness. Examples of those responses are provided in Figure 8. Two respondents explained that they believe their students interpret a proficient score on the SOL test to mean something unrelated to their college readiness, such as that they are really smart if they score proficient or not very smart if they do not score proficient. Finally, three respondents gave explanations related to their own interpretations of a proficient SOL test score rather than their perceptions of their students' interpretations. For that reason and because those explanations are covered in categories presented earlier in this chapter, those responses are not included in Figure 8.

Students see no relationship between SOL test scores and college readiness.	"Students do not associate SOL scores with college at all"
	"I don't think they are considering their college readiness"
	"They are [not] all connecting the dots"
Students are more concerned with passing the course and/or their grades.	"They are just happy to pass the test"
	"They are just happy to have the verified credit"
	"...they focus more on the near term and what the score means for passing the class..."
Students interpret their scores to mean something unrelated to college readiness.	They are really smart (or not very smart)
	They studied really hard (if they pass).
	There is something wrong with their teacher (if they don't pass).

Figure 8. Analysis of “Other” Responses to Teachers’ Perceptions of Students’

#### Interpretations of Proficient SOL Test Scores

Table 14 shows the number and percentages of teachers who chose each of the possible response items related to their perception of their students interpret their own *below* proficient score on the SOL test in the subject they teach. The majority of respondents (55%) said that they think that students interpret their below proficient score on the SOL test to mean neither that they are neither unprepared nor somewhat unprepared to enter and successfully complete credit-bearing college courses in this subject. Table 15 displays the number and percentages of the teachers who chose each

explanation for their “neither of the above” response from Table 14. The most commonly selected explanation by far (77%) was that students are not generally aware that the SOL test has any relationship to how they expect to perform in college.

Table 14

*Teachers’ Perceptions about Students’ Interpretations of a Below Proficient SOL Test Score*

	Frequency	Percent
Unprepared for college	71	25.8
Somewhat unprepared for college	54	19.6
Neither	150	54.5
Total	275	100.0

Table 15

*Explanations for “Neither of the Above” in Table 14*

	Frequency	Percent
My students feel they may be able to do well at some colleges in this subject even if they do not score at least proficient on the SOL test.	32	21.3
My students feel that the cut score needed to receive a proficient score on the SOL test is set unnecessarily high.	8	5.3
My students feel that a proficient score on the SOL test alone does not indicate college readiness	43	28.7
My students are not generally aware that the SOL test has any relationship to how they expect to perform in college.	115	76.7
Other	25	16.7

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 15, 17% of respondents who chose “neither of the above” in Table 14 provided an “other” explanation for their response. Figure 9 displays categories of these “other” explanations that emerged from a concept mapping analysis of those

responses. Similar to the previous questions, six respondents said that their students see not relationship between SOL test scores and college readiness. Also similar to the previous question, five respondents said their students are more concerned with how a below proficient score impacts their high school experience, rather than their college success. Examples of these concerns include their ability to graduate from high school, whether or not they have to retake the test, and what a below proficient score means about their ability to take or complete their next course in that subject. Two teachers explained that their students interpret a below proficient score on the SOL test to mean something unrelated to their college readiness, and direct quotes from these two responses are included in Figure 9. Finally, some respondents gave explanations related to their own interpretations of a below proficient SOL test score rather than their perceptions of their students' interpretations. For that reason and because those explanations are covered in categories presented earlier in this chapter, those responses are not included in Figure 9.

Students see no relationship between SOL test scores and college readiness.	"Students do not associate SOL scores with college at all."
	"Students don't associate the SOLs with college at all"
	"My students do not view the SOL as key to college success."
Students are more concerned with what a below proficient score means for high school than college.	Required for graduation
	Means they have to retake it
	Implications for next high school course
Students interpret their scores to mean something unrelated to college readiness.	"My students feel 'stupid' and defeated."
	"The test might just help reinforce how much of a 'loser' or how 'stupid' they really are.

Figure 9. Analysis of “Other” Responses to Teachers’ Perceptions of Students’

#### Interpretations of Below Proficient SOL Test Scores

Table 16 shows the number and percentages of teachers who chose each of the possible response items related to their perception of their students interpret their own advanced score on the SOL test in the subject they teach. A majority of respondents said that they think their students interpret their advanced score on the SOL test to mean that they are either prepared (52%) or somewhat prepared (16%) to enter and successfully complete credit-bearing college courses in this subject. Table 17 displays the number and

percentages of the teachers who chose each explanation for their “neither of the above” response from Table 16. The most popular explanation was that his/her students are not generally aware that the SOL test has any relationship to how they expect to perform in college (65%).

Table 16

*Teachers’ Perceptions about Students’ Interpretations of an Advanced SOL Test Score*

	Frequency	Percent
Prepared for college	142	51.6
Somewhat prepared for college	45	16.4
Neither	88	32.0
Total	275	100.0

Table 17

*Explanations for “Neither of the Above” in Table 16*

	Frequency	Percent
It depends on the student.	34	38.6
My students feel an advanced score on the SOL test alone does not accurately indicate college readiness in this subject.	19	21.6
My students feel that the SOL test does not test the knowledge students they will need to be successful in this subject in college.	17	19.3
-		
My students are not generally aware that the SOL test has any relationship to how they expect to perform in college.	57	64.8
-		
Other	11	12.5

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 17, 13% of the respondents who chose “neither of the above” in Table 16 provided an “other” explanation for their response. Figure 10 shows the categories of these explanations that emerged from an analysis of these responses via concept mapping. Similar to the other questions in this section, three respondents said they feel their students see no relationship between SOL test scores and college readiness.

Another two respondents said that their students interpret an advanced score on the SOL test to mean something unrelated to their readiness for college. For example, they may feel pride or accomplishment, or interpret an advanced score to mean they are smart. Fewer respondents provided additional explanations in this section of the survey. This may be because this question was near the end of the survey and respondents were less motivated to provide additional information.

Students see no relationship between SOL test scores and college readiness.	"Students do not associate SOL scores with college at all."
	"They do not see [the SOL test] as having any connection with college..."
	"[My students] have no idea what college means or how to get there."
Students interpret their scores to mean something unrelated to college readiness.	"They have a greater sense of accomplishment and pride."
	"They just think they are smart and the SOLs are easy."

*Figure 10.* Analysis of “Other” Responses to Teachers’ Perceptions of Students’

#### Interpretations of Advanced SOL Test Scores

Table 18 shows the number and percentages of teachers who chose each of the possible response items related to their perception of their students interpret their own *below* advanced score the SOL test in the subject they teach. A large majority of respondents (70%) said they think that students interpret their below advanced SOL test

performance to mean neither that they are unprepared or somewhat unprepared for college. Table 19 displays the number and percentages of the teachers who chose each explanation for their “neither of the above” response from Table 18. The most popular explanation (60%) was that his/her students are not generally aware that the SOL test has any relationship to how they expect to perform in college.

Table 18

*Teachers’ Perceptions about Students’ Interpretations of a Below Advanced SOL Test Score*

	Frequency	Percent
Unprepared for college	19	6.9
Somewhat unprepared for college	65	23.6
Neither	191	69.5
Total	275	100.0

Table 19

*Explanations for “Neither of the Above” in Table 18*

	Frequency	Percent
My students feel they may be able to do well at some colleges in this subject even if they do not score at least advanced on the SOL test.	62	32.5
My students feel that the cut score needed to receive an advanced score on the SOL test is set unnecessarily high.	11	5.8
My students feel that an advanced score on the SOL test alone does not indicate college readiness	63	33.0
My students are not generally aware that the SOL test has any relationship to how they expect to perform in college.	114	59.7
Other	20	10.5

*Note.* Percentages do not equal 100 because respondents could choose more than one response.

As shown in Table 19, 11% of respondents who chose “neither of the above” in Table 18 provided an “other” explanation for their response. Figure 11 shows the categories of these explanations that emerged from a concept mapping analysis. Similar

to previous questions, the two most common kinds of explanations were that students see no relationship between SOL test scores and college readiness and that students are more concerned about what their SOL test score means for high school than for college. That being said, two new kinds of explanations emerged in the first category. One respondent said, “If they passed, they likely think that means they will do fine in college. IB students have a more nuanced understanding of this and don't put much weight in the test scores, but the regular students put weight on the scores.” Another respondent explained that “most students are not directly associating level of achievement on an SOL with college readiness. Even though they have a vague knowledge that level of achievement on the SATs tends to relate to acceptance rate into college.” Similar to previous questions, some respondents gave explanations related to their own interpretations of a below advanced SOL test score rather than their perceptions of their students’ interpretations. For that reason and because those explanations are covered in categories presented earlier in this chapter, those responses are not included in Figure 11.

Students see no relationship between SOL test scores and college readiness.	If they passed, they think they will do fine, but IB students don't put as much weight into test scores.
	There is less association between SOL scores and college than between SAT scores and college.
	"Students don't see the SOL as important beyond [high] school."
Students are more concerned with what a below advanced score means for high school than college.	Relieved they passed
	Bonus points for final exam
	Prepared to take the next high school course
	Passing the class/high school graduation

*Figure 11: Analysis of “Other” Responses to Teachers’ Perceptions of Students’ Interpretations of Below Advanced SOL Test Scores*

### **Teachers’ Interpretations by Teacher Characteristics**

**Analysis of Major Questions.** Because respondents agreed less on the questions about their interpretations of below proficient SOL test performance and their interpretations of advanced SOL test performance, I conducted an analysis of variance (ANOVA) of these survey items across three variables related to teacher characteristics—their years of teaching experience, the level of low-income students in the school where they teach, and the subject they teach. I chose to conduct an ANOVA because the response items for these major questions are continuous in nature, and the variables (teacher characteristics) are categorical. A three-way ANOVA would indicate whether the different responses to these questions are, at least in part, accounted for by the

differences between teachers of different levels of experiences, proportion of low-income students they teach, or the subject they teach.

As shown in Table 20, there is a statistically significant main effect for years of experience,  $F(2,215) = 3.29, p = .04$ . The reported effect size is small at .03, meaning only 3% of the differences between responses to this question are accounted for by years of teaching experience. Results from the Tukey post hoc test, as shown in Table 21, indicate that there is a statistically significant difference between moderately experienced teachers and very experienced teachers, with moderately experienced teachers more inclined to interpret a below proficient score as meaning a student is unprepared for college.

Table 20

*Analysis of Variance for Teachers' Interpretations of a Below Proficient SOL Test Score*

Source	<i>df</i>	<i>F</i>	<i>pn</i> <sup>2</sup>	<i>p</i>
Subject (S)	3	.197	.003	.898
Low-income (L)	2	.209	.002	.811
Years of experience (Y)	2	3.285	.030	.039
S X L	6	1.403	.038	.215
S X Y	6	.582	.016	.744
L X Y	4	.938	.017	.443
S X L X Y	12	1.373	.071	.181
S within group error	215			

Table 21

*Post Hoc Analysis of Variance for Teachers' Interpretations of a Below Proficient SOL Test Score*

Years of Teaching Experience	$\Delta M$	SE $\Delta M$	95% CI for $\Delta M$	
Less experienced—Moderately experienced	.08	.139	-.25	.41
Less experienced—Very experienced	-.26	.138	-.59	.06
Moderately experienced—Very experienced	-.34*	.143	-.68	.00

Note.  $\Delta M$  = Mean difference. SE $\Delta M$  = Standard error of  $\Delta M$ .

\* $p < .05$ .

I conducted a similar three-way ANOVA for the question about teacher interpretations of an advanced score on an SOL test. As shown in Table 22, there is a statistically significant main effect for subject,  $F(3,215) = 6.78$ , ( $p < .00$ ). The effect size is small at .06, meaning only about 6% of the differences in responses to this question are explained by the subject the respondent teaches. The results from the Tukey post hoc tests, as shown in Table 23, indicate a statistically significant difference in the way math teachers and teachers of all three other subjects responded to this question, with math teachers more inclined than English, science, or social studies teachers to respond that they interpret an advanced SOL test score as meaning that student is prepared for college.

Table 22

*Analysis of Variance for Teachers' Interpretations of an Advanced SOL Test Score*

Source	<i>df</i>	<i>F</i>	<i>pn</i> <sup>2</sup>	<i>p</i>
Subject (S)	3	6.784	.086	.000
Low-income (L)	2	1.761	.016	.174
Years of experience (Y)	2	2.191	.020	.114
S X L	6	.695	.019	.654
S X Y	6	.891	.024	.502
L X Y	4	.487	.009	.745
S X L X Y	12	.932	.049	.516
S within group error	215			

Table 23

*Analysis of Variance for Teachers' Interpretations of an Advanced SOL Test Score-  
Tukey Post Hoc*

Subject	$\Delta M$	SE $\Delta M$	95% CI for $\Delta M$	
English—Math	.54*	.155	.14	.94
English—Science	.06	.142	-.31	.43
English—Social studies	-.18	.153	-.58	.21
Math—Science	-.48*	.144	-.85	-.11
Math—Social studies	-.72*	.154	-1.12	-.32
Science—Social studies	-.24	.141	-.61	.12

*Note.*  $\Delta M$  = Mean difference. SE $\Delta M$  = Standard error of  $\Delta M$ .

\* $p < .05$ .

**Analysis of Sub-Questions.** Because a large majority of respondents were in agreement that a proficient score on the SOL test indicates neither that students are prepared nor somewhat prepared for college and that a below advanced score on the SOL test indicates that a student is neither unprepared nor somewhat unprepared for college, I further analyzed these respondents' explanations for their interpretations. To do so, I conducted a binary logistic regression for each of the response items across the three variables. I chose to use a binary logistic regression to analyze these responses rather than an analysis of variance because the response items are less ordinal in nature than the

responses for the major questions. By conducting a binary logistic regression, I could predict the chances that a respondent belonging to one of the categories of teacher characteristics (years of experiences, amount of low-income students, or subject taught) chose each of the explanations in the sub-questions. However, none of these binary logistic regression analyses produced statistically significant results at the .05 level. Therefore, none of the variables related to teacher characteristics analyzed in this study predicted whether a respondent chose a specific explanation for a “neither of the above” response for this question.

### **Teachers’ Perceptions Regarding Students’ Interpretations by Teachers’ Characteristics**

**Analysis of Major Questions.** The only major question about student interpretations of SOL test scores for which there was a general consensus among respondents was related to below advanced SOL test scores. Therefore, I conducted three-way ANOVA analyses for the major questions that asked about proficient, below proficient, and advanced SOL test scores to see if there were any significant differences across the three variables related to teacher characteristics at the .05 level. As explained above, a three-way ANOVA would indicate whether the different responses to these questions are, at least in part, accounted for by the differences between teachers of different levels of experiences, proportion of low-income students they teach, or the subject they teach. None of these analyses of variance resulted in statistically significant results. Therefore, the variation in responses cannot be explained by years of teaching

experience, the subject taught, or the level of low-income students at the school where the respondent teaches.

**Analysis of Sub-Questions.** Because a large majority of respondents indicated that they think their students interpret a below-advanced SOL test score to mean neither that they are unprepared or somewhat unprepared for college, I conducted a binary logistic regression for each of the possible explanations for this response. As explained above, conducting a binary logistic regression, allows me to predict the chances that a respondent belonging to one of the categories of teacher characteristics (years of experiences, amount of low-income students, or subject taught) chose each of the explanations in the sub-questions. However, none of these analyses produced statistically significant results at the .05 level. Therefore, none of the variables related to teacher characteristics analyzed in this study predict whether a respondent chose a specific explanation for a “neither of the above” response for this question.

## CHAPTER FIVE: CONCLUSION

The purpose of this study was twofold—to understand better how teachers from one school division in Northern Virginia interpret their students’ performance on a high school exit exam related to college readiness as well as how teachers think their students interpret their own performance on the exam related to their college readiness. As explained in Chapter 1, this research is important as many state exit exam policies shift from assessing high school competence to assessing academic preparedness for college. Because three-quarters of the nation’s students are enrolled in states with high school exit exam requirements, it is important to understand whether these policies are achieving their intended purpose (Center on Education Policy, 2012). Previous studies found little evidence that high school exit exam policies aimed at increasing high school achievement were able to do so (Amrein & Berliner, 2002; Grodsky, Santibanez, & Daley, 2009; Reardon, Arshan, Atteberry, & Kurlaender, 2010). Further, the existing research focusing on exit exams and college readiness has mostly consisted of alignment studies—asking how closely the content tested on exit exams aligns with college expectations—and longitudinal studies—analyzing how well performance on high school exit exams predicts college success.

This research focused on the perspective of the teacher, an often ignored voice in policy evaluation. According to Venezia and Kirst's (2005) signaling theory as applied to the high school to college transition process by Brown and Conley (2007), a policy can only achieve its intended purpose if teachers interpret the policy construct (in this case the exit exam) as intended. This theory served as the theoretical framework for this research, and when the findings described in Chapter 4 are applied to this theoretical framework, implications can be drawn regarding the potential for Virginia's new high school exit exam policy to achieve its purpose—to ensure that “college and career-ready learning standards in reading, writing and mathematics are taught in every Virginia high school classroom” and “[to strengthen] students' preparation for college and the work force before leaving high school” (Virginia State Department of Education, 2012). This chapter discusses the implications of my findings, the limitations and boundaries of this study, and suggestions for future research.

### **Implications of the Findings**

As a reminder, this research was guided by the following research questions:

- How do high school teachers of SOL subjects interpret a proficient and/or advanced student performance on an exit-level SOL test related to academic preparedness for college?

- How do high school teachers of SOL subjects think their students interpret their own proficient and/or advanced performance on an exit-level SOL test related to academic preparedness for college?
- In what ways do the teachers' interpretations vary depending on their years of experience, the subject they teach, or the percentage of low-income and minority students they teach, if at all?

**Findings on Teacher Interpretations.** The findings described in Chapter 4 indicate that the majority of teachers who participated in this study are more likely to interpret an advanced score on the SOL test in the subject they teach to mean that a student is prepared or somewhat prepared for college than they are to interpret a proficient SOL test score in this way. This is good news for policymakers, as the advanced proficiency level is now meant to signal college readiness in math, English, and science (Virginia Department of Education, 2010). That said, a closer look at the findings shows that only 34% of survey respondents said they interpret an advanced score to mean a student is prepared for college. An additional 28% said they interpret an advanced score to mean the student is somewhat prepared, but 38% said they interpret an advanced score to mean neither that the student is prepared nor somewhat prepared for college.

The explanations for these “neither” responses offer some insight regarding why the majority of the teachers who responded to this survey were hesitant to interpret an advanced SOL test score as the new policy intends. First, many of these respondents (30%) said that they believe an advanced score on the SOL test alone does not accurately

indicate college readiness in the subject they teach. Other respondents who chose “neither” said that it depends on the student (19%), and an additional 15% said that the SOL test does not test the knowledge students need to be successful in college.

Just as the teachers in this study were hesitant to say they interpret an advanced SOL score to mean a student is ready for college, the majority of them said they do not interpret a *below* advanced score to mean a student is *not* prepared for college. Only 4% of respondents said they interpret a below advanced SOL score in this way. Further, even though a much larger proportion of respondents said they interpret a below *proficient* score to mean a student is unprepared for college (41%), that still leaves more than half of the teachers in this survey feeling that even a below proficient score is not a strong enough indicator of unpreparedness for college.

These findings could mean that teachers are hesitant to label a student as prepared or unprepared for college based on just one indicator, or they could mean that teachers are hesitant to label a student as prepared or unprepared for college based on *this* indicator. When given the opportunity to provide additional explanations for their responses, teachers listed ways they felt the SOL test is limited or inefficient in its ability to assess students’ academic preparedness for college. For example, they said SOL tests cover some subject content needed for success in college, but not all skills needed for this step after high school, including higher level thinking skills, such as critical thinking, and soft skills, like time management. Others explained that students who have strong memorization or test-taking skills may perform well on the SOL test, but that might not

mean they are prepared academically for college. Similarly, they explained that some students perform poorly on SOL tests for reasons not related to their readiness for college, such as poor test taking skills or anxiety. Finally, it may also simply be that the new college ready standards and achievement levels have not been implemented long enough for these teachers to start interpreting students' SOL test scores in this way, considering the policy change had been in effect for math teachers for two years at the time of this study, only one school year for English and science teachers, and not at all for social studies teachers.

According to signaling theory, the theoretical framework for this study, if teachers do not interpret SOL test scores as the new policy intends, the policy may not be able to achieve its intended purpose. In Figure 12 below, the top arrow points to the part of the theory where teachers interpret the exit exam (the policy construct) as an inaccurate, or in this case insufficient, indicator of college readiness. The bottom arrow points to one possible outcome, that teachers do not have the information they need to prepare their students for college better.

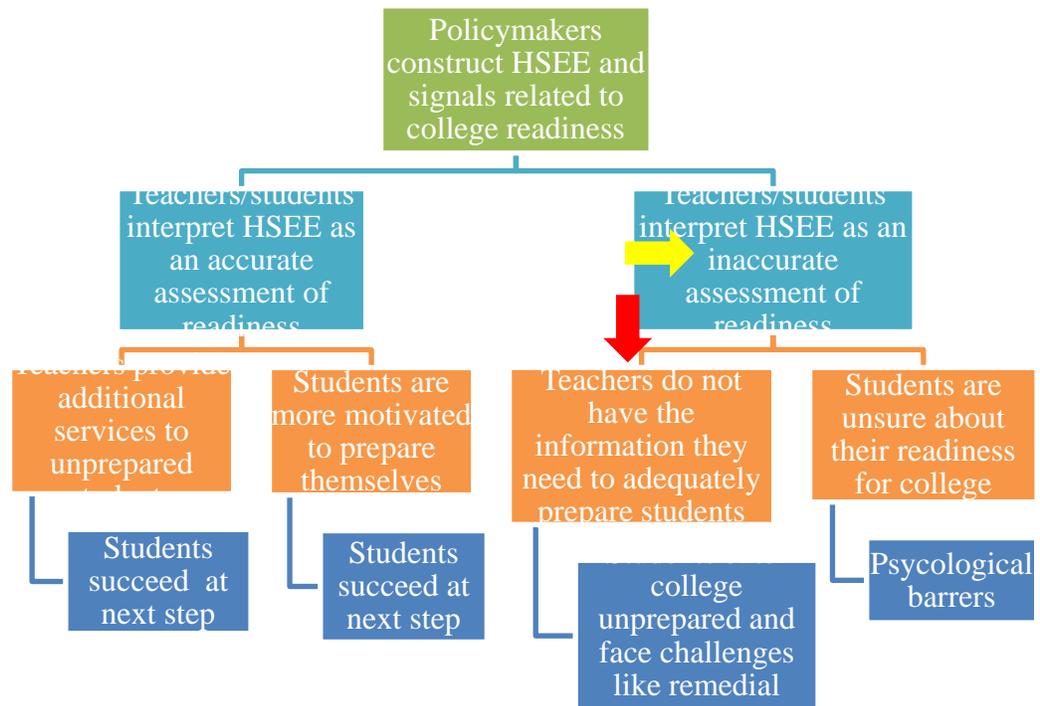


Figure 12. Inaccurate Signals to Teachers According to Signaling Theory

**Findings on Student Interpretations.** This study also asks how teachers think that students interpret their own performance on SOL tests related to college readiness. Even though only 32% of the teachers in this survey said they interpret an advanced score on an SOL test to mean a student is ready for college, 52% of the responding teachers said that they think their students interpret an advanced SOL test score in this way. Further, this was the only performance level on which a majority of the responding teachers agreed that students interpret the SOL test score as Virginia’s new policy intends. For the other performance levels—proficient and below proficient—teachers explained that they believe their students are generally unaware that their SOL

performance has any relationship to their readiness for college. This perception was evident in both the sub-question responses options as well as the open-ended explanations for “other” responses.

It is important to note that this survey did not ask students themselves what they think, but instead relied on the perceptions of the teachers who responded to the survey. Thus it could be that the teachers over or underestimate the extent to which their students view an advanced SOL test score as an indicator of college readiness. However, as explained in Chapter 1, because of their direct relationship with students, teachers are in the best position to witness how students interpret their own performance on the exit exam, second only to asking students themselves. The fact that many of these teachers reported that they think their students see little relationship between their SOL test scores and their college readiness might be worrisome to policymakers; however, those responses were much more frequent on the questions about the below proficient and proficient performance levels, which are not intended to be indicators of college readiness.

If this perception is accurate, it may be that students are receiving the intended signal by the new SOL test performance level more so than the teachers, which could lead to more students with a better sense of their academic preparedness for college while still in high school. According to signaling theory, if students receive the intended signals from the policy construct, those students that are labeled not prepared might be more motivated to seek the preparation and services they need to be fully prepared for college.

This part of the theoretical framework of this research is indicated by the arrows in Figure 13 below.

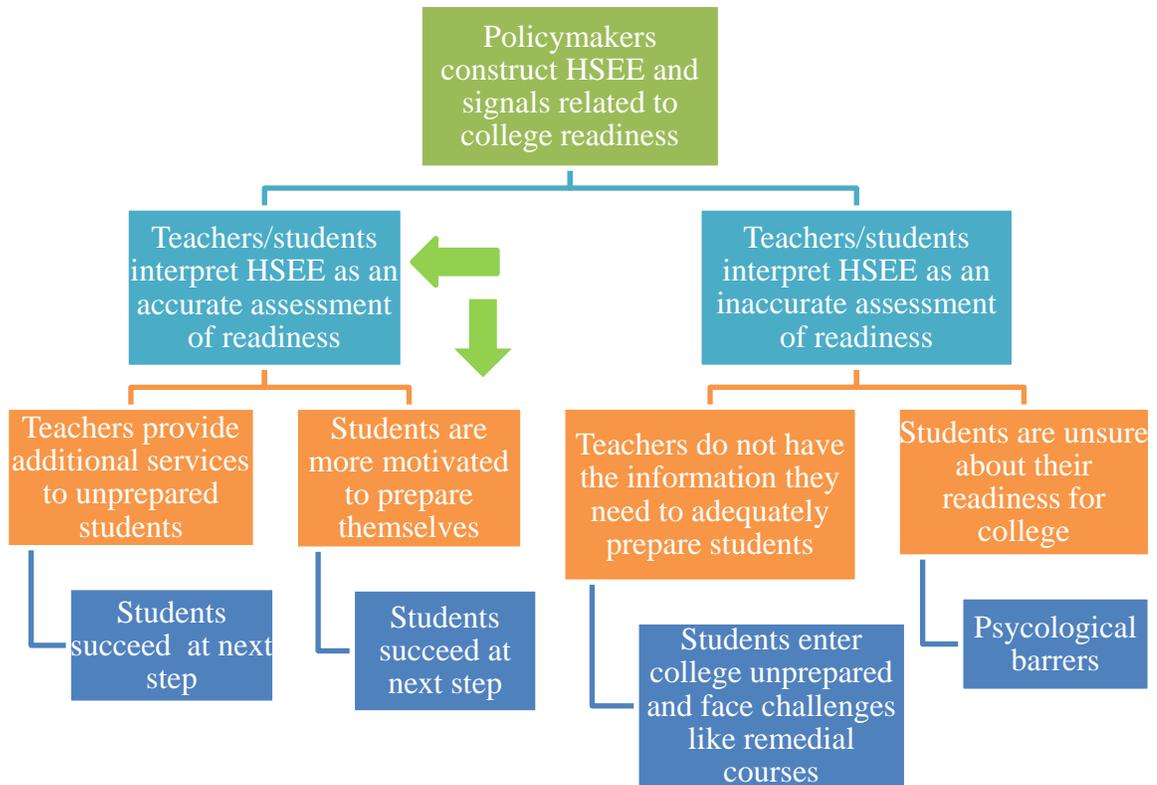


Figure 13. Accurate Signals Sent to Students According to Signaling Theory

**Differences Across Teacher Groups.** Finally, this study also asks how the interpretations of the teachers in this study vary depending on their years of experience, the subject they teach, or the percentage of low-income students they teach, if at all. To answer this question, two different kinds of analyses were used—a three-way analysis of variance for the major questions and a binary logistical regression for each of the

response items of the sub-questions. Only two statistically significant differences emerged from these analyses between the different groups of teachers studied. First, moderately experienced teachers were more inclined to interpret a below proficient score as meaning a student is unprepared for college than very experienced teachers were. Second, math teachers were more inclined than English, science, or social studies teachers to say that they interpret an advanced SOL test score as meaning that student is prepared for college.

It is not surprising that math teachers are more inclined than teachers of other subjects to interpret an advanced SOL performance to mean a student is prepared for college. As explained above, Virginia's new College and Career Readiness Initiative had been in effect for math teachers for two full school years at the time of this study, only one school year for English and science teachers, and not at all for social studies teachers. This may simply mean that it will take one more school year for the policy to have the same effect for English and science teachers, and that the policy will hold little meaning to social studies teachers until the same changes are made to the SOL tests in those subjects.

### **Implications for Practice**

The state testing policies that have developed across the nation in the years since *A Nation at Risk* have increasingly impacted what teachers teach (or do not teach), how they teach it, and how much time during the school year they have to do so. Virginia's new exit exam policy intends to capitalize on that influence, hoping that the result of the

policy will be that all students are taught college-ready learning standards. However, the results of this study imply that the new policy likely has had little impact on teaching practices one to two years after implementation. If the results of this study are representative of the majority of teachers in Virginia, meaning that only about a third of them view the new college-ready achievement level as an indication of college readiness, it is not likely that they are changing the way they prepare students for college based on these tests results. That said, even if the results of this study had indicated that more teachers *did* interpret advanced SOL test scores as an indicator of college readiness, the timing of the tests—the end of the school year—gives teachers little time to change the way they are preparing their students for college before the school year and their time with those students ends.

Given the possible lack of influence of the new SOL test policy on teachers' practice for the reasons explained above, it is likely that teachers must rely on other assessments of students' readiness for college throughout the school year. These assessments include student assignments and tests, their study habits, and the teachers' own observations of their classroom behavior. The conclusions they draw from these other indicators of college readiness can influence the amount of time they spend teaching college-ready content standards, individual attention they give to students to help build their study habits, and whether or not they connect students with any additional resources they need outside of their classroom to better prepare for college.

## **Implications for Policy**

As noted above, it is possible that Virginia's new SOL test policy may have been implemented too recently at the time of this study to show significant influence in the way teachers and students interpret these scores. Nonetheless, the results of this study suggest that policymakers should reflect on the impact (or lack thereof) of the new policy so far and possibly reevaluate its efforts to send accurate signals to teachers about how prepared their students are for college. For the Center on Education Policy (CEP)'s 2012 report on state high school exit exam policies, I reviewed eleven years of CEP reporting and data collection on these policies. This review resulted in lessons that can be learned from states' experiences with implementing these policies and/or making major changes to their policies in the past. Virginia policymakers might benefit from reviewing all of these lessons learned, but one lesson in particular relates to the findings of this study.

I wrote in the CEP study that "successful implementation of exit exams depends on maintaining the support of key state leaders, stakeholder groups, and the public" (Center on Education Policy, 2012, p, 46). The support of Virginia teachers for the new SOL test policy is essential for its success. The findings of this study imply that Virginia policymakers may not have yet gained the much needed support for the new policy from this stakeholder group. As discussed in Chapter 2, Grant (2000) concluded from his research on teachers in New York that the teachers' support for the state's new testing policies waned when they felt frustrated by incomplete and conflicting information about the new tests. The teachers in Grant's study were also frustrated by the feeling that,

though they were the professionals on whom the tests would have the most impact, their voices were not well reflected in important discussions about the content and design of the new state tests. Given Grant's findings and the lesson learned in the CEP study, Virginia policymakers may want to reevaluate the awareness and knowledge of the new SOL test policy among its teachers, as well as involve teachers to a greater extent in the implementation of this policy to make sure their voices are heard.

### **Limitations and Boundaries**

As explained by Glesne (2011), "Limitations are consistent with the partial state of knowing in social research, and elucidating your limitations helps readers know how they should read and interpret your work." The method choices I made when designing this study, particularly decisions concerning the selection of the setting and participants but also those related to data collection and analysis, have established certain boundaries for this research study. However, there are also some limitations inherently built into the research design. In this section, I list potential limitations to this study and discuss how I have address each of these limitations, as well as how my methods decisions have established boundaries for this research.

**Limitations caused by response rates.** As with any study that employs survey methods, this study is limited by the response rate. Though the district official who sponsored this research in her district felt that a 22% response rate on the survey was better than average for the teachers in her district, the responses represent less than a quarter of the surveyed teacher population. Not to mention, it is possible that only those

teachers with extreme opinions of the state's exit exam policy (very positive or very negative) were motivated to participate in the survey, creating an oversampling of teachers with extreme views of SOL tests. The low response rate quite possibly limits the significance of these findings, making them less generalizable to the rest of the teachers of SOL subjects in this school division. Considering this limitation, it is important to interpret the findings of these research within the context of those teachers who responded to the survey, keeping in mind that they may not represent all teachers from this school district, and certainly not all teachers in Virginia.

**Limitations related to reactivity.** As explained by Patton (2002), research findings can be limited when study participants are affected by the research process, also known as “reactivity”. In this study, it may be that some survey respondents answered survey questions based on what they believed the researcher will want to hear. Participants may have thought that I wanted the survey to yield certain results if the questions on either the survey appeared leading in one direction or another or if the participants are aware of my previous research on high school exit exam policies. To limit the effects of reactivity as much as possible, the survey was reviewed by experts in survey research. The survey was also piloted with a small group of teachers who were asked if any research bias was evident that might impact participant responses.

**Generalizability.** The conclusions drawn from this study are not what Maxwell (2005) refers to as “externally generalizable” (p. 115). Maxwell explains that external generalizability refers to the ability to draw conclusions beyond the setting or group

studied in this research. As previously mentioned, high school exit exam policies vary a great deal from state to state; therefore, the findings from this study may not be generalizable to states other than Virginia. Similarly, the school division selected for the setting of this research is located in the Northern Virginia, which varies in a number of ways from the rest of the state. Therefore, the findings of this study may not be generalizable to school divisions other than the division selected for this study.

On the other hand, I am more confident in the internal generalizability or “the generalizability of a conclusion *within* the setting or group studied” (Maxwell, 2005, p. 115). Maxwell explains that the ability of a study to draw conclusions about the setting or group studied as a whole is limited if particular members of that group are ignored. Though the response rate is low, the survey respondents do represent all of the variables of interest in the study at somewhat equal levels. For example, about a third of the respondents teach few low-income students, about a third teach a moderate level of low-income students, and about a third teach many low-income students. The respondents represent similar distributions of years of teaching experience and subjects taught. Though the low response rate means the internal generalizations should be done with caution, I do feel somewhat confident that no groups of teachers as defined by the three variables analyzed in this study were ignored.

**Boundaries.** Similar to the limitations associated with the generalizability of this study, the methods I have chosen for this research establish certain boundaries within which its findings can be interpreted. I have chosen to explore the Virginia exit exam

policy and in the context of one school division in the northern region of the state.

Similarly, I have chosen to include only high school teachers of SOL subjects required for graduation as participants, so the conclusions drawn from the findings of this study only offer insight into the perspectives of these kinds of teachers. Also, the method of data collection I chose set boundaries regarding the kind of information I received during this research. It is highly possible that a study that conducts more qualitative interviews or focus groups instead of a survey would yield different conclusions or more in-depth explanations for the phenomena discussed in this research. However, as discussed in Chapter 3, I chose to bind this part of my study by depth rather than by breadth.

Finally, the research is bound in some ways by my identity as a researcher.

Because my interests lie in education policy, I have interpreted the findings of this study through a policy lens, which may ignore conclusions that could be drawn if I were to approach this study with special interests in teacher quality, education psychology, or education leadership, for example. I also know that my interest in protecting educational quality for underserved populations affects how I designed this research. Because it was a priority to me to analyze the survey results according to how many low-income students the teachers taught, it may be that other ways to analyze the data were set aside in order to focus on my interests.

### **Future Research**

Additional research is needed in order to better understand much of what is left unanswered by this study. For example, it is unknown how well these survey findings

represent the perspectives of all teachers impacted by the new SOL test policy across the state of Virginia. Administering this same survey to teachers of SOL subjects in other school divisions located in other regions of Virginia would help to know whether or not the findings of this study hold true (or are generalizable) to other teachers across the state. It would also provide information about how the policy might have varying effects on teachers and students in different parts of the state. Additionally, because policy changes typically take more than one school year to achieve their intended objectives, it would also be valuable to repeat this survey after more time has passed to see if the policy becomes more effective over time.

It is also unclear why so few teachers perceive the SOL tests to be accurate indicators of academic readiness for college. It may be that, as some teachers indicated in this survey, the tests do not accurately assess for the knowledge and skills needed to succeed in college. After more time has passed and the students who have taken the new SOL tests have moved on to college, longitudinal studies similar to those by Bishop and Mane (2001), Dee and Jacob (2006), D'Agostino and Bonner (2009) and Cimetta (2012) could provide insight into how well the SOL tests predict success in specific college courses and/or college graduation.

As discussed in Chapter 3, this study was designed with a second phase in mind. A follow-up study to this research should focus on understanding not just why teachers interpret SOL test scores the way they do, but also how their interpretations of SOL test

scores related to college readiness impact their behavior. For example, a follow-up study could address the following research questions:

- How do high school teachers' of SOL subjects feel that their interpretations of SOL test performance related to college readiness impact the ways they prepare their students for college?
- How do high school teachers' of SOL subjects feel that students' interpretations of their SOL test performance related to college readiness impact the ways they try to prepare themselves for college?

The findings from the survey could inform the development of an interview protocol that might “elaborate, enhance, deepen, and broaden the overall interpretations and inferences” from the survey findings, similar to what Greene (2007) describes as a sequential, developmental mixed-methods research design. This follow-up study is important in order to understand the next level of signaling theory, the third level of Figure 12 below.

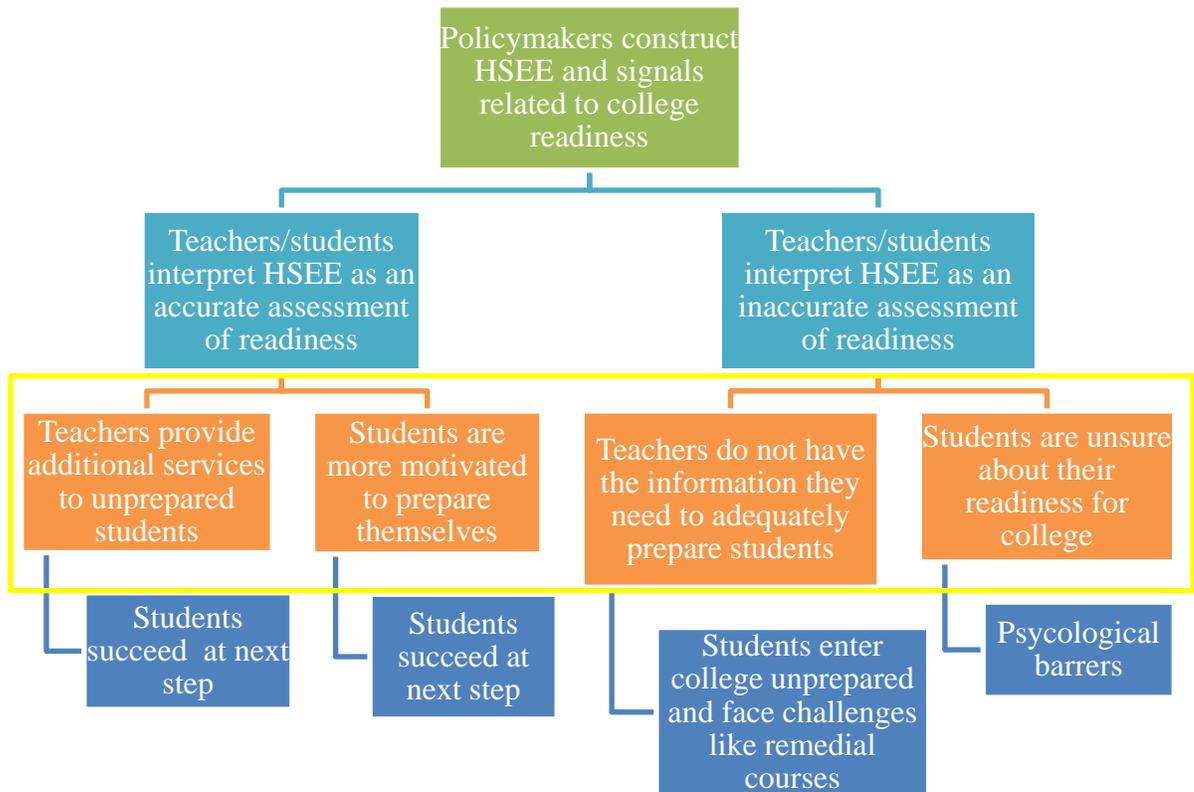


Figure 14. Signaling Theory as Applied to High School Exit Exams- The Next Level

Finally, the advent of the Common Core State Standards and their related common assessments means that it is even more important to continue to try to understand how high school exit exam policies do or do not impact high school students' readiness for college. At the time of this study, forty-seven states had adopted the Common Core State Standards (CCSS), standards designed to assess the knowledge and skills young people will need for success in college. Further, most of these states were participating in one or both of the two state consortia that were developing and

implementing common assessments tied to these standards. The findings of this study (and related future research) have strong implications for the ability of the CCSS to increase college readiness among high school students. The theory behind the CCSS policy is nearly identical to the new SOL test policy in Virginia—increase academic standards and hold students and schools accountable for these standards by attaching high stakes testing to the standards. The CCSS movement only increases the number of students impacted by this kind of policy nationwide; therefore, it is imperative to continue to try to better understand teacher interpretations of high school tests meant to assess college readiness and subsequently, how their interpretations impact their behavior, if at all.

## APPENDIX A

Dear Teacher,

Thank you for volunteering to pilot the attached survey, which is part of the data collection for my dissertation project. Your feedback will help make this survey as clear and understandable as possible for other teachers who take the survey. It will also help produce valuable results for this study. This research has three goals. The first is to better understand how teachers' interpretations of their students' performance on a high school exit exam related to academic college readiness. The second is to explore teachers' perceptions on how students interpret their own performance. And, the third is to know more about how this information impacts teacher and student behaviors.

Please review the attached survey questions and responses, and rather than answering the survey questions, please provide comments and suggestions about the following issues:

- Are the survey questions easy to understand? Is it clear what each question is asking? Why or why not? Suggested improvements are welcome.

- Are the response items easy to understand? Is it clear what each response items means? Why or why not? Suggested improvements are welcome.
- Do the available response items allow you to answer the question? Why or why not? Are there additional possible responses I should add?
- Is there any additional information you would need at the beginning of the survey in order to complete it to the best of your ability?
- Would a chance to win a \$50 Visa gift card incentivize you to participate in this survey? Would a chance to win a second \$50 Visa gift card incentivize you to volunteer for a follow-up interview? Please feel free to suggest other incentives you think may generate more participation.
- Is there anything else you would like to share with me about this survey?
- Finally, please indicate somewhere on the survey about how long you think it would take you to complete it.

In order for me to track your comments and suggestions, the “tracked changes” function is turned on. Please leave this on so I can track any changes you make to the survey. Feel free to also use the “comment” function. Thank you again for your help.

Shelby McIntosh  
PhD Candidate  
George Mason University  
Shelby9903@gmail.com

## APPENDIX B

### Cover Letter to Teachers to Accompany Survey

Dear Teacher,

As a former teacher and current researcher of education policy, I know that those who write policy as well as those who study it often ignore one of, if not the, most important voice in education, that of the teacher. For this reason, I am asking you for your perspective on a policy that impacts both you and your students. I am currently a PhD candidate at George Mason University, and the goal of my dissertation research is to better understand how you interpret your students' performance on the SOL tests in the subject you teach related to their academic readiness for college.

I understand that your time is incredibly valuable, which is why I have designed this survey to take no more than 10-15 minutes of your time. **I would greatly appreciate it if you could respond to the survey by [enter date here].** Though your school division may want to read the findings of my research, your responses will be kept confidential and survey results will only be reported in the aggregate.

I believe that this survey is only able to capture a small part (though a very valuable part) of your perspective on this issue. For that reason, at the end of the survey I ask you to volunteer for a follow-up interview by providing your contact information for

the summer break. Should you decide to volunteer, this interview will be scheduled at your convenience off-campus and outside of school hours. Providing your contact information will not compromise the confidentiality of your survey answers (the survey software will deliver your contact information to me separate from your survey responses). Your participation in a follow-up interview as well as what you share with me during this interview will also be kept confidential.

**When you complete this survey by [enter date here] you will be entered into a drawing for a \$50 Visa gift card. Also, when you complete a follow-up interview, you will be entered to win a second \$50 Visa gift card. If you have any questions about the survey, the follow-up interview, or the research your responses will inform, please feel free to contact me via phone or email at the contact information listed below. Thank you in advance for your participation.**

Shelby McIntosh  
PhD Candidate  
George Mason University  
469-878-4891  
Shelby9903@gmail.com

## APPENDIX C

### Survey of Teacher Interpretations of Students' Performance on High School Exit Exams and College Readiness

The purpose of this survey is to better understand how you interpret your students' performance on the exit-level SOL exam in the subject you teach related to their academic readiness for college. **Your responses to this survey will remain anonymous.**

There will be questions pertaining to advanced, proficient, and below proficient student performance on this exam.

Please answer the following questions to the best of your ability.

1. When a student scores proficient on the exit-level SOL test in the subject I teach, I interpret their performance to mean:
  - This student is prepared to enter and successfully complete credit-bearing college courses in this subject.
  - This this student is *somewhat* prepared to enter and successfully complete credit-bearing college courses in this subject.
  - Neither of the above

*If you selected "neither of the above" in question 1, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student
  - A proficient score on the exit-level SOL test alone cannot accurately indicate college readiness in this subject
  - The exit-level SOL test does not test the knowledge students need to be successful in this subject in college
  - Other \_\_\_\_\_(please explain)
2. When a student does NOT score at least proficient on the exit-level SOL test in the subject I teach, I interpret their performance to mean:
- This student is unprepared to enter and successfully complete credit-bearing college courses in this subject.
  - This this student is *somewhat* unprepared to enter and successfully complete credit-bearing college courses in this subject.
  - Neither of the above

*If you selected “neither of the above in question 2, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student
- Students may be able to do well at some colleges in this subject even if they do not score at least proficient on the exit-level SOL test

- The cut score needed to receive a proficient score on the exit-level SOL test is set unnecessarily high.
  - A below proficient score on the exit level SOL test alone cannot indicate that a student is unprepared for college
  - Other \_\_\_\_\_(please explain)
3. When a student scores advanced on the exit-level SOL in the subject I teach, I interpret their performance to mean:
- This student is prepared to enter and successfully complete credit-bearing college courses in this subject.
  - This this student is *somewhat* prepared to enter and successfully complete credit-bearing college courses in this subject.
  - Neither of the above

*If you selected “neither of the above” in question 3, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student
- An advanced score on the exit-level SOL test alone cannot accurately indicate college readiness in this subject
- The exit-level SOL test does not test the knowledge students need to be successful in this subject in college
- Other \_\_\_\_\_(please explain)

4. When a student does NOT score advanced on the exit-level SOL test in the subject I teach, I interpret their performance to mean:

- This student is unprepared to enter and successfully complete credit-bearing college courses in this subject.
- This this student is *somewhat* unprepared to enter and successfully complete credit-bearing college courses in this subject.
- Neither of the above

*If you selected “neither of the above” in question 4, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student
- Students may be able to do well at some colleges in this subject even if they do not score advanced on the exit-level SOL test
- The cut score needed to receive an advanced score on the exit-level SOL is set unnecessarily high.
- An advanced score on the exit-level SOL test alone cannot indicate that a student is unprepared for college
- Other \_\_\_\_\_(please explain)

**The following questions refer to how your students interpret their own performance on the exit-level SOL in the subject you teach.**

5. When my students score proficient on the exit-level SOL test in the subject I teach, I believe these students interpret their score to mean:

- They are prepared to enter and successfully complete credit-bearing college courses in this subject.
- They are *somewhat* prepared to enter and successfully complete credit-bearing college courses in this subject.
- Neither of the above

*If you selected “neither of the above” in question 5, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student
- My students feel a proficient score on the exit-level SOL test alone cannot accurately indicate college readiness in this subject
- My students feel that the exit-level SOL test does not test the knowledge they will need to be successful in this subject in college
- My students are not generally aware that the exit-level SOL test has any relationship to how they expect to perform in college.
- Other \_\_\_\_\_(please explain)

6. When my students do NOT score at least proficient on the exit-level SOL test in the subject I teach, I believe these students interpret their score to mean:

- They are unprepared to enter and successfully complete credit-bearing college courses in this subject.
- They are *somewhat* unprepared to enter and successfully complete credit-bearing college courses in this subject.
- Neither of the above

*If you selected “neither of the above” in question 6, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- My students feel they may be able to do well at some colleges in this subject even if they do not score at least proficient on the exit-level SOL test
- My students feel that the cut score needed to receive a proficient score on the exit-level SOL test is set unnecessarily high.
- My students feel that a proficient score on the exit-level SOL test alone cannot indicate college readiness.
- My students are not generally aware that the exit-level SOL test has any relationship to how they expect to perform in college.
- Other \_\_\_\_\_(please explain)

7. When my students score advanced on the exit-level SOL test in the subject I teach, I believe they interpret their performance to mean:

- They are prepared to enter and successfully complete credit-bearing college courses in this subject.
- They are *somewhat* prepared to enter and successfully complete credit-bearing college courses in this subject.
- Neither of the above

*If you selected “neither of the above” in question 7, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- It depends on the student.
  - My students feel that an advanced score on the exit-level SOL test alone cannot accurately indicate college readiness in this subject.
  - My students feel that the exit-level SOL test does not test the knowledge they will need to be successful in this subject in college.
  - My students are not generally aware that the exit-level SOL test has any relationship to how they expect to perform in college.
  - Other \_\_\_\_\_(please explain)
8. When my students do NOT score advanced on the exit-level SOL test in the subject I teach, I believe they interpret their performance to mean:
- They are unprepared to enter and successfully complete credit-bearing college courses in this subject.

- They are *somewhat* unprepared to enter and successfully complete credit-bearing college courses in this subject.
- Neither of the above

*If you selected “neither of the above” in question 8, please answer the following question.*

I selected “neither of the above” because (choose all that apply):

- My students feel they may be able to do well at some colleges in this subject even if they do not score advanced on the exit-level SOL test.
- My students feel that the cut score needed to receive a proficient score on the exit-level SOL test is set unnecessarily high.
- My students feel that advanced performance on the exit-level SOL test alone cannot indicate college readiness.
- My students are not generally aware that the exit-level SOL test has any relationship to how they expect to perform in college.
- Other \_\_\_\_\_(please explain)

9. How many years have you served as a classroom teacher? \_\_\_\_\_

10. Which of the following subjects do you currently teach? (choose all that apply)

- |              |                 |
|--------------|-----------------|
| ○ English 9  | ○ Geometry      |
| ○ English 10 | ○ Algebra II    |
| ○ English 11 | ○ Earth Science |
| ○ Algebra I  | ○ Biology       |

- Chemistry
- World History and Geography to 1500
- World History and Geography 1500 to present
- Virginia and US History
- Virginia and US Government

11. Which of the following grades of students do you teach? (choose all that apply)

- 9<sup>th</sup> grade students
- 10<sup>th</sup> grade students
- 11<sup>th</sup> grade students
- 12<sup>th</sup> grader students

If you are willing to participate in one hour follow-up interview, please provide your contact information for the summer break here. The follow-up interview will be scheduled at your convenience outside of school hours and off-campus. Providing the following contact information will not compromise the confidentiality of your survey responses. Additionally, your participation in the follow-up interview as well as the information you share with me during the interview will be kept confidential.

The email address at which you can be contacted over the summer: \_\_\_\_\_

The phone number at which you can be contacted over the summer: \_\_\_\_\_

## APPENDIX D

### Contact Email to School Principals

Dear [insert principal's name],

As part of my dissertation research at George Mason University, I would like to send a survey to some of the teachers in your school. **This survey should take no more than 10-15 minutes to complete, and their participation is completely voluntary.** My goal as the researcher in this study is to make the administration of this survey as convenient as possible for you and your teachers.

The goal of this survey is to better understand teachers' perspectives of the SOL tests related to college readiness. A copy of the survey is attached to this email. The survey will be sent to those teachers in your school who currently teach a course with a corresponding SOL that students must pass in order to graduate high school. Those teachers that appear to meet this criterion and their email addresses (according to your school's website) are listed in a second attachment to this email. I will email the survey to these teachers during the week of June 3, 2013. I will ask that teachers complete the survey within two weeks and will send them a follow-up email.

I would appreciate your support. I understand that teachers' time is extremely valuable; therefore, teachers that complete the survey will be entered into a drawing for a \$50 Visa gift card in appreciation of their time and input. If you have any questions about

the survey administration or the survey itself, please feel free to contact me at 469-878-4891 or by email at [shelby9903@gmail.com](mailto:shelby9903@gmail.com).

Thank you in advance for your help.

Shelby McIntosh  
PhD Candidate, George Mason University  
469-878-4891  
[Shelby9903@gmail.com](mailto:Shelby9903@gmail.com)

## APPENDIX E

### Reminder Email to Teachers about Survey Deadline

Dear teacher,

This is a friendly reminder that the deadline to participate in the “SOL Tests and College Readiness” survey is [insert date here]. I realize that your time is extremely valuable; however, this survey should take no more than 10-15 minutes of your time. Also, please remember that all survey participants will be entered into a drawing for a \$50 Visa gift card, as well as have an opportunity to receive a second \$50 Visa gift card.

As a reminder, the survey can be accessed here [insert survey link] and your responses will remain anonymous. If you have any questions about this survey, feel free to email me at [shelby9903@gmail.com](mailto:shelby9903@gmail.com).

Thank you,

Shelby McIntosh  
PhD Candidate  
George Mason University

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## **BIOGRAPHY**

Shelby McIntosh graduated from Nimitz High School in Irving, Texas in 1999. She received her Bachelor of Science degree in Secondary Education from Oklahoma State University in 2003. She received her Master of Education degree from Dallas Baptist University in 2007. She has worked as a high school English teacher in Flower Mound, Texas and as a research associate at the Center on Education Policy at The George Washington University. She was employed as a Director of Research at K12 *Insight* while completing her Doctorate of Philosophy in Education from George Mason University in 2013.