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# High-Stakes Testing: A Study of the Relevance and Its Contribution to Career and College Readiness

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# HIGH-STAKES TESTING: A STUDY OF THE RELEVANCE AND ITS CONTRIBUTION TO CAREER AND COLLEGE READINESS

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## Approval Page

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## Abstract

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Educators and policymakers have continued to search for the ideal medium for gauging learning and teacher accountability. After nearly 50 years since the inception of assessments to prove minimum competency, many attempts have been made to reform the process and the assessment tool. With the current focus in education being on career and college readiness and 21st century skills, the purpose of this study was to determine if high-stakes testing contributes to college and career readiness. College and career readiness and 21st century skills have been considered qualities needed to remain competitive in the global workplace. The most desirable qualities have been critical thinking skills, problem-solving skills, communication skills, and judgment and decision-making skills. College freshmen from a community college and a 4-year college were the participants of this mixed-methodology study. The sample was determined by students enrolled in English 111 or the equivalent, due to this being a requirement for all regardless of career path. Those participating were categorized by gender and the number of years since graduation from high school. Questions were presented through Likert-style surveys as well as interviews, that determined their experiences with high-stakes testing at their respective schools. Data collected were very similar when compared by years since graduation but changed significantly when compared by gender. Key findings included students' desire to be assessed by a portfolio of project-based assignments rather than a single, multiple-choice exam. Myths about the negative connotation that follow

high-stakes tests were debunked. Implications of the findings included student choice in the manner in which they are being assessed and the use of multiple projects for determining content mastery.

*Keywords*: accountability, evaluative, standardized, narrowing, education reform, gateway, high-stakes

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# Chapter 1: Introduction

## Introduction

Education is nearly 5 decades into the age of accountability in North Carolina. Beginning as an idea to recognize minimum competency, the scope, effectiveness, and impact have changed since its inception.

## Background

In 1977, Governor James B. Hunt had fears that workforce competency was declining in North Carolina, in the United States, and around the world. To prevent the decline and attempt to maintain a dominant position, he proposed that high school students pass a minimum competency test as a graduation requirement (Baker, 2015).

By June of the same year, Governor Hunt's legislation was presented to the North Carolina Legislature where it was overwhelmingly approved. Included in the legislation was a state-wide competency test that all students were held responsible for passing as a graduation requirement. This mandate was the beginning of high-stakes testing in North Carolina. High stakes became the term used to describe any test with a consequence attached to it. Over time, these tests not only had a bearing on graduation for students but also on incentives for teachers and schools. Considerations for this test included determining minimal competency, uniformity of tests for all students, and if the test determined whether the student had the ability to lead a productive life (Baker, 2015).

An 11-member testing commission was appointed to develop a program to test minimal competency (Baker, 2015). Initially, the tests were created to measure math and reading skills. Questions were developed by textbook giant McGraw Hill, the Educational Testing Service, and the American College Testing (ACT) Service (Baker,

2015). By the spring of 1978, the initial tests were administered to more than 70,000 high school juniors in North Carolina. When the results were in, they found that nearly one third of White students and over two thirds of Black students failed one or both tests. The national office of the NAACP made accusations that the schools were not teaching the materials for which students were being held accountable. These claims included a lack of practical education in tax forms, checkbook balancing, or comparison shopping (Baker, 2015). Steele (1978) stated that testing for competency was not totally opposed if it was a means to improve student proficiency. Holding a diploma brought concerns.

By 1983, the Reagan administration created a commission to determine the effectiveness of the nation's education system. From that commission came a report, *A Nation at Risk.* Included was a warning that the dominance that America once had in economic arenas was in jeopardy. In the commission's opinion, mediocrity in schools was the root cause. Following the release of the report, the focus for improvement became increased student accountability. By the mid-1980s, 35 states had begun educational reform. Students were now being held accountable for mastery of a new set of world-class standards (Kornhaber & Orfield, 2001). Measures for student and teacher accountability were adjusted occasionally and many programs came and went, but a perfect system was always out of reach. Billions of dollars were invested to reform education, but no major improvements in proficiency were seen.

In the 1990s, more rigorous high school exit exams were established. As part of the Elementary and Secondary Education Act, states began using test scores to hold schools and teachers accountable (Atkinson, 2002). In North Carolina, third, fifth, and eighth grades became "gateway" years. Students were required to pass state exams to be

promoted to the next grade. A high school exit exam was phased in over the next few years. Dropout rates increased, especially with African American and Hispanic students. Heubert and Hauser (1999) stated that data have shown that retention increases dropouts and not achievement.

Educators were concerned with the outcomes of standardized tests and stated that tests measured a limited part of what students were being taught in the classroom. Concerns arose that students would be taught to memorize information along with test-taking skills. Time was being used to prepare for taking the tests rather than for learning the material that needed to be covered (Abrams et al., 2003).

Teachers and principals were being threatened with salary and job stability. "Teaching to the test" became the focus over teaching the material listed in the standards. Murillo and Flores (2002) stated that teachers felt that the outcomes of the standardized tests were more important than teaching the appointed standards to fidelity. Initially, tests were created to establish uniformity in what students were taught. With the accountability focusing on the schools, high scores were rewarded with praise and bonuses. Results were printed in newspapers either praising or shaming area schools. Poor-performing schools could require teachers to be transferred or fired, and schools could be taken over by the state (Counsell & Wright, 2018).

With the North Carolina State Board of Education trying to develop a plan following *Goals 2000: Educate America Act*, the ABCs of Education was created in 1995. This program was a reorganization plan for schools in North Carolina. Focuses were strong accountability for students and teachers; an emphasis on basic skills; and a concentration on reading, writing, and mathematics in the early grades. This plan was

described as a model for successful educational reform (Gordon & Patterson, 2008).

ABCs was an acronym for accountability in Grades 3-8; basic skills like reading, writing, and mathematics; and control of decisions by local communities. Schools were ranked annually with teachers receiving bonuses for high performance and not for a lack of. Categories for ranking were “low performing,” “no recognition,” “meets expected growth,” and “demonstrates exemplary growth.” Schools falling into the lower categories could be assigned an assistance team to improve a school’s performance (Gordon & Patterson, 2008). Students' individual needs and the decisions made on their behalf were transferred to administrators, textbook publishers, and test makers (Darling-Hammond, 1997).

With the states being in control of creating their own, standards were written in a manner that was so vague that students had no guidance for meeting them. Teachers used textbooks as a guide since they were a part of the decision-making process. Veselak (2018) stated that this lack of teacher guidance kept the school systems mired in the mediocrity they were fighting to overcome. August 1997 brought the first report of the ABCs. The State Board of Education created a standard for each school. Each school was accountable for meeting this standard, based on year-to-year performance, under the threat of punishment (National Research Council, 1999).

The North Carolina Board of Education passed additional reforms in 1999 that included student accountability. Students were given a performance ranking based on a scaled score. Achievement levels ranged from Level 1 (insufficient mastery to be promoted) to Level 4 (beyond what is expected to be promoted; North Carolina State Board of Education, 1999). For students failing to meet proficiency standards for

promotion, there was a review process that allowed principals to decide whether to promote or retain them. Other relevant information was considered in the decision process. Grades and teacher recommendations were also considered for promotion. The American Educational Research Association (2000) agreed that decisions of such magnitude should not be based on a single measure.

Federal involvement in education evolved with the implementation of the No Child Left Behind Act of 2002 (NCLB). Accountability was placed directly on the schools. NCLB was an extension of policies enacted by the Improving America's Schools Act of 1994 (IASA), another attempt by the Clinton administration to reform education. IASA reforms included

- Title I program for assistance to disadvantaged students
- charter schools
- safe and drug-free schools
- Eisenhower professional development
- major increases in bilingual and immigrant funding
- impact aid
- education technology and other programs (Glavin, 2014).

NCLB imposed demands that determined the receipt of federal aid. Along with coordinated standards, assessments, and accountability, every student had to be tested in math, reading, and science. These tests were administered in Grades 3-8. A plan had to be in place for students who failed to meet academic proficiency by 2014. Schools were expected to meet "adequate yearly progress" every year; if not, consequences followed. Students had to be taught by highly qualified teachers and had to take a National

Assessment of Educational Progress (NAEP) test every other year. Progress for every student in every content area had to be reported, with a breakdown by race, gender, English proficiency, disability, or socioeconomic status. Low-performing schools must offer school choice as well as supplemental services (Heise, 2017).

Race to the Top was created as an add-on to NCLB. Competitive grants, amounting to $4.35 billion, were created to reward innovation in state and local education districts. Glavin (2014) explained that points were awarded based on satisfaction of performance-based evaluations, adopting common standards, policies in favor of high-quality charter schools, improving lowest-performing schools, and creating a data system to track progress; all leading to the creation of career and college ready standards, data systems for tracking, and recruitment of high-quality staff.

By 2014, NCLB expired, and the Every Student Succeeds Act (ESSA) was enacted by Congress. Like NCLB, ESSA was a reauthorization of the 1965 Elementary and Secondary Education Act. ESSA passed with bi-partisan support and was the first to reduce the federal government's role in education since the 1980s. Testing requirements stayed the same, but accountability and standard creation were given back to the states (Glavin, 2014).

In North Carolina, student performance would be determined not only by proficiency but also by growth from year to year. Expected growth is determined by a standardized growth model that was created by the North Carolina Department of Public Instruction (NCDPI). This model is used to calculate the expected growth of all the schools in North Carolina yearly (Pollard, 2014).

The North Carolina School Improvement Planning Implementation Guide,

developed by NCDPI, was created to provide a standard to follow for the planning process. The guide offered schools and districts a guide for effective school improvement planning. The initial model presented was not handed down as a template to follow but was merely a suggestion. Several North Carolina school districts provided input that identified issues with the planning process. To address these issues, NCDPI developed a guide for use by all districts. NCDPI met with representatives for recommendations to create a roadmap for school improvement planning. Continuous improvement was the goal of the guide. All aspects or any combination could be used for planning purposes (North Carolina School Improvement Planning Implementation Guide, 2016).

School improvement planning should take student learning into consideration. Schools should use a strategy that can promote positive change for their students. The guide gave schools suggestions to accomplish what teachers, principals, and parents believe was best for the students in each school. The guide gave the schools the tools that were needed for improvement; it also held them accountable for improving and meeting performance standards (North Carolina School Improvement Planning Implementation Guide, 2016).

**Statement of the Problem**

North Carolina's high-stakes testing has resulted in a laundry list of negative connotations: increased stress on teachers and students; questionable test validity; teaching test-taking skills over content; student shaming; reduced instruction time; lack of teacher creativity; turnover or leaving the teaching profession; dropout increase; and test bias based on race, origin, or status, to name a few. With all the negatives that shadow high-stakes testing, questions arise regarding whether the students' needs have

been met or if students are leaving high school college and career ready. College and career readiness refers to the content, knowledge, and skills that high school graduates must possess in English and mathematics (College & Career Readiness & Success Center, n.d.).

Although now 2 decades in, these skills are often called 21st century skills. They refer to the knowledge, life skills, career skills, habits, and traits that are important for a student's success in the postsecondary world. As students enter postsecondary education, they are deemed prepared when they have the abilities needed to complete college courses in an associate or baccalaureate degree program without assistance. Similarly, these attributes are needed for entry into the trade of their choice, the military, or a job that offers career advancement (Villares & Brigman, 2019). Questions have arisen following years of implementation and billions of dollars spent regarding the North Carolina accountability model's success in meeting the expectations placed upon it. Accountability in education, though reformed many times, has created undue stress for students, teachers, and parents (Blazer, 2011).

**Purpose**

To be college and career ready, students should possess certain 21st century skills in order to succeed in the professional world and to proceed into postsecondary education. Schools must bring these skills into learning and instruction. While continuing the present path, questions continue to arise, such as will students be obtaining the skills that are needed to be successful in college or going forward into the workforce; if students are being assessed on their abilities to collaborate; and whether students can be tested on their ability to think critically. The purpose of this study was to determine

whether North Carolina high-stakes testing promotes college and career readiness.

**Research Questions**

This study was guided by the following research questions:

1. What impact does high-stakes testing have on career and college readiness?
2. How do high-stakes tests promote or improve 21st century skills?
3. Which 21st century skills are impacted by high-stakes testing?

**Significance of Study**

Pete Seeger wrote a song in 1959 with the lyric, "To everything (turn, turn, turn) There is a season (turn, turn, turn) And a time to every purpose, under heaven." Changes come rapidly. To believe that something that was relevant half a century ago should remain relevant today deserves some inquiry. All aspects of education have changed drastically in 50 years; even more so in the last 5! This study was done to determine if the standards that were first put into place 5 decades ago remain beneficial today.

Although newly written legislation has occurred from time to time, the educational process has outpaced the changes. Technology has become a driving force in the delivery of information, and educators have derived ways to meet the needs of students who may otherwise struggle. This study provided data indicating whether the testing process should remain the same, or if a system should be created that measures whether students are aptly prepared to embark into the career field or postsecondary education of their choice.

**Theoretical Framework**

Multiple theories have been posed that discuss how students learn and how they retain the information that has been presented to them. The theories of learning are

considered in this study including but not limited to behaviorism including classical and operant conditioning, cognitive theory, social learning theory, and constructivist learning theory. Personal growth can be determined by one's exposure to information and interactions that promote measurable increases in cognition. Learning can be affected by one's surroundings, behaviors, relationships, and reactions (IEduNote, 2017).

Classical conditioning is the creation of a response using methods that would normally not produce a response. This conditioning is a training of sorts where the expectation is that if one event happens, a predicted response will follow; a cause and effect. Over time, one can be conditioned to provide a desired response.

Operant conditioning involves training an individual to provide a favorable outcome with rewards or reprimands. Conditioning of this type is used in the training of animals. When the outcome is positive, there are rewards; if not, there may be punishment. Positive reinforcement is the key to this learning theory–I will do my best because I know the response will be favorable. Motivation to perform at peak levels is created extrinsically (IEduNote, 2017).

Cognitive theory is generally based on an individual's environment, thoughts, or understandings. This learning does not come from triggers or behaviors but from internal thought processes. These processes can make learning and retention easy but also have an adverse effect. Success is dependent upon the efficiency of the thought processes (Western Governors University, 2020).

Social learning theory is more of an observational learning. Watching and mimicking what was seen is considered social learning theory. This learning can be done by watching someone perform a desired task or by creating a product by looking at a

model. Social learning can be affected by attention or a lack of the subject's ability to retain actions seen, the ability to reproduce what was presented, and whether any positive reinforcement or incentives are in place (Western Governors University, 2020).

Determining the effects of high-stakes testing on a student's ability to become college and career ready was the focus. Outcomes varied from student to student, and a positive or negative correlation was determined.

**Setting of Study**

A local 4-year College and Community College comprise the setting of this study. Both institutions were in proximity and provided the participants needed for the study. With the focus being on high-stakes testing and its impact on student readiness, these students have all been impacted by high-stakes testing.

The 4-year College is centrally located in North Carolina; just 45 minutes from the greater Charlotte area. Founded by the Church of Christ in 1851, it has grown to average 1,300 students, offering 70 academic majors. The student body is 60% White and 22% Black, being evenly split male to female. Thirty-four states and 19 countries are currently represented on the campus.

The Community College, founded in 1963, has grown into three campuses in central North Carolina. It now offers 40 areas of study including diploma avenues, certifications, basic skills programs, and transfer programs to institutions of higher learning. The student body consists of 59% White, 19% Black, and 13% Hispanic. Females outnumber male students 61% to 39%.

## Definition of Terms

***Accountability***

The quality of being accountable; liability to account for and answer for one's conduct, performance of duties, etc. (Oxford English Dictionary, n.d.-a).

***Education Reform***

Make changes in something (typically a social, political, or economic institution or practice) to improve it. (Oxford English Dictionary, n.d.-b).

***Evaluative***

Based on or relating to an assessment to form an idea of the value of something (Oxford English Dictionary, n.d.-c).

***Gateway***

A means of achieving a state or condition (Oxford English Dictionary, n.d.-d).

***High-Stakes***

High-risk, dangerous; having the potential for significant gains or losses (Oxford English Dictionary, n.d.-e).

***Narrowing***

Become or make more limited or restricted in extent or scope (Oxford English Dictionary, n.d.-f).

***Standardized***

Determine the properties by comparison with a standard (Oxford English Dictionary, n.d.-g).

## Summary

Nearly 50 years ago, the era of accountability began. In that time, policies have

changed; our country has changed; our ideas have changed; our means of providing education have changed; but most importantly, students have changed.

This study provides insight into the importance, the effects, and the need or lack thereof for high-stakes testing as we know it. The goal was to provide evidence of whether these tests are helping develop college and career ready students.

# Chapter 2: Literature Review

## Introduction

The purpose of this study was to determine the impact of high-stakes testing on college and career readiness. The literature first examined learning theories. Studying how learning occurs helped to determine which teaching/learning strategies show impact. The review then examined other studies that discussed the impact of high-stakes testing on learning. Lastly, I investigated college and career readiness and 21st century skills that are expected of each high school graduate.

## Learning

Learning is defined by many using similar verbiage with only subtle variances. One stated that learning is a process that leads to change as a result of experience. Another stated that learning opens the opportunity for future performance. Finally, learning was described as acquiring knowledge and skills and having them readily available. Others have described learning as modifying knowledge, skills, strategies, beliefs, attitudes, and behaviors. Though the definitions vary, so does the process. Pramling (1988) described three types of learning: learning to do through activities, learning to know by growing older, and learning to understand through experiences. Active learning comes from firsthand experience, reliable testimony, or inferential reasoning. Former President of India Abdul Kalam stated that the learning process gives creativity, creativity leads to thinking, thinking provides knowledge, and knowledge makes you great (IEduNote, 2017).

Defining learning by the experts has been shown in multiple ways; the why and how learning takes place was the bigger question. To learn is to create an understanding

that improves one's ability to function in the environment. One must be willing and able to adjust behaviors in order to maintain positive relationships and in turn be successful. To achieve success, one must acquire information to improve attitudes and practices. This transformation is done through observations, building from previous knowledge, or seeking help from others (IEduNote, 2017).

## Learning Theory

No two subjects are alike, and their learning will vary. Understanding learning theories and different techniques to create a learning environment was important. For a uniform standard to measure effectiveness and desirable performance, learning theories must be understood (Reid, 2011).

Learning theories involve the reason learning takes place and how it happens. Since the era of Greek philosophers, many theories have been introduced and studied. In the earliest studies, conditioning was the point of convergence to promote desired behaviors. Dewey (1933) stated observing directly is more valuable than theorizing learning. Theories defeat the purpose of conducting research. Theories can be used to explain research but not take the place of it (Reid, 2011).

## Classical Conditioning

Classical conditioning, also known as respondent conditioning, is described as a behavior that is based on the environment or external forces. A previously neutral stimulus elicits a response after it is paired with a stimulus that creates an automatic response. An unconditioned stimulus can create certain responses without previous learning. This is called an unconditional response. A subject may be misled by classical conditioning. Classical conditioning was viewed as a process of directly attaching a

reflex to a new stimulus. Pairing of the unconditioned stimulus with a neutral stimulus will begin to create the same response. At this point, the stimulus becomes conditioned. The components in classical conditioning are neutral stimulus, unconditioned stimulus, and unconditioned response (Lee, 2005).

This type of conditioning develops thought and learning in two approaches. It is called the stimulus-response theory. In more common terms, an action that normally causes a reaction is substituted by a differing action. The subject is trained to produce the previous reaction from the initial prompt. This form of conditioning or training promotes the association of an action to the predictability of what will happen next (IEduNote, 2017).

Sometimes referred to as Pavlovian conditioning, classical conditioning is the process in which neutral stimulus is converted into conditioned stimulus (Coşkun, 2019). Russian neurologist, Ivan Pavlov, experimented with a dog and its reaction to meat. He used two stimuli to determine the dog's reaction. When the dog was presented with meat, its response was to produce an increased amount of saliva. Ringing a bell, however, did not create the same reaction. Pavlov continued his experiment by combining the presentation of meat with the ringing bell. The combination of stimuli created the same increased saliva production. Following multiple attempts, the dog became conditioned, or trained, to produce the increased saliva when just the bell rings and no meat is present. The dog connected the ringing of the bell to the meat and a similar response was achieved. Ringing bells alone would not elicit the same response, but in conjunction, the bell became a replacement for the meat (IEduNote, 2017).

Paul Eelen, an expert in learning philosophy, was dismissive of the theory of

conditioning. Eelen (2018) believed there was more to this theory than a dog and his saliva. Two events must be meaningful in some way and not a coincidence (Eelen, 2018). Eelen stated that there must be a correlation or contingency between events to create a desired response. His thought was that being influenced by correlational events does not mean the subject has any understanding.

The Garcia Effect is an example of a conditioned response with no general correlation. A dinner consisting of filet mignon in béarnaise sauce was consumed shortly before a young man was stricken with the stomach flu. His sickness was in no way caused by the filet, but it will forever be in his mind as the factor. This conditioning will not allow him to ever enjoy a filet mignon in béarnaise sauce again (Eelen, 2018).

Lin (2020) stated that classical conditioning can be declarative or non-declarative. Declarative conditioning comes from explicit memory or facts. The brain creates a relationship between unrelated objects. Non-declarative conditioning is more procedural. It comes from memory; like riding a bike.

Generalization is a term that is used for the response created by using a stimulus that is like the conditioned stimulus, once a reaction has been conditioned; therefore, a similar stimulus can elicit the conditioned response (Vervliet et al., 2013). Traditional psychologists refer to classical conditioning as involuntary, while operant conditioning is more voluntary (Lee, 2005).

**Operant Conditioning**

Psychologist B. F. Skinner felt that classical conditioning was too simplistic. Skinner was known for his studies that conditioned rats to perform a task for pellets of food, stated that consequences determine the probability of an outcome being repeated

(Williams, 2018). If there is a reward or reinforcement, it is likely to be repeated. If there is a punishment or deterrent, it is less likely to occur. Reward or positive reinforcement will aid in the retention of conditioned behavior (IEduNote, 2017).

Operant conditioning contains three elements. The first element is cues that spark a response. The response itself is the second element. Third is the consequence of the response (McLeod, 2018). Behaviors generate consequences and are controlled by them. The positive or negative consequence of response shapes and controls future responses. This will determine if the response will be repeated. The consequence of the response reinforces the response. A subject will behave repeatedly in a specific way if there is a benefit and avoid the behavior if getting nothing in return (IEduNote, 2017). In operant conditioning, the consequence either increases or decreases the frequency of a specific behavior to respond to a stimulus (McLeod, 2018).

Consequences that strengthen behavior are reinforcers, and consequences that weaken behavior are punishers (IEduNote, 2017). Reinforcement must match the needs of the subject involved. External reinforcement can be in the form of approval; reinforcement is noted internally by one’s happiness to perform. Positive reinforcement leads to desired behaviors or a change in behaviors by basically bribing the subject. In humans, feedback can be positive reinforcement. Compliments, approval, encouragement, and affirmation are examples of such feedback (McLeod, 2018).

Thorndike's law of effect explains three possible responses to positive reinforcement. If the reward is neutral, the probability is neither increased nor decreased. If the reward reinforces the response, the probability of it occurring increases. If the reward is a punishment, the likelihood of the behavior being repeated is decreased

(McLeod, 2018).

In the case of Skinner's mice, a mouse was conditioned to pull down a lever to receive a food pellet. This was a positive reinforcement. Similarly, a mouse was placed in a cage with an electrical current in the flooring. In this instance, the mouse could pull down the lever to make the current subside. Though conditioned to achieve a desired result, the reinforcement was negative. Negative reinforcement is, in a sense, punishment. It will never be forgotten; it can cause aggression, and it creates fear. Subjects do not learn what to do; they learn what not to do (McLeod, 2018).

In certain incidents, classical conditioning can become operant conditioning. An example of such a change would be a teacher turning the lights off and on to get the students to make their way to their seats and be quiet. Initially, a command would accompany the light switch. As students begin to connect the flickering lights as a signal to move, the conditioning is classical. As time passes and students make the choice to adhere to the signal or not, it may be followed by a consequence to promote the correct choice. Students who do as expected may receive a positive consequence or reinforcement, while those who ignore the cue may receive a negative consequence (Lee, 2005).

**Cognitive Theory**

Bruner stated that there are three levels of cognitive theory: enactive, iconic, and symbolic (McLeod, 2019). In the inactive stage, knowledge is gained from motor responses. These skills become automatic with repetition. Examples of these skills would be riding a bike or typing. The iconic stage is more visual. Knowledge is gained through images, such as diagrams or illustrations. Symbolic stage learning is stored as words or

mathematical symbols. Language, not appearance, influences thoughts (IEduNote, 2017).

One's thoughts, interpretations, and understandings about oneself or their environment are their cognition (IEduNote, 2017). The efficiency of one's cognitive process determines the ease of learning and retention of material. Inefficient cognitive processes can cause learning difficulties and impact the length of time information is retained. Cognitive theory is the way people think and how they are influenced internally or externally (Western Governors University, 2020). Through cognitive theory, one's internal structure or environment impacts their learning. The cognitive process includes internal thoughts as well as external forces (Western Governors University, 2020). In students, it is important to know how their thought process works.

**Social Learning Theory**

Social learning theory has been described as the bridge between classical conditioning or behaviorism and cognitive learning theory. Social learning is a human learning process. Social learning describes someone who is driven to imitate others (Loveless, 2022). This learning theory consists of identifying the social position that one aspires to reach and modeling behaviors to complete the transformation (McLeod, 2018). Individuals successfully match the behavior of appropriate societal models (Bandura, 1969). Thoughts, feelings, and actions can be modeled by others. Teachers, parents, associates, and others with immediate contact can be accepted as models, even from film and television. The traits involved are considered accepted ways of behaving. There may be an adoption of behaviors, values, beliefs, or attitudes. Observing desired skills and recreating them is a cognitive process. To be successful, one must internalize what is observed and make the change from information to action (McLeod, 2018).

Decisions made through this process are generally based on the consequences that follow, be they positive or negative (Loveless, 2022). These reinforcing consequences dictate the frequency or likelihood that a behavior will be repeated. Social learning theory involves behavior retained through reinforcement. This reinforcement may be direct, vicarious, or self-reinforcement (McLeod, 2018). One's environment plays a vital role in their learning. Their environment impacts their learning as their learning impacts their environment (Loveless, 2022). Many variables in the acquisition and modeling process determine whether the modeling is simply an imitation or if there is any long-term retention associated with the modeled behaviors (Bandura, 1969). Many theorists from Morgan in 1896, to Piaget in 1951, to Skinner in 1953, to Bandura in 1965 have analyzed and attempted to explain imitation with conditioning.

Two major systems included in modeling behavior or observational learning are imaginal and verbal (Bandura, 1969). These two codes are placed on the observed behavior to create ease in reproduction or retrieval from the memory. Of the two coding mechanisms, verbal accounts for speed of learning and long-term retention (Bandura, 1969). Verbal signals are easily manipulated to create patterns quickly recalled from memory. Studies in children have shown a higher level of acquisition and a greater percentage of matching responses when information was verbalized versus visualized alone (Bandura,1969).

A four-step process is followed through social learning: attention, retention, reproduction, and motivation (McLeod, 2018). Attention in learning is imperative. Simply exposing an individual to stimuli is not a guarantee that the individual will be attentive. Motivation, training in observation, or incentivization will greatly increase

focus and attention. Behavior is dictated by consequences that follow.

Retention is the ability to internalize information and recall behavior. Retention can be affected by several factors. Whether the events that have been modeled have been enhanced through practice or rehearsal can have an impact on their retention. Responses that are deemed important are generally repeated or rehearsed (Bandura, 1969). Reproduction is pulling from learned behavior and knowing when it is applicable. Performance, in this case, is directed by external cues. Levels of observational learning have a substantial impact on the ability to recall and reproduce information. High-order responses are produced by creating combinations of previously learned materials (Bandura, 1969). These responses are common in mathematical calculations.

Motivation can be from rewards or punishments. Negative sanctions or inadequate positive reinforcement have very little impact on the improvement in performance. When favorable incentives are introduced, observational learning promptly improves (Bandura, 1969). Learning and retention can have similar results with positive incentives. Reward should outweigh cost.

Performance is affected by many variables: nurturance withdrawal, fear, and influence of model. Freud believed that learning and intrinsic motivation began in the first few years of one's existence (McLeod, 2018). Mower took it a step further in 1950 and made the connection to learning theory (Western Governors University, 2020). One's initial experience with gratification or incentivization comes from parental reward. These nurturing experiences, withdrawn over time, prompt the child to create a self-reward experience, much later explained as intrinsic motivation.

As a child becomes accustomed to these rewarding behaviors, they become a

necessity. This creates the need for modeling those prior behaviors in a self-rewarding manner. The opposite can also occur as an individual sets a high standard and rewards accomplishments but is self-critical when the performance does not meet the standard that was self-imposed (Bandura, 1969).

The social learning theory of vicarious reinforcement explains the desire to duplicate sports figures and model behaviors. Stylistic performances produce public adulation. In observational learning, the focus is on the model's competence, rewarding qualities, and social power. Children who observed the model rewarded for behaviors displayed a greater desire to imitate behaviors than those who witnessed a negative reaction (Bandura, 1969).

**Constructivist Learning Theory**

Dewey (1933) was critical of traditional education. He felt that students were passive and the teacher controls the knowledge and it must be passed to the child. In contrast, constructivist learning is a process of combined personal experiences that affect how future experiences are dealt with. Also referred to as active learning, it includes the organization of individual experiences. The instructor is simply a facilitator for encouragement and collaboration.

Piaget (1953) shared similar thoughts on constructivist learning. Taking it a step further, a two-step process was discussed. The first step is assimilation, which involves how an individual understands an experience in terms of their present stage of cognitive development. The second step is accommodation, which is the adjustment of cognitive structures based on the environment, possibly developing new cognitive structures.

Constructivism builds upon one's previous experiences and creates a learning

process from one's past. Rather than absorbing new information, constructivism is more reflective of past experiences. Constructivism is built by experiential learning and hands-on activities, increasing student engagement and retention. Interaction, team building, and problem-solving are enhanced through constructivist activities (Chuang, 2021).

The three divisions of constructivism are individual, social, and contextual (Chuang, 2021). Individual constructivism is based on one's individual experiences and perspectives. Social constructivism is based on multiple perspectives and collaboration between teammates. Learning comes from interactions with others. Contextual constructivism includes real-life contexts with authentic assessments. Learning begins with an experience in a social situation, and the experience becomes knowledge (Knowles et al., 2015). Accumulation of knowledge comes from life experiences.

Vygotsky is credited with the expansion from constructivism to social constructivism. Learning takes place through social interactions with those more knowledgeable, such as a teacher or peer, and then individually. Problem-solving begins with the support of others and eventually through self-regulation (Jacobsen, 2019). Verbal language is the primary means for the transfer of knowledge. Eventually, there will be a transformation over to inner speech (Lewis, 2018). Scaffolding has also been tied to Vygotsky's theory of the zone of proximal development. Supports are in place initially but are gradually removed as independent problem-solving skills are developed.

Vygotsky credits learning to the zone of proximal development. Individuals learn and use higher order thinking skills to rely more on themselves and less on the assistance of others. This process often begins in a collaborative environment. Learning is continuous and interactive with learners and teachers being active participants (Lewis,

2018). Epistemology is the mind's ability to make sense of problems and challenges. In education, project-based learning (PBL) is one of the best examples of a constructivist learning environment. PBL is applicable for all ages and levels. It is learner-centered, learning is active, and there is collaboration. Ideally, problem-solving is gained from self-inquiry and reflection (Jacobsen, 2019).

A study was performed with students using educational gaming systems. Students were allowed to play at will and rate their experiences. All provided a positive rating. At this point, students were allowed to switch to a multi-player setting, allowing for interaction with peers. When tested for skill development, the multi-player interactive students demonstrated better performance. When rating their experience, at this point, there were reports of more positive emotional reactions to learning new skills (Lewis, 2018).

Table 1 displays the four learning theories discussed in the study. The learning theory is the heading for each column followed by the theorists most well-known for completing seminal research and writings explaining their work. Along with the recognized theorists is a short explanation and synopsis of the theory and the outcomes recognized.

**Table 1**

*Learning Theories Dissected*

| | Behaviorism | Cognitive | Social learning | Constructivism |
|---|---|---|---|---|
| Theorists | Pavlov, Skinner, Watson | Bruner, Lewin, Piaget | Bandura | Dewey, Piaget, Vygotsky |
| Process | Change in behavior | Internal mental process | Observation in a social context | Meaning from experience |
| Locus | Stimuli from environment | Internal structuring | Interactions | Construction of reality |
| Purpose | Produce a desired change | Develop learning skills | Model new behaviors | Construct knowledge |

*Note.* Adapted from *Learning in Adulthood: A Comprehensive Guide* (2nd ed.), by S. B. Merriam, and R. Caffarella, 1999, Jossey-Bass.

Throughout the literature review, many learning theories and theorists were introduced, and their works were described in conjunction with this study. Classical and operant conditioning were parts of the behaviorist learning theory. Famous theorists within the behaviorist theory included Pavlov and Skinner; cognitive learning theorists included Piaget and Bruner; and the most well-known social learning theorists included Bandura. Well-known constructivism theorists included Dewey, Piaget, and Vygotsky.

For this study, constructivist learning theory best lent itself to determining the answers to the research questions. Constructivist learning is based on a student's ability to use previous experiences to learn through inquiry and be successful critical thinkers. With teachers taking on the role of facilitators of learning, students are responsible for their own success. Such opportunities help students develop resilience and determination while creating problem solvers, critical thinkers, and students with the ability to use sound judgment to make decisions.

From the beginning of a student's educational journey, many opportunities are present to prove understanding through standardized tests (Conley, 2015). Skills that are created through constructivist learning practices will aid in the building of a student's capacity to be successful based on their ability to manipulate their basic understanding. If content skills are lacking, the ability to critically think and problem solve can lead them to a reasonable solution (Jacobsen, 2019).

**College and Career Readiness and 21st Century Skills**

Prior to and since the dawn of the 21st century, two statements in education have dominated discussions pertaining to and describing the success of students: career and college readiness and 21st century skills. As with many common phrases that get consistent use, what gets measured and how it is measured are regularly questioned. Soule and Warrick (2015) stated that 21st century skills are "survival skills" (p. 180), no longer a luxury but a necessity.

The National Council on Measurement in Education listed four strategies that are considered determinants for career and college readiness. Cognitive strategies include higher order thinking skills; key content knowledge in disciplines; key learning skills including time management, persistence, metacognition, goal setting, and self-awareness; and key transition knowledge and skills including knowledge and awareness about the navigation of college systems (Camara, 2013).

Mokher et al. (2018) stated that students are considered college and career ready when they have the knowledge, skills, and academic preparation needed to enroll and succeed in introductory college credit-bearing courses within an associate or baccalaureate degree program without the need for remediation. The College Board

defined a student as being college and career ready if the student meets both the math and evidence-based reading and writing benchmarks on the SAT exam (DiBenedetto & Myers, 2016). College preparatory tests such as the ACT are of the assumption that the same skill set is needed to meet the demands of college or the labor market (Mokher et al., 2018).

Many ideas of what college and career readiness entails are present, but studies say that the ability to earn a living wage, be productive and successful, and lead a fulfilling and adequate life was the ideal measure. Sixty-eight secondary teachers, teaching 10th through 12th grades, were part of an action research study that determined that communication, collaboration, and critical thinking were the keys to being successful in a postsecondary life (McQueen, 2021). The teachers credited a lack of basic skills for the inability of students to succeed post high school. The results of the study encouraged career and technical education career pathways to increase students' abilities to solve problems and think critically. If students were not suited for college, career certifications could be obtained without the need to attend college first. Career and technical education classes included group activities, hands-on practice, and the opportunity to think critically. Vygotsky's constructivist learning theory states that interaction and participation create new knowledge using personal experiences (McQueen, 2021).

DiBenedetto and Myers (2016) stated that a student's developmental process, motivation, interests, aspirations, socioeconomic status, and support systems greatly influence one's ability to be college and career ready. Though skills can be impacted by one's environment, students need to be equipped with knowledge, skills, and dispositions to be critical thinkers and problem solvers.

DiBenedetto and Myers's (2016) study on the creation of a model list for student readiness completes an extensive review of the literature to identify skills relevant to career readiness in high school students. Nine seminal pieces of literature were the focus of the research. From those seminal pieces, a list was created of recommended skills and dispositions needed for career success. A spreadsheet was created listing the traits from each of the nine works, and commonalities were identified from the list. Results of the study identified the following commonalities: learning skills, life skills, career skills, social skills, knowledge competencies, incidental learning skills, dispositions, experiences, and interdisciplinary topics (DiBenedetto & Myers, 2016).

Upcoming studies made mention of Conley's (2015) four keys to college and career readiness. Table 2 is a chart of the aforementioned "keys." This provides an elaborate explanation of traits and skills needed in order to be college and career ready. Conley stated that this ranking of skills and abilities has been recorded and derived from tens of thousands of courses from postsecondary institutions.

**Table 2**

*The Four Keys to College and Career Readiness*

| Cognitive strategies | Content knowledge | Learning skills | Transition knowledge |
|---|---|---|---|
| The ability to think | Retention of knowledge | Taking the action needed | Knowledge transfer |
| Planning/strategizing | Terminology and concepts | Ownership | Goals/aspirations |
| Collection | Attitude and effort | Motivation/self-efficacy | Choice of institution |
| Interpretation | Technical knowledge | Time management | Finances |
| Communication | | Note/test-taking skills | Cultural norms |

*Note.* Adapted from "A New Era for Educational Assessment," by D. Conley, 2015, *Education Policy Analysis Archives, 23*(8).

Table 3 displays college and career readiness traits that ease the transition to postsecondary life. Each trait lists its goal behavior, what its focus is, and how it ensures success. Of the four keys, the higher the rate of possession, the higher the chances of success.

**Table 3**

*Transferability of Skills Between Careers*

| Current occupation | Skill | Importance | Target occupation | Target importance | Raw weight |
|---|---|---|---|---|---|
| Mechatronics engineers | Complex problem-solving | 3.62 | Energy engineers | 3.88 | -0.26 |
| Mechatronics engineers | Critical thinking | 3.50 | Energy engineers | 4 | -0.50 |
| Mechatronics engineers | Judgment and decision-making | 3.75 | Energy engineers | 3.50 | 0.25 |
| Robotics engineers | Complex problem-solving | 3.75 | Wastewater engineers | 4 | -0.25 |
| Robotics engineers | Critical thinking | 4 | Wastewater engineers | 4 | 0 |
| Robotics engineers | Judgment and decision-making | 3.62 | Wastewater engineers | 3.38 | 0.24 |

*Note.* Adapted from "Data-Driven Identification of Skills for the Future: 21st-Century Skills for the 21st-Century Workforce," (Vista, 2020),

Table 3 is an example of the data aggregated from the Vista (2020) study on transferability. Table 3 shows a very limited representation of the study that was completed. This example displays merely six of the more than 16,000 possible transitions.

Boatman (2021) was one of many who mentioned Conley's four keys to college and career readiness. Boatman credited critical thinking as the number one skill to becoming a problem solver. To promote these skills, working in a middle school,

Boatman stated that students must be able to consider their audience prior to response. For this to be implemented and practiced, role play is suggested. Other avenues for improving communication skills are research projects, fishbowl discussions, problem-solving, and the use of four corners discussions.

Participants of the study also stated that they felt that PBL was the optimal way to include all these skills in their practice. They also stated that less than 25% of the curriculum includes 21st century skill promotion and there is a lack of professional development for teachers in the integration of 21st century skill practice (Boatman, 2021).

McKissick (2021) completed a quantitative study to determine if PBL improved college and career readiness. Using Bandura's (1969) learning theory and Conley's (2015) four keys to college and career readiness as the basis for the study, a determination of a statistically significant difference was completed. The study included 231 high school juniors from Horry County, South Carolina. Of the 231 students, 103 had taken part in course programs that promoted PBL. The goal of the study was to determine if SAT or ACT scores reflected an improvement based on the students taking part in programs that included PBL. The data used in the study were collected from 2015 until 2019 and included the juniors' results of the complete tests and a breakdown of the multiple sections of the tests.

Data were disaggregated to compare SAT total scores, SAT math scores, and SAT reading and writing scores. The comparison was then completed for PBL versus non-PBL. Similar disaggregation was completed for the ACT. Composite scores were recorded; reading, math, science, and English scores were recorded; and comparisons

were completed.

Results showed that there was a statistically significant difference between the groups pertaining to SAT total scores. The same results were recorded for the math portion and the reading and writing portion. Statistically, the PBL programs had a significant impact on the success of students and their SAT scores. Results for the ACT were quite different. There was no statistically significant difference between the groups regarding ACT composite scores or math, reading, science, or English scores. Though the PBL students had high mean scores on the test results, there was no significant difference. While the results of the study were somewhat mixed, the conclusion was made that the career and college readiness of students has not increased but the student graduation rate has (McKissick, 2021).

A qualitative study was completed that obtained the perceptions of Gen Z regarding 21st century skills and the ability to communicate. Themes that were recorded were that 21st century skills are essential to academics, a person's professional development, and continued personal growth. Of the skills included in the study, listening was considered the most important. The skill of listening was the basis for many of the other skills. It was also stated that two-way feedback was central to developing sound communication skills. These skills allowed for the improvement of mistakes and the ability to overcome obstacles (Brown, 2022).

Twenty-first century skills have also been described as transferable or transversal skills or also cross-functional or cross-cutting skills. The term encompassed a broad range of skill sets and competencies including critical thinking and problem-solving skills, just to name a few. These skills were thought to be imperative at the present time

(Vista, 2020). These skills gained attention in the current and future educational environments. Schools worked to formalize the frameworks for the teaching and learning of these skills (Care et al., 2019). Surveys and data mining were being completed that objectively quantify the value of a particular skill. Results showed what skills were needed currently and what respondents think would be needed in the foreseeable future (Vista, 2020).

Studies have identified the skills that are deemed most useful for certain careers. Taking the concept a step further, skills were identified that were transferable across multiple career paths. The goal of the study was to not only identify current skills needed to be competitive but to remain competitive in the future. For this identification, a metric was created that identified the value of the skill and charted a path from recent graduates to the potential job market (Vista, 2020). Each path began with the current position of the subject, whether it be a recent graduate or transitioning worker. Skills for the transition were identified and ranked by level of importance. Once identified, a matrix was created that identifies skills that are needed and can be transferred between careers.

For the study, three sets of data were used: one for broad data and the other two for parallel analysis. Architecture and engineering occupations were used to provide 70 occupations for comparison. The social sciences occupations provided 16 occupations, and the production occupations provided 96 occupations. With the 12 skills listed in Table 3 and the first analysis of the 70 occupations, 16,848 permutations were identified for the transferability between career paths (Vista, 2020).

Table 3 displays examples of the permutations of transferability between careers and the importance of each of the skills to the career path chosen. Each occupation was

paired with the skills that were pertinent to successfully carrying out the duties of the job. For each occupation, the skills were ranked by their importance on a scale of 1 being "not important," up to 5 being "extremely important." For example, in Table 3, complex problem-solving as a mechatronics engineer had an importance ranking average of 3.62. Should a mechatronics engineer be interested in changing their occupation to an energy engineer, the importance ranking of complex problem-solving in their target career was 3.88, or a difference of -0.26. As the comparisons of skill performance importance ratings were completed, a determination could be made if an individual was suited for the career change based on their current skill set. With the comparison of the weight difference in rankings of importance, an ideal weight for ease of transition would be 0.00 or greater.

Table 4 depicts the top twelve 21st century skills and their description identified by the Identification of Skills for the Future: 21st-Century Skills for the 21st-Century Workforce study. Table 4 was adapted from that study (Vista, 2020). The list is not all-inclusive or relevant to all careers. Based on the occupation, not all will apply.

**Table 4**

*Twenty-First Century Skills With Descriptions*

| Twenty-first century skills | Description |
|---|---|
| Complex problem-solving | Developing options for solutions to complex problems |
| Critical thinking | Use of reasoning in the creation of solutions |
| Flexibility of closure | Ability to find hidden patterns in materials |
| Fluency of ideas | Generating multiple ideas for solving problems |
| Judgment and decision-making | Using risk/reward analysis to successfully solve problems |
| Manual dexterity | The ability to manipulate and assemble quickly using hands |
| Negotiation skills | The ability to aid in reconciliation with others |
| Problem sensitivity | Recognition that a problem exists |
| Selective attention | Concentration on a task for an extended period without disruption |
| Social perceptiveness | Understanding the reactions of others |
| Visualization | Seeing change in something before it takes place. Spatial reasoning. |
| Written expression | Making written or verbal communication easy to understand |

*Note.* Adapted from "Data-Driven Identification of Skills for the Future: 21st-Century Skills for the 21st-Century Workforce," (Vista, 2020).

The National Association of Colleges and Employers (2019) identified seven competencies that define career readiness: critical thinking and problem-solving, oral and written communication, teamwork or collaboration, application of digital technology, leadership, professionalism or work ethic, and career management. While the previously mentioned 21st century skills mirror five of the seven desirable skills for future success, a

suitable means for developing those skills should be in practice (Vista, 2020).

Though being sought after by employers, these identified skills were difficult to measure. Most can only be judged subjectively, intuitively, or subconsciously (Devedzic et al., 2018). No true benchmarks or procedures have been created to measure a student's soft skills. Some metrics have been created that quantitatively measure teamwork skills or collaboration skills, but others are tested qualitatively through observations and judgment. For an accurate measure to be completed, the variables being measured should be concrete with a rating scale that identifies minimal levels of performance and contains specific measures to show an increase in performance (Devedzic et al., 2018).

Since initially collected from the National Association of Colleges and Employers, four attributes have remained in the top spots according to employers. Those include teamwork, leadership, problem-solving, and communication (National Association of Colleges and Employers, 2016). These skills were beginning to be built at a curricular level. Schools were beginning to offer introductory management courses that increase students' abilities to work in teams. These courses helped students work through individual differences, conflict management, perceptions, motivation, project management, and communication (Ritter et al., 2018).

Studies have been done that analyze the impact of a specific learning format, such as a flipped classroom, on students' hard and soft skills. These studies compared a traditional class with active learning techniques such as presentations, debates, and teamwork activities. Pearson correlations were used to measure the relation between students' hard skills, or grades, and such attributes as critical thinking, self-efficacy, and teamwork. Sixty-three students were used as a sample in the experiment. Half were

taught exclusively using a flipped classroom model, while the other half by traditional means. Data were collected concerning teamwork, self-efficacy, and critical thinking. A 25-question survey was given to both groups. Data were recorded at the beginning and end of the course (Betti et al., 2022).

Results showed that critical thinking was impacted by the implementation of a flipped classroom model. There was a 26% increase in student critical thinking abilities after taking part in the study. Self-efficacy was the only soft skill with a correlation to hard skills initially, but the final data show that the correlation was not significant (Betti et al., 2022).

High-stakes tests have the potential to motivate students to perform at a higher level. Adversely, those with limited success can be discouraged from putting forth their best effort. With career and college readiness being the ultimate goal for educators, were the skills needed to meet this milestone being taught? Experts feel that critical thinking should be taught explicitly during instruction. For this to be carried out, it should be embedded into the instruction. Being a fundamental 21st century skill, critical thinking enables and requires students to use higher order thinking skills. Analysis, evaluation, and synthesis allow students to apply the knowledge gained to the real world (DeWitt et al., 2013).

For knowledge to be useful, it must be able to be applied in multiple settings (Conklin, 2012). Deep learning requires students to think critically, taking cognition to a higher level (Higgins, 2014). Halpern (1998) stated that critical thinking was purposeful, reasoned, and goal-directed. Making decisions, formulating inferences, and solving problems required this level of thinking. Hilton (2015) also noted the ability to transfer

knowledge as an imperative skill to be successful in the 21st century.

In preparation for all future endeavors, students should be able to visualize a problem, determine the relevance of the given information, and justify possible solutions (Conklin, 2012). Studies stated that PBL is a more effective instructional model for delivering a rigorous curriculum that is linked to 21st century skills as well as work-based learning. Tasks that engaged students in modeling or constructing arguments aided in the development of a deeper level of thinking. Students draw on previous knowledge and do something meaningful with it. Learning in one context and applying it in another demonstrates 21st century relevance (Hilton, 2015).

As with constructivist learning, students actively participate and learn from their actions (Chuang, 2021). The opportunity to bring forth individual expertise while interacting with other members of a team allows collaboration to continue until a viable solution is found. Most PBLs include real-life contexts and can be used to assess understanding as well as teamwork skills (Knowles et al., 2015). While communication and collaboration are important for student growth, the ability to rely on themselves to recognize problems and challenges while having the wherewithal to create a pathway to success comes from practice at an early age. PBLs are applicable to all levels (Jacobsen, 2019). With 1.4 million secondary public school teachers, the focus and preparation should be on preparation and the creation of lessons including PBL (Martinez, 2022). Teachers should not only teach content but encourage students to be curious learners while promoting lifelong learning (Szabo et al., 2016). This outweighs the ability to score well on a high-stakes test.

**Perceived Value of High-Stakes Tests**

Standardized tests are created and offered for a variety of reasons. Originally created to be an IQ test for determining minimal competency, the goal of the minimum competency test was to maintain competitiveness with China and India. Students were being given the means and skills to compete in the 21st century (Leake, 2019).

Public dissatisfaction with the direction that education was going led to mandates for standardized testing (Madaus & Clarke, 2001). Leake (2019) added that the focus has transitioned from minimal competency to the improvement of curriculum and instruction, achievement gains, increased teacher and student motivation, and equity among at-risk groups. Such examinations can identify and close existent academic achievement gaps between identifiable subgroups (Lee & Reeves, 2012). These tests are still in practice as a standard to judge and compare the output of each school and district (ProCon.org, 2020).

Those in favor of high-stakes tests argued that test results are objective, comparable, and consistent. These facts coincidentally determine the effectiveness of the teacher. Students have a unified measure of their knowledge. Standardized tests provide a similar set of questions that are given under nearly identical testing conditions. Tests are then graded by a machine or blind reviewer. An accurate measure of student knowledge is the ultimate goal (Churchill, 2015).

Churchill (2015) stated that without standardized testing, there was no accurate way to identify poor- or high-performing schools. Standardized tests were the best measure of accountability. Connelley (2019) agreed that the check for the quality of the curriculum was imperative. She stated that with consistent questions, conditions, scoring,

and interpreting, data could accurately and reliably be compared throughout the country. With these constants in place, subjectivity or bias was taken out of the equation (Connelley, 2019). Churchill (2015) agreed that with an objective summative assessment, we could answer the question, “How do students stack up?” Connelley added that education programs must continue to be evaluated. Civil rights leaders stated that they cannot fix what we cannot measure, and abolishing the tests or sabotaging the validity of their results only makes it harder to identify and fix the deep-seated problems in our schools (The Leadership Conference on Civil and Human Rights, 2015).

Cordogan (2015) argued that there are many benefits to standardized tests. Aside from merely determining the mastery of standards, they are an instrument to evaluate students, teachers, and the school. The information gained could identify at-risk students and guide measures to improve the curriculum. There has been an increase in instructional time with a focus on core content; supplemental help has been provided for struggling learners; and teacher collaboration is higher than ever (Grissom et al., 2017).

Curriculum could be narrowed and teacher-centered instruction encouraged. Academic achievement and future potential could also be measured. Without standardized tests, teacher objectivity, bias, and lack of rigor could come into play. Tests were also an evaluation of the effectiveness of teachers and the curriculum. Insight for revision and improvements could be gained (Connelley, 2019).

Gonzalez et al. (2017) stated that all students should have access to the same high-quality education. Standardized tests can offer evidence of and promote academic rigor, which was invaluable in college as well as in students’ careers. Standardized tests could be good indicators of college and job success (ProCon.org, 2020).

For this to happen, data from standardized tests could be used to raise student standards to produce this quality. Gonzalez et al. (2017) also added that it was only fair that students have the same opportunity for an education to meet the minimum or proficiency standards of the state assessments. High-stakes exams were designed to sort, select, and certify students through formally "meritocratic" processes that allocated educational opportunities in an equitable manner (Heubert & Hauser, 1999).

Taking the argument a step further, Lauen and Gaddis (2012) believed it is equally important to determine whether schools are meeting the performance targets. Individual school administrators, school districts, and the state compared teachers using test scores to show how each teacher has helped students master core concepts (Measuring Teacher Effectiveness FAQ, n.d.).

Standardized tests were vital for measuring student, school, and district academic performance while identifying at-risk students. Career and college success might be a more authentic measure, but the data were harder to gather (Cordogan, 2015).

**Opposition to High-Stakes Testing**

Teaching and learning should be connected to student interests and to real-world problem-solving (Soule & Warrick, 2015). Personalized learning and strategies promoting higher order thinking are critical to student success. Schools have created the belief that literacy and numeracy were distinct pieces of information that should be mastered with no focus on teaching students how to use them together or apply them to solving real-world problems (Conley, 2015). Students should be taught the ability to apply or transfer knowledge from one context to another. Jensen et al. (2014) stated that high-stakes tests are less likely to foster critical thinking. High-stakes assessments did not

generate a skill set that ensured postsecondary success (Soule & Warrick, 2015).

Recent reports have shown an increase in those who supported teaching job and career skills. Eighty-two percent believed that a mix of social, personal, and academic strengths was important. Further results stated that only 13% believed that test scores were important and 49% believed that standardized tests could not accurately measure children's education (Ferguson, 2017).

Many aspects were determined to be negative results stemming from high-stakes testing. Of those, the most spoken of were anxiety and stress, poor classroom performance due to focus on test-taking strategies, use of a single data point in decision-making, student demographics and bias in tests, predetermined growth levels, inaccuracy, and lack of student seriousness (Cordogan, 2015). Henry (2007) stated that high-stakes standardized exams have been billed as a panacea for our educational ills. This is a sham and an appallingly bad educational strategy that guarantees poor results, reduced motivation, and legions of graduates without the skills necessary to live a decent and fulfilling life (Au & Gourd, 2013).

A large majority of public education stakeholders failed to see high-stakes state testing as a valid instrument for identifying the quality of a school. Stakeholders also believed that high-stakes testing is not a useful tool in helping students learn. There was a unified hope for school improvement, but state-standardized tests, unfortunately, are not it (Brewer et al., 2014).

Brewer et al. (2014) stated that the validity of the assessments has been tainted by the interpretation of the results. The degree of precision in testing and the power of the assessment have been falsely built up as a tool of accountability.

Teachers have noticed that high-stakes tests have led to students losing self-confidence (Wisdom, 2018). Students worried during testing periods and feared a lower grade point average, poor achievement levels, and social-emotional health (Wisdom, 2018). Teachers have noted students' concerns about test performance and have seen an increase in students' symptoms of anxiety: nausea, flushed skin, headaches, and stomachaches. Wisdom (2018) stated that stress and anxiety could alter a student's performance. High levels of pressure and low self-esteem could be the result.

In North America, an estimated 10 million children were affected by test anxiety. Suggestions have been made that test anxiety was greater in students taking high-stakes tests than those taking conventional classroom tests (von der Embse & Witmer, 2014). According to the Anxiety & Depression Association of America (2016), symptoms of student test anxiety could be physical, behavioral, cognitive, and emotional. Physical symptoms included headaches, stomachaches, rapid breathing, and light-headedness. Lowe (2014) stated that anxiety could impair memory and cognitive functions and could contribute to poor school performance. Between 25% and 40% of students have experienced test anxiety during testing. More recently, the Anxiety & Depression Association of America stated that nearly 20% of students had high or severe test anxiety, while another 16% of students had moderately high test anxiety.

Anxiety can continue into adulthood, causing issues with career decisions and impacting the quality of life. In a study, between 15% and 40% of postsecondary students encountered test anxiety during their educational experiences (Gerwing et al., 2015). Test anxiety has impacted grade point averages and academic and exam outcomes and led to student withdrawal. Fifteen percent to 20% of withdrawals occur during the first 2 years

of college (Connon et al., 2016).

Von der Embse and Hasson (2012) stated that high-stakes testing is used by officials to make decisions regarding students, teachers, and school districts. The main goal of high-stakes testing was teacher accountability which ensured that students were being educated properly and effectively (von der Embse & Hasson, 2012).

High-stakes tests could determine if students gained knowledge, but test results are incomplete. Abilities that many will benefit from later in life were difficult to measure, such as interest in learning and the ability to apply the knowledge learned. Information that was gathered from testing was useful but very limited. Rather than deem a school or teacher unfit, high-stakes tests should identify the reason for the poor performance and decipher how it could be improved (Koretz, 2008).

While the ACT seemed to be an accurate representation of preparedness, the number of students who qualify for free and reduced lunch; the percentage of adults in the area with bachelor's degrees; and the percentage of black, Hispanic, and Native American students enrolled had a definite bearing on assessment outcomes. Performance was based on the specific students who were enrolled in the school, not necessarily the school itself (Cordogan, 2015). A more accurate representation of student learning could be gained by using growth models. Demographic considerations or whether students have taken the tests seriously were never factored into the results (Cordogan, 2015). The ACT reported that only 25% of students who graduated high school are ready for college. In actuality, 65% of students who met ACT benchmarks persisted to a second year of college with better than a C+ average (Cordogan, 2015).

Grissom et al. (2017) attributed unethical practices as the greatest deterrent to

high-stakes tests. His term “gaming the system” included multiple possible negative paths that were taken. He mentioned teacher assignment as a common sleight of hand. Assigning inadequate teachers to non-tested subjects/grade levels was an occurrence that happened often. When teachers with lackluster performance were moved to untested grade levels, students missed out on foundational teaching and learning that impacted them once their grade level was tested. Students needed information early to be successful later.

Low-achieving students were more likely to be issued harsher punishments or to be suspended during testing windows. Students who were not present during the testing window did not have an adverse effect on the testing data (Grissom et al., 2017). Students who were historically low performing also found themselves being reclassified to special education. Finally, and most disturbing, the worst possible act was teachers who took it upon themselves to alter responses whether by physically changing answers or by aiding in students choosing (Grissom et al., 2017). An estimated 4% of teachers have cheated on state exams in Chicago Public Schools by manipulating students’ answer choices. These disturbing findings were based on pressures created by the accountability measures that were in place (Jacob & Levitt, 2003).

Brewer et al. (2014) stated that it has been determined that states have set unequal target standards. The levels of interpretation of results have made achievement fidelity nearly impossible. Interpretation and accountability have created teaching to the test rather than teaching the standards that challenged students’ potential and abilities to perform at high levels (Brewer et al., 2014).

**Summary**

Previous research has been done to create a pathway explaining the relevance of multiple educational topics. Individually, much has been stated about the significance and historical role of each in education, but little has been said about the connection each has with the other. This review of literature sought to tie constructivist learning theory with high-stakes testing and the perceived impact on a student's career and college readiness.

For more than 5 decades, standardized or high-stakes testing has been present as a measure of many different educational benchmarks. Initially used as a tool to determine minimal competency, many are now used to determine educational proficiency as well as predicted career and college success (Hughes et al., 2019).

In 1969, Congress established NAEP to measure what students were being taught but more so what students were learning in school. Known as the Nation's Report Card, its key responsibility was to create an assessment that would be accurate and meaningful in measuring student achievement (Hughes et al., 2019).

Standardized or high-stakes tests were administered to measure higher order thinking skills, key content knowledge, learning skills, persistence, and meta-cognition (Camara, 2013). Students were being groomed to compete in the 21st century. Testing, and the accountability that came with it, was no longer used for minimal competency but allowed for the improvement of curriculum and instruction and the promotion of equity. High-stakes tests were a means to sort and certify students based on their merits (Heubert & Hauser, 1999). This system allowed for the allocation of educational opportunities in an equitable manner. Academic rigor could be measured and insured, creating good indicators of college and job success (ProCon.org, 2020). Gains in achievement increased

the motivation of teachers as well as students.

The ACT created similar tests to the NAEP. ACT's Aspire tests were aligned with states' college and career standards. Like the NAEP, the ACT tests were administered at varying times throughout a student's education. The ACT Aspire was offered in Grade 8 and again in Grade 10, and the ACT prior to graduation (Rains, 2014). All ACT exams tracked progress toward meeting the ACT's college readiness benchmarks in English, math, reading, and science. For high school students, ACT WorkKeys was implemented for students planning to enter the workforce directly after graduation. Students have the ability to determine interests and job skills while gaining certifications that show potential employers the students' strengths and capabilities (Rains, 2014). Forty-six states used some form of state standards as well as career and college readiness standards.

The initial focus of state standards, and all things included, was on "back to basics" skills. Soon, "standards" became the measuring stick. By the time reports such as *A Nation at Risk* were published, pedagogy, assessment, and professional development were under the microscope. From the decade of the 1990s until the turn of the century, new terms were being used in education: reasoning, connections, and communication, to name a few. Problem-solving and conceptual understanding became more important than rote memorization and basic knowledge. Procedural knowledge became a frontrunner in the gauge of one's ability to succeed.

Constructivist learning theory is based on active learning based on one's personal experiences. Vygotsky stated that a teacher does not simply pass along knowledge; the student uses guidance to create their own knowledge. Learners needed to engage in their surroundings, so they were actively involved in their learning. To learn, one needs to

engage in discussions, reading, and activities, not just sit and expect to be told what is perceived to be important. Cognitive development begins with an understanding or assimilation. The accommodation phase is the ability for one to adjust their understanding based on their environment. Developmental processes, motivation, interests, aspirations, socioeconomic status, and support systems greatly influence one's ability to be college and career ready. Though skills can be impacted by one's environment, students need to be equipped with knowledge, skills, and dispositions to be critical thinkers and problem solvers (DiBenedetto & Myers, 2016).

Previous experiences create an individual's learning process. Learners must be reflective; create understanding through experiential and hands-on learning; and grow through interaction, team approach, and problem-solving. For students to have a positive learning experience, verbal transfer and listening are imperative (Brown, 2022). From there, problem-solving skills and reliance on oneself are paramount. PBL is one of the best examples of a constructivist learning environment. Most PBLs require self-inquiry and reflection.

By 2009, concerns once again arose about students' abilities to compete internationally. A perceived need for technological and analytical thinking skills brought about Common Core and college and career ready standards (Hughes et al., 2019). Common Core standards included problem-solving, perseverance, reasoning, constructing arguments, and critiquing the reasoning of others. Students were expected to create deeper learning using real-life situations. By the end of the decade, most states had adopted college and career standards (Hughes et al., 2019).

With the passage of ESSA in 2015, schools began to focus on different indicators

for accountability: academic achievement, graduation rate, English language proficiency, and school quality or school success. The relevance of assessments became clearer to parents and students when postsecondary opportunities were available. Assessments should be used to gauge students' necessary performance for life after graduation. If the level of achievement progression is not yet favorable, schools had the opportunity and the obligation to offer guidance and support to improve student progress (Achieve, Inc., 2019).

Previously, assessments were created that measured student content knowledge in an individualized manner. Recognizing that this is not an ideal or accurate representation of a student's potential, states began to create assessments that used multiple approaches with the goal of receiving a more detailed record of student learning (Conley, 2015).

The Partnership for the Assessment of Readiness for College and Careers and the Smarter Balanced Assessment Consortium worked to create an assessment that mirrored the Common Core standards for the early grades (3-8) and added performance tasks for high school students. While the intent was to produce a more complex assessment, meeting Common Core's requirements was a missed opportunity. Though improved, the breadth of the assessment was not sufficient (Conley, 2015).

Many research and pilot projects have been done to determine the true potential for success through performance task-based assessments. The basis was to create a system where students could demonstrate multiple levels of proficiency including research, interpretation, communication, and accuracy throughout an assigned task (Conley, 2015). The New York Performance Standards Consortium used performance tasks as a school-based assessment. As a part of their requirement, students presented

their work to not only students and teachers but also to local experts from the community (Knecht, 2007).

New Hampshire teamed up with the Center for Collaborative Education and the National Center for the Improvement of Educational Development to develop the Performance Assessment for Competency Education. This assessment was designed specifically to measure college and career competencies (Conley, 2015). Colorado, Kansas, and Mississippi created a similar assessment along with the University of Kansas called the Career Pathways Assessment System to measure high school students' readiness to enter college or the workforce. Real-world situations are the basis for measuring knowledge and skills for specific career pathways (Conley, 2015).

Envision Schools, a charter school in San Francisco, created a project-centered assessment as a culmination of their semester. Students completed a project throughout their coursework, and their presentations were formally reviewed by teachers and peers. These projects were open-ended and challenged students to complete lengthy, multi-step activities. Being a semester-long project, these projects were very complex and required lots of time and resources (Conley, 2015).

Finally, the Summit Charter Network of schools required students to complete a project that included a digital portfolio of their work that provided evidence of the content knowledge, how to efficiently apply the knowledge in real-world applications, and the development of the skills associated with career and college readiness (Conley, 2015).

To create an accurate method to assess both basic skills and the ability to succeed in the postsecondary world, there may be a need for a system of multiple assessments.

This system could be treated as a student's portfolio to determine where they are presently, how much progression has been made, and what strides must take place for them to be career and college ready (Conley, 2015). Such a system could eliminate the need for yearly multiple-choice exams and produce a living set of documents that paints an accurate picture of a student's performance and abilities. No longer would there be a need for a single piece of data that determines student proficiency or an adequate year's growth (Conley, 2015).

# Chapter 3: Methodology

## Introduction

To be college and career ready, students should possess certain 21st century skills in order to succeed in the professional world and to proceed in postsecondary education. Such skills include problem-solving, critical thinking, fluency of ideas, decision-making ability, visualization, and sound written expression. Schools should incorporate these skills into learning and instruction. While continuing the present path, questions have arisen: Were students obtaining the skills that were needed to be successful in college or the workforce; were students being assessed on their abilities to collaborate; and was it possible to be tested on the ability to think critically?

The purpose of this study was to determine whether North Carolina high-stakes testing promotes college and career readiness. This research sought to determine how high-stakes testing impacted soft skills such as work ethic, adaptability, active listening, or growth mindset. The aforementioned soft skills were said to be determining factors in the success of students moving into the workforce or postsecondary education.

## Research Design

This study was conducted using a mixed methodology, including both quantitative and qualitative methods for collecting data. The combination of both methods provides more meaningful data for pending decisions (Davis, 2007). Creswell (2015) stated that mixed methodology studies were a way to gather quantitative or closed data and qualitative or open data. Both combined strengths to better understand research problems. In the late 1960s, the formative period of mixed methods research began. Researchers began to use quantitative surveys in conjunction with interviews to answer

research questions. In the late 1970s, the paradigm debate period began. Questions arose if quantitative and qualitative methods should be paired together. By the 1990s, procedural developments began to generate and adopt multiple types of mixed methods approaches. Presently, the possibilities and recognition of mixed methodologies have blossomed to become well-noted in research journals.

Creswell (2015) explained the three most used designs of mixed methods research. Convergent design is the collection of quantitative and qualitative data in unison. When the sets of data were analyzed, the data were compared. The explanatory sequential design collects the quantitative data first. Qualitative collection through interviews or focus groups follow. The purpose of the qualitative portion was to help better explain the quantitative results. An exploratory mixed methods design collects qualitative data first and then creates a survey based on the analysis. Though an unusual design method, exploratory is used to learn more about the population or the subject being studied. With advanced knowledge, a larger sample can be studied.

This study included an explanatory sequential mixed methodology study that collects quantitative data through a survey (Appendix A) from participants first and then is followed by an interview (Appendix B) to collect qualitative data. The qualitative data helped to explain results in more depth. Participants were students recently joining a postsecondary education program and recently graduating from a traditional high school. Data collected were presented as a determinant of participant perceptions of their history with high-stakes testing and the perceived impact of testing on their preparedness for college and the career that follows.

Quantitative studies are generally based on an assumption the researcher has.

Quantitative studies focus on “how much” or “how many.” The results are displayed in numerical forms and are analyzed using statistical techniques. These studies are used to test a hypothesis and are based on validity, reliability, generalization, and replication (Davis, 2007). Experimental approaches look for the cause of an event that has happened and can be used to make predictions of future happenings. For efficiency and time constraints, quantitative is the best choice. Anonymity and interaction limitations aid in efficiency. Large numbers of participants can be included, but the time and human interaction can be limited. Ideally, quantitative studies require high numbers of participants. For this study, I hoped to receive data from 50 willing participants. In actuality, I was able to collect data from only 35. I understand that time constraints of students and a possible unwillingness to volunteer for a study impacted these numbers.

The qualitative portion was used as a follow-up to the initial questioning for clarification and elaboration. Qualitative studies are used to understand how people interpret experiences. Several approaches from as early as the 1920s dealt with qualitative research. Anthropology and sociology were two of the earliest, while journalism, education, medicine, and law, to name a few, followed suit. Social contexts are the target of people’s experiences through qualitative research. Multiple methodologies have also been introduced over time. Glaser and Strauss (1965) were credited with grounded theory (Chun Tie et al., 2019), while Egon Guba introduced a naturalistic approach where studies took place outside of a laboratory and in the real world (Guba & Lincoln, 1982). A study’s purpose drives the choice of the inquiry and analysis methods used.

Four philosophical orientations made up the majority of qualitative research

studies but can also be a hybrid of or intersecting throughout the same study. Positivist or postpositivist studies begin with a hypothesis. Initially, interventions are created and put in place. During the intervention cycles, data are recorded and compiled with post-intervention results. Interpretive studies record data from the experiences or perspectives of the subjects being studied. These studies can be used to discover differing opinions of subjects based on their individual experiences. These studies can be completed through observations or interviews.

Qualitative studies are deemed critical when the investigation or analysis is based on socioeconomic, cultural, or political problems. The desired outcome of these studies is to take action to create attention to and address the problem. Finally, postmodern or poststructural studies present questions or disruptions. Findings are presented in the form of field notes, narratives, or other creative manners.

Interviews help the researcher to understand experiences of the subject and the factors that differentiate them. Interviews are a qualitative data collection strategy where the researcher asks well-chosen open-ended questions followed by probing questions for clarification. Choosing an interview type should be based on how well the data addresses your research questions. Options for interviews can be based on the structure of the questioning or the philosophical orientation. Focus group interviews are a popular option but eliminate anonymity. Finally, there is the option of an online interview.

Structured interviews ask questions in the same order with no variation in wording. No probing is done, just recording the responses that are given and accepting them as the final word. Semi-structured interviews have minimal flexibility. Exact wording or order is not the standard.

Philosophical interviews are delivered by asking good questions that minimize bias. These interviews produce the highest quality of data and valid findings. The elimination of perceived bias allows the participants to be candid and open with their responses.

Focus groups allow like-minded individuals to gather and provide insight into questions. Collection of data is also done in the group setting but can be difficult if multiple participants share information simultaneously. Marketing data collection is a popular choice for a focus group; personal or sensitive topics are not.

The most user-friendly option is the online interview. Many reasons make this a popular option. Geographic restraints can be eliminated; literally, anyone from around the world can be interviewed without issue. Online videos can be recorded for review while data collection and analysis are being completed. A synchronous interview will allow for rapport similar to face-to-face interviews to be built between the participant and researcher. Recognizing genuine interest and a lack of bias will encourage the participant to provide genuine feedback.

Being a skilled interviewer does not come naturally. Body language and verbal cues can send messages to participants that make them unwilling to be forthcoming with information. Observing experienced interviewers and practicing the craft are important to becoming a skilled interviewer.

A drawback to a qualitative study is typically a long written explanation of the results gathered. Why are things the way they are? Flexible but relevant variables are not known initially. These are derived from data analysis. Words are used to display findings once the analysis can be done.

Analysis can be displayed in several ways. The advantages of interviews are to expand understanding, clarify and summarize, or explore unanticipated responses. Possible limitations would be the subjection to biases that impact the study. Those must be identified and monitored. With qualitative analysis, words and pictures can be used as themes or categories. Quotes, field notes, and videotapes all support the findings.

Questions for the interview portion of the study were created based on the answers given in the survey portion. Qualitative research focused on the big picture or explanation of results. Follow-up responses added context and clarification to the data collected. The "why" and "how" could be answered. Common themes were created, and a voice was given to the participants. With the follow-up, a rapport was built with the chosen participants.

The final decision was how structured the interview would be. Would the same questions be asked in the same order, or would questions be asked and explained with no exact wording or predetermined order?

For this study, interviews were completed online through computer-mediated communication in real-time. Those synchronous interviews were completed via Zoom, Google Meets, etc. These meetings allowed for building rapport, being neutral, and being caring and respectful. Patton (2003) described six types of good questions, including experience and behavior, opinions and values, feelings, knowledge, sensory, and background and demographics. All questions should avoid leading or yes or no answers. All studies should determine what the motive or intention is, protect the participants with pseudonyms, and explain the logistics of the study.

This study is guided by the following research questions:

1. What impact does high-stakes testing have on career and college readiness?
2. How do high-stakes tests promote or improve 21st century skills?
3. Which 21st century skills are impacted by high-stakes testing?

**Setting and Participants**

A local 4-year College and a Community College comprise the setting of this study. Both institutions were in proximity and provided the participants needed for the study. These students have all been impacted by high-stakes testing, making them an appropriate study group for examining the impact of high-stakes testing on career and college readiness.

The 4-year College is centrally located in North Carolina, just 45 minutes from the greater Charlotte area. Founded by the Church of Christ in 1851, it has grown to average 1,300 students, offering 70 academic majors. The student body is 60% White and 22% Black, while being evenly split male to female. Thirty-four states and 19 countries are currently represented on the campus.

The Community College, founded in 1963, has grown into three campuses in central North Carolina. It now offers 40 areas of study including diploma avenues, certifications, basic skills programs, and transfer programs to institutions of higher learning. Students were made up of 59% White, 19% Black, and 13% Hispanic. Females outnumbered male students 61% to 39%.

In order to gain access to participants at the college level, my central office mentor/contact and former professor at the 4-year college connected me with the proper administration at the college. Through the registrar's office, freshman English classes and students were chosen to ask for their willingness to participate. At the community college

level, my high school's Career and College Promise liaison aided in connecting me with study participants through their entry-level English classes.

The initial step was to determine participants to use for data collection. Students entering college as freshmen are required to enroll in an English 111 class or an equivalent. This requirement eliminated the possibility of collection bias based on the program of study. Prospective participants were asked to voluntarily participate in the study. With the invitation to participate, a Form of Consent, approved by the Institutional Review Board, was included. As the researcher in this study, I coordinated with each of the participating schools (Appendices C and D) and completed the distribution of materials needed. Survey links and information were emailed to each potential participant through the registrar's office and English department (Appendix E).

**Data Collection**

Participants were asked to complete a series of questions in the form of a survey. These questions were written based on the ideas developed during the literature review. The survey questions were presented in a Likert style, with a 4-point answer range of strongly disagree, disagree, agree, and strongly agree. With only four choices, the ability to seem undecided or unaffected was eliminated. An opinion was noted either positively or negatively. Participants for the survey portion remained anonymous.

As an additional task, at the conclusion of the survey, students were asked to participate in a follow-up interview. Follow-up interview questions were created based on the answers received from the survey and an analysis of the data. A series of questions were created for the interviews. Participants shared the data and were asked why they think the responses were given. Possible questions were similar to, "How would you say

that high-stakes testing made you a better student," "In your opinion, what would be a better representation to measure knowledge gained in a class or subject," or "How do you feel that high-stakes tests have improved your ability to think critically?"

Interviews were performed via Zoom to eliminate scheduling conflicts or geographical constraints. Participants were interviewed on their schedules and in their chosen locations. The idea was to make the interviewees as comfortable as possible and encourage them to be as open and honest as possible. With Zoom, the interviews were recorded for future review. Completed interview questions and their responses were included in the recommendations for Chapter 5.

At the point that a participant agrees to take part in the interview, the anonymity changes to confidentiality. The responses were connected to the participant and known by me, but when displayed, the identification remained confidential, and the subject was assigned a pseudonym for identification.

**Validation**

Validation of the collection instrument was completed to ensure that the intended topic is being measured. The three most commonly used validity tests are content validity, criterion validity, and construct validity. Content validity is created using the assistance of a content expert. Construct validity is used when underlying behaviors need to be correlated. Criterion validity is used when one seeks to find if other criteria are systematically related or influence the test taker. Concurrent criterion validity tests consistency at the present time. Predictive tests for future consistency. The reliability of the test or determining that the tool is measuring consistently is also important.

The quantitative portion of the study was carried out by a survey consisting of 13

questions following a preliminary questionnaire recording gender, years since graduation, and the confirmation that the participant was indeed asked to participate in the study. Creation of the survey and question validation was done through QualtricsXM. Questions were created based on data collected throughout the literature review. As a topic surfaced that was relevant to answering one or more of the research questions, a survey question was created.

Table 5 displays the research questions used in this study as well as the survey statements. Based on students' responses to the Likert-type scale, question significance was determined.

**Table 5**

*Alignment of Research Questions and Survey Questions*

| Research questions | Survey statements |
|---|---|
| 1. What impact does high-stakes testing have on career and college readiness? | My school system focused on teaching the material/standards. |
| | Emphasis was placed on being our best. |
| | High-stakes tests (End of Grade/End of Course/SAT/ACT) were rarely mentioned. |
| | High-stakes testing (EOG/EOC/SAT/ACT) days were the most stressful days of my entire school year. |
| | I have felt physically sick during high-stakes testing (EOG/EOC/SAT/ACT) days. |
| 2. How do high-stakes tests promote or improve 21st century skills? | Having high-stakes tests (EOG/EOC/SAT/ACT) made me a stronger student with the drive to succeed. |
| | We (our class) would spend days preparing (test-taking strategies, practice problems, etc.) for high-stakes tests (EOG/EOC/SAT/ACT). |
| | I would have never been prepared for college if not for high-stakes testing (EOG/EOC/SAT/ACT). |
| | I suffer from testing anxieties. |
| 3. Which 21st century skills are impacted by high-stakes testing? | High-stakes testing (EOG/EOC/SAT/ACT) pressures made me a better student. |
| | I thrive on the idea that a high-stakes test (EOG/EOC/SAT/ACT) can determine my promotion, retention, or educational future. |
| | High-stakes testing struggles will only make you stronger. |
| | With the pressures of high-stakes testing, I feel that I am prepared to handle anything. |

Follow-up interviews were conducted through a computer-mediated communication tool. The choice for this interview was Zoom. Synchronous, or real-time interviews were carried out such that participants could answer candidly and probing or clarifying questions could be asked. The ability to speak in real time allowed for a rapport to be built and maintained with the participant. As a researcher, neutrality, caring, and respect can be translated. To be fair to the interviewee, the motive and intention of the interview were shared, and their protection and confidentiality were a priority. A bonus to video recording was the ability to review responses and the nuances presented by the respondent. The interview responses were filtered in search of common themes. From these themes, the research questions were answered.

**Follow-Up Interview Questions**

Questions used for the follow-up interview were written based on the analysis of survey data (Appendix B). Table 6 shows the alignment of the possible follow-up questions and the research questions. Questions were created to clarify answers that were given during the survey portion of the study. Patton (2003) suggested that questions asked should be meaningful, but it is important to move things along to avoid stagnancies in time.

**Table 6**

*Alignment of Research Questions and Hypothetical Follow-Up Interview Questions*

| Research question | Interview question |
|---|---|
| 1. What impact does high-stakes testing have on career and college readiness? | How do you describe the amount of time spent on test preparation?<br><br>How much time would you say was devoted to high-stakes test preparation?<br><br>Describe why you think that your school encouraged you to perform well or created an unreasonable amount of pressure.<br><br>What do you feel is the overall purpose of high-stakes testing?<br><br>How would you say that high-stakes testing made you a better student?<br><br>How do you feel about a single test score being an accurate or fair representation/gauge of your success or learning in a particular class?<br><br>What do you think would be a better representation to measure knowledge gained in a class or subject? |
| 2. How do high-stakes tests promote or improve 21st century skills? | How would you say that high-stakes tests prepared you for postsecondary life (college or career)?<br><br>How would you say that high-stakes tests have improved your problem-solving ability?<br><br>Do you feel that high-stakes tests have improved your ability to think critically? |
| 3. Which 21st century skills are impacted by high-stakes testing? | Rank skills that you feel are impacted by high-stakes tests; 1 being most impacted, 5 being least impacted.<br><br>(judgment and decision-making, negotiation skills, critical thinking, fluency of ideas, complex problem-solving.) |

Survey responses provided important data for the study, but at times, clarification and elaboration were needed. Table 6 includes a listing of hypothetical probing questions that would be created following the analysis of the data and which research questions they were trying to answer.

**Data Analysis**

Chi-squares were used to determine if the observed frequencies were what was expected to happen. QualtricsXM provided the mean, mode, and standard deviation which was reported along with a frequency distribution. Table 7 is an example of chi-square goodness of fit. Data that are included in the example are completely hypothetical.

**Table 7**

*Hypothetical Example of a Chi$^2$*

| My school system focused on teaching the material/standards. (Hypothetical example) | | | | | |
|---|---|---|---|---|---|
| Category | Observed | Expected | Difference | Difference$^2$ | Difference$^2$ / Expected frequency |
| Strongly Agree | 13 | 5 | 8 | 64 | 12.80 |
| Agree | 2 | 5 | -3 | 9 | 1.80 |
| Disagree | 4 | 5 | -1 | 1 | 0.20 |
| Strongly Disagree | 1 | 5 | -4 | 16 | 3.20 |
| Chi$^2$ value | | | | | 18 |

*Note.* The *p* value is .00044. The result is significant at $p < .05$.

Table 7 is a hypothetical example of a chi-square goodness of fit table. Based on the data imported, the question presented during the survey was significant to the study.

**Qualitative Results: Categories of Themes**

The goal of the data analysis was to find answers to the research questions that were identified in the problem statement. While analyzing qualitative data, words or descriptions were used in the comparison. These words or descriptions are called

categories or themes. As the analysis reaches its conclusion, regularities are identified. These regularities are assigned to the aforementioned themes. This type of grouping is known as axial or analytical coding.

As the themes were identified and the data were crunched to fit into a category, the themes began to align with the research questions. As this alignment took place, a relevant explanation began to form. Qualitative data can be manipulated to fit most situations since the data are not clear-cut and more based on participant opinions or personal experiences.

**Summary**

For a student to be considered ready to enter postsecondary education or the career field, it is said that one should possess 21st century skills. Desired skills include complex problem-solving, critical thinking, fluency of ideas, an ability to make sound decisions, and appropriate communication skills. Questions have arisen if these skills were being presented to students or if unneeded focus has been placed on high-stakes test scores. This study focused on whether high-stakes testing promotes college and career readiness through the promotion of the previously mentioned skills.

Using an explanatory sequential mixed methodology approach, students were surveyed with the potential of a follow-up interview to clarify and expand upon the data collected. The students who participated in the study were public school graduates entering a postsecondary educational program. To eliminate the potential for bias, students were chosen from their entry-level English class which was required of all students regardless of course or career aspirations.

Students were surveyed to determine their thoughts on high-stakes tests

historically and how their schools handled and promoted the tests. After the quantitative data were collected, students were asked to participate in a follow-up interview. The quantitative data were analyzed through QualtricsXM using chi-squares or goodness of fit diagrams. Qualitative data were displayed through the identification of common themes.

Finally, the data were used to answer the following research questions:

1. What impact does high-stakes testing have on career and college readiness?
2. How do high-stakes tests promote or improve 21st century skills?
3. Which 21st century skills are impacted by high-stakes testing?

# Chapter 4: Results

## Introduction

To be college and career ready, students should possess certain 21st century skills in order to succeed in the professional world and to proceed in postsecondary education. Such skills include problem-solving, critical thinking, fluency of ideas, decision-making ability, visualization, and sound written expression. Schools should incorporate these skills into learning and instruction. While continuing the present path, questions arise: Are students obtaining the skills that are needed to be successful in college or the workforce; are students being assessed on their abilities to collaborate; and is it possible to be tested on the ability to think critically?

The purpose of this study was to determine whether North Carolina high-stakes testing promotes college and career readiness. This research sought to determine how high-stakes testing impacts soft skills such as work ethic, adaptability, active listening, or growth mindset. The aforementioned soft skills are said to be determining factors in the success of students moving into the workforce or postsecondary education.

The survey was intended to record the opinions of high-stakes testing from those who have been most recently tested. Participants of this study had recently enrolled in a postsecondary program of study. With English 111 or the equivalent being a requirement for all, these were the students who took part in the study. With this universal requirement, no bias could be identified regarding participant selection.

Following the survey portion of the study, participants were offered the opportunity to participate in an interview. The questions for the interview were derived from responses received during the survey process. Interview questions were created for

clarification as well as elaboration on opinions shared.

**Study Participant Demographics**

The introductory phase of the survey included demographic questions where gender identification was one of the questions: male, female, non-binary or third gender, or prefer not to say. Rather than ask the age of the participants, it was decided to record the number of years since graduation from high school. Ranges in years included 1 to 5 years, 6 to 10 years, 11 to 15 years, and more than 16 years.

**Graduation Data**

Table 8 displays the years since the participants graduated from their high school prior to continuing with their postsecondary education.

**Table 8**

*Study Participants' Number of Years Since Graduating High School*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | 1-5 Years | 90.63 | 29 |
| 2 | 6-10 Years | 3.13 | 1 |
| 3 | 11-15 Years | 6.25 | 2 |
| 4 | More than 16 years | 0 | 0 |
| | Total | 100 | 32 |

Of the 32 participants, 29, or 90.63%, graduated between 1 and 5 years ago. Three, or 9.38%, graduated more than 5 years ago.

**Gender Data**

The gender data of the participants are displayed in Table 9.

**Table 9**

*Study Participants' Gender Identification*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | M | 38.89 | 14 |
| 2 | F | 55.56 | 20 |
| 3 | Non-Binary/third gender | 5.56 | 2 |
| 4 | Prefer not to say | 0 | 0 |
| | Total | | 36 |

Of the 36 participants, 14, or 38.89%, were male, while 20, or 55.56%, were female. Two, or 5.56%, identified as non-binary or third gender. None of the participants preferred not to disclose their gender.

**Results for the Quantitative Phase of the Study**

Survey results were gathered from the following statements using a Likert-type ranking scale:

1. My school system focused on teaching the material/standards.
2. Emphasis was placed on being our best.
3. High-stakes tests (End of Grade/End of Course/SAT/ACT) were rarely mentioned.
4. High-stakes testing (EOG/EOC/SAT/ACT) days were the most stressful days of my entire school year.
5. I have felt physically sick during high-stakes testing (EOG/EOC/SAT/ACT) days.
6. Having high-stakes tests (EOG/EOC/SAT/ACT) made me a stronger student with the drive to succeed.
7. We (our class) would spend days preparing (test-taking strategies, practice

problems, etc.) for high-stakes tests (EOG/EOC/SAT/ACT).

8. I would have never been prepared for college if not for high-stakes testing (EOG/EOC/SAT/ACT).
9. I suffer from testing anxieties.
10. High-stakes testing (EOG/EOC/SAT/ACT) pressures made me a better student.
11. I thrive on the idea that a high-stakes test (EOG/EOC/SAT/ACT) can determine my promotion, retention, or educational future.
12. High-stakes testing struggles will only make you stronger.
13. With the pressures of high-stakes testing, I feel that I am prepared to handle anything.

**Summary of Research Question 1: What impact does high-stakes testing have on career and college preparedness?**

***Data Tables With Narrative***

Table 10 displays the data from the survey question, including all participants, stating whether their respective school systems focused on teaching the material and the standards.

**Table 10**

*Student Opinions on School Systems' Area of Focus*

| My school system focused on teaching the material/standards. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 9.68% | 3 |
| 2 | Disagree | 6.45% | 2 |
| 3 | Agree | 58.6% | 18 |
| 4 | Strongly agree | 25.81 | 8 |
| | Total | 100 | 31 |

An overwhelming majority believe that their school systems were engaged in teaching and not test preparedness. Twenty-six, or 84.41%, collectively agree that their school system focused on the standards; 25.81% of those strongly agree with the statement.

Table 11 displays the results of the survey statement recalling whether the schools motivated students to do their best during testing.

**Table 11**

*Student Perceptions of Motivation*

| Emphasis was placed on being our best. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 6.67 | 2 |
| 2 | Disagree | 10 | 3 |
| 3 | Agree | 60 | 18 |
| 4 | Strongly agree | 23.33 | 7 |
| | Total | 100 | 30 |

Once again, the majority, 83.33%, agreed that the school system's intent was that students performed at their highest level, no matter the outcome.

Table 12 provides insight into whether schools allow students to focus on content without stressing constantly about high-stakes tests.

**Table 12**

*Student Experiences of Testing Pressures*

| High-stakes tests (end of grade/end of course/SAT/ACT) were rarely mentioned. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 32.14 | 9 |
| 2 | Disagree | 17.86 | 5 |
| 3 | Agree | 39.29 | 11 |
| 4 | Strongly agree | 10.71 | 3 |
| | Total | 100 | 28 |

At an even split, half of the participants felt that high-stakes tests were at the very least a constant topic of conversation.

Table 13 reflects the participants' dread or fear of test days.

**Table 13**

*Student Feelings of Stress on Testing Days*

| High-stakes testing (EOG/EOC/SAT/ACT) days were the most stressful days of my entire school year. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 7.69 | 2 |
| 2 | Disagree | 19.23 | 5 |
| 3 | Agree | 34.62 | 9 |
| 4 | Strongly agree | 38.46 | 10 |
| | Total | 100 | 26 |

Student responses show disdain for the effects of high-stakes test periods; 73.08% felt the stress and pressures that came with testing sessions.

Table 14 represents the students' feelings of pressure and the physical issues that were caused by the stress.

**Table 14**

*Student Affects From Testing Anxiety*

| I have felt physically sick during high-stakes testing (EOG/EOC/SAT/ACT) days. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 7.69 | 2 |
| 2 | Disagree | 38.46 | 10 |
| 3 | Agree | 30.77 | 8 |
| 4 | Strongly agree | 23.08 | 6 |
| | Total | 100 | 26 |

Many students became physically ill at the thought of testing. Just over half of the participants, or 53.85%, indicated physical sickness on test day.

**Summary of Research Question 2: How do high-stakes tests promote or improve 21st century skills?**

***Data Tables With Narrative***

Table 15 displays the opinions students have of the testing pressures related to performance.

**Table 15**

*Student Perceptions of Testing Benefits*

| Having high-stakes tests (EOG/EOC/SAT/ACT) made me a stronger student with the drive to succeed. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 19.23 | 5 |
| 2 | Disagree | 42.31 | 11 |
| 3 | Agree | 34.62 | 9 |
| 4 | Strongly agree | 3.85 | 1 |
| | Total | 100 | 26 |

Less than half felt the challenges of testing made them better students, while 61.54% would disagree, indicating that high-stakes tests did not make them stronger students or increase their drive to succeed.

Table 16 explains the amount of time students would spend focusing on testing strategies and practice problems.

**Table 16**

*Historical Experience With Preparation*

| We (our class) would spend days preparing (test-taking strategies, practice problems, etc.) for high-stakes tests (EOG/EOC/SAT/ACT). | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 7.69 | 2 |
| 2 | Disagree | 19.23 | 5 |
| 3 | Agree | 65.38 | 17 |
| 4 | Strongly agree | 7.69 | 2 |
| | Total | 100 | 26 |

Students believe time was not used efficiently teaching critical content, with 73.07% agreeing that extended time was spent focusing on test-taking strategies and tips rather than on critical content.

Table 17 is a representation of the opinion that testing and everything that goes along with it prepare students for postsecondary education.

**Table 17**

*Student Opinions of College Readiness Due to Testing*

| I would have never been prepared for college if not for high-stakes testing (EOG/EOC/SAT/ACT) | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 26.92 | 7 |
| 2 | Disagree | 46.15 | 12 |
| 3 | Agree | 23.08 | 6 |
| 4 | Strongly agree | 3.85 | 1 |
| | Total | 100 | 26 |

A significant majority, 73.07%, disagree that high-stakes tests alone prepared them for college.

Table 18 is a display of the participants who struggle with testing anxiety.

**Table 18**

*Student Recognition of Testing Anxiety*

| I suffer from testing anxieties. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 0 | 0 |
| 2 | Disagree | 50 | 13 |
| 3 | Agree | 23.08 | 6 |
| 4 | Strongly agree | 26.92 | 7 |
| | Total | 100 | 26 |

Half of the participants, or 50%, have, at some point, felt anxiety and the symptoms associated with it during testing sessions.

**Summary of Research Question 3: Which 21st century skills are impacted by high-stakes testing?**

***Data Tables With Narrative***

Table 19 presents the percentage of students who feel pressure is a driving force in their success.

**Table 19**

*Student Perceptions of Testing Pressures*

| High-stakes testing (EOG/EOC/SAT/ACT) pressures made me a better student. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 23.08 | 6 |
| 2 | Disagree | 42.31 | 11 |
| 3 | Agree | 26.92 | 7 |
| 4 | Strongly agree | 7.69 | 2 |
| | Total | 100 | 26 |

Not all participants felt that pressure was a bad thing, but 65.39% do not agree with the fact that the pressure made them better students.

Table 20 represents the participants who appreciated the control they had over

their success in the form of promotion and their educational future.

**Table 20**

*Student Perceptions of Determinations From Test Results*

| I thrive on the idea that a high-stakes test (EOG/EOC/SAT/ACT) can determine my promotion, retention, or educational future. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 34.62 | 9 |
| 2 | Disagree | 34.62 | 9 |
| 3 | Agree | 26.92 | 7 |
| 4 | Strongly agree | 3.85 | 1 |
| | Total | 100 | 26 |

Nearly 70% of the participants do not like the idea that a single test can determine promotion and retention or dictate their educational future.

Table 21 is a representation of those participants who believe they have grown by being challenged through high-stakes tests.

**Table 21**

*Student Reactions to Struggles*

| High-stakes testing struggles will only make you stronger. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 23.08 | 6 |
| 2 | Disagree | 38.46 | 10 |
| 3 | Agree | 30.77 | 8 |
| 4 | Strongly agree | 7.69 | 2 |
| | Total | 100 | 26 |

Over half, 61.54%, of the participants do not believe that struggles with tests will make one a stronger student.

Table 22 represents the percentage of participants who feel better prepared for future endeavors. This preparation comes from their experience with high-stakes testing.

**Table 22**

*Student Opinions of Pressure and the Benefits*

| With the pressures of high-stakes testing, I feel that I am prepared to handle anything. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| 1 | Strongly disagree | 19.23 | 5 |
| 2 | Disagree | 42.31 | 11 |
| 3 | Agree | 30.77 | 8 |
| 4 | Strongly agree | 7.69 | 2 |
| | Total | 100 | 26 |

Less than half, 38.46%, believe that the pressure has been positive for them, while 61.54% do not agree.

**Comparisons By Groupings**

Two areas for comparison in the data are years since graduation from high school and gender. Grouping for graduation data was 1 to 5 years and 6 or more years. As far as gender, the options given were male, female, non-binary, or choose not to say. For ease of comparison, the decision was made to compare males to not males (female, non-binary or third gender).

Table 23 shows the number of students who participated in the study and graduated within the last 5 years.

**Table 23**

*Graduation Time 1-5 Years*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | 1-5 | 100 | 29 |
| | Total | 100 | 29 |

Twenty-nine of the participants of the study are recent graduates from high school. Their graduation occurred within the last 5 years.

Table 24 breaks down the gender of the participants who are 1-to-5-year graduates.

**Table 24**

*Participant Breakdown by Gender*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | M | 44.83 | 13 |
| 2 | F | 48.28 | 14 |
| 3 | Non-Binary/third gender | 6.90 | 2 |
| | Total | 100 | 29 |

Table 24 shows that the participation rate was similar between males and females. Of the participants who have graduated within the last 5 years, 44.83% are male and 48.28% are female; 6.90% of those participants are non-binary or third gender.

Table 25 displays the number and percentage of those participants who graduated from high school more than 5 years ago.

**Table 25**

*Student Number of Years Since High School Graduation*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | 6-10 | 33.33 | 1 |
| 2 | 11-15 | 66.67 | 2 |
| | Total | 100 | 3 |

Table 26 displays the gender of participating graduates 6 or more years removed from high school.

**Table 26**

*Student Gender With 6 or More Years Since High School Graduation*

| # | Answer | % | Mode |
|---|---|---|---|
| 1 | M | 14.29 | 1 |
| 2 | F | 85.71 | 6 |
| 3 | Non-Binary/third gender | 0 | 0 |
| | Total | 100 | 7 |

Of the participants who were graduates from 5 or more years ago, 14.29% are male, while 85.71% are female.

**Differences by Comparison**

As the female and non-binary participants were separated from the male participants, results varied in a few of the survey statement results. Tables 27-30 display those variances.

Table 27 displays the female and non-binary participants' responses to feeling physically sick during high-stakes testing sessions compared to those of male students.

**Table 27**

*Comparison by Gender on Physical Illness During Testing*

| I have felt physically sick during high-stakes testing (EOG/EOC/SAT/ACT) days. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| M-1 | Strongly disagree | 11.11 | 1 |
| M-2 | Disagree | 55.56 | 5 |
| M-3 | Agree | 11.11 | 1 |
| M-4 | Strongly agree | 22.22 | 2 |
| FNB-1 | Strongly disagree | 5.88 | 1 |
| FNB-2 | Disagree | 29.41 | 5 |
| FNB-3 | Agree | 41.18 | 7 |
| FNB- 4 | Strongly agree | 23.53 | 4 |

Close to double the number of female/non-binary participants felt symptoms of

physical illness, compared to male students; nearly 65% to 33%.

Table 28 represents the responses of the female/non-binary students' feelings on the increased drive to succeed due to high-stakes testing.

**Table 28**

*Comparison by Gender on Testing Increasing Drive to Succeed*

| Having high-stakes tests (EOG/EOC/SAT/ACT) made me a stronger student with the drive to succeed. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| M-1 | Strongly disagree | 33.33 | 3 |
| M-2 | Disagree | 44.44 | 4 |
| M-3 | Agree | 22.22 | 2 |
| M-4 | Strongly agree | 0 | 0 |
| FNB-1 | Strongly disagree | 11.76 | 2 |
| FNB-2 | Disagree | 41.18 | 7 |
| FNB-3 | Agree | 41.18 | 7 |
| FNB-4 | Strongly agree | 5.88 | 1 |

Over 52% more female and non-binary participants agree that high-stakes tests gave them the drive to succeed.

Table 29 compares the results of participants who feel testing struggles make them better, more successful students.

**Table 29**

*Comparison by Gender on Testing Struggles Making Students Stronger*

| High-stakes testing struggles will only make you stronger. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| M-1 | Strongly disagree | 44.44 | 4 |
| M-2 | Disagree | 33.33 | 3 |
| M-3 | Agree | 22.22 | 2 |
| M-4 | Strongly agree | 0 | 0 |
| FNB-1 | Strongly disagree | 11.76 | 2 |
| FNB-2 | Disagree | 41.18 | 7 |
| FNB-3 | Agree | 35.29 | 6 |
| FNB-4 | Strongly agree | 11.76 | 2 |

Table 29 shows that 52.7% more female/non-binary participants are in agreement that testing struggles only make you stronger. Over 47% of female/non-binary participants agree compared to 22.22% of male participants.

Table 30 also displays the expressions that positive outcomes can be increased by struggles, pressures, and even failures.

**Table 30**

*Comparison by Gender on High-Stakes Testing Preparing You to Handle Anything*

| With the pressures of high-stakes testing, I feel that I am prepared to handle anything. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| M-1 | Strongly disagree | 33.33 | 3 |
| M-2 | Disagree | 44.44 | 4 |
| M-3 | Agree | 22.22 | 2 |
| M-4 | Strongly agree | 0 | 0 |
| FNB-1 | Strongly disagree | 11.76 | 2 |
| FNB-2 | Disagree | 41.18 | 7 |
| FNB-3 | Agree | 35.29 | 6 |
| FNB-4 | Strongly agree | 11.76 | 2 |

Over 52% more female/non-binary participants agree that testing pressures have prepared them to handle anything. Forty-seven percent of female/non-binary participants

and over 22% of male participants agree that high-stakes testing has had a positive impact on their resilience when it comes to education.

**Further Comparison**

Tables 31-40 show the variance of the data comparing graduates from the past 1 to 5 years versus those 6 years or more removed from graduation. All tables show an increase in the percentage of agreement or disagreement of 6+ years over the more recent graduates.

Table 31 displays the comparison of agreement and disagreement between recent graduates and those graduating 6 or more years ago regarding school systems focusing on critical content.

**Table 31**

*Comparison by Years Since Graduation on School Teaching Critical Content*

| My school system focused on teaching the material/standards. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 11.54 | 3 |
| (1-5)-2 | Disagree | 7.69 | 2 |
| (1-5)-3 | Agree | 53.85 | 14 |
| (1-5)-4 | Strongly agree | 26.92 | 7 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 0 | 0 |
| (6+)-3 | Agree | 80 | 4 |
| (6+)-4 | Strongly agree | 20 | 1 |

All the 6+ year graduates agreed that their respective schools focused on teaching critical content. That was 19.2% more than from the more recent graduates.

Table 32 shows the comparison between recent graduates and those from 6 or more years ago regarding schools emphasizing that students should perform at their best levels without worrying about proficiency.

**Table 32**

*Comparison by Years Since Graduation on Student Encouragement to Do Their Best*

| Emphasis was placed on being our best. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 8 | 2 |
| (1-5)-2 | Disagree | 12 | 3 |
| (1-5)-3 | Agree | 56 | 14 |
| (1-5)-4 | Strongly agree | 24 | 6 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 0 | 0 |
| (6+)-3 | Agree | 80 | 4 |
| (6+)-4 | Strongly agree | 20 | 1 |

Twenty percent more 6+ year graduates agreed that the focus and emphasis were on performing one's best. While the recent graduates were at a respectable 80%, the elder graduates posted 100%.

Table 33 represents the difference in recent graduates versus 6+ year graduates that high-stakes tests were rarely mentioned.

**Table 33**

*Comparison by Years Since Graduation on High-Stakes Tests Being Rarely Mentioned*

| High-stakes tests (End of Grade/End of Course/SAT/ACT) were rarely mentioned. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 34.78 | 8 |
| (1-5)-2 | Disagree | 13.04 | 3 |
| (1-5)-3 | Agree | 39.13 | 9 |
| (1-5)-4 | Strongly agree | 13.04 | 3 |
| (6+)-1 | Strongly disagree | 20 | 1 |
| (6+)-2 | Disagree | 40 | 2 |
| (6+)-3 | Agree | 40 | 2 |
| (6+)-4 | Strongly agree | 0 | 0 |

The seasoned graduates showed 20.3% more disagreed; high-stakes tests were discussed more frequently in the 6+ year graduates.

Stressors are common in the learning environment. Table 34 displays a comparison of the feelings of students regarding stress levels during testing sessions.

**Table 34**

*Comparison by Years Since Graduation on Test Days Being the Most Stressful*

| High-stakes testing (EOG/EOC/SAT/ACT) days were the most stressful days of my entire school year. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 9.52 | 2 |
| (1-5)-2 | Disagree | 23.81 | 5 |
| (1-5)-3 | Agree | 28.57 | 6 |
| (1-5)-4 | Strongly agree | 38.10 | 8 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 0 | 0 |
| (6+)-3 | Agree | 60 | 3 |
| (6+)-4 | Strongly agree | 40 | 2 |

For the 6+ year graduates, 33.3% more agreed that test days were the most stressful day of the school year. One hundred percent of the 6+ year graduates agreed versus 66.7% of the recent graduates.

Similar to Table 34, stress can manifest into physical ailments. Table 35 shows the numbers of those who have felt physically sick during testing sessions.

**Table 35**

*Comparison by Years Since Graduation on Student Anxiety Symptoms on Test Days*

| I have felt physically sick during high-stakes testing (EOG/EOC/SAT/ACT) days. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 9.52 | 2 |
| (1-5)-2 | Disagree | 42.86 | 9 |
| (1-5)-3 | Agree | 28.57 | 6 |
| (1-5)-4 | Strongly agree | 19.05 | 4 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 20 | 1 |
| (6+)-3 | Agree | 40 | 2 |
| (6+)-4 | Strongly agree | 40 | 2 |

Table 35 shows nearly 40% more 6+ year graduates agreed that they have become physically sick during testing sessions.

Table 36 represents the opinion that days would be spent preparing for high-stakes tests.

**Table 36**

*Comparison by Years Since Graduation on Time Spent on Test Preparation*

| We (our class) would spend days preparing (test-taking strategies, practice problems, etc.) for High-stakes tests (EOG/EOC/SAT/ACT). | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 9.52 | 2 |
| (1-5)-2 | Disagree | 23.81 | 5 |
| (1-5)-3 | Agree | 57.14 | 12 |
| (1-5)-4 | Strongly agree | 9.52 | 2 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 0 | 0 |
| (6+)-3 | Agree | 100 | 5 |
| (6+)-4 | Strongly agree | 0 | 0 |

All the 6+ year graduates state that an excessive amount of time was spent on test preparation. This is 33.3% higher than the more recent graduates.

Table 37 displays the reflection that graduates felt regarding high-stakes tests preparing them for postsecondary education.

**Table 37**

*Comparison by Years Since Graduation on High-Stakes Testing Preparing for College*

| I would have never been prepared for college if not for high-stakes testing (EOG/EOC/SAT/ACT) | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 28.57 | 6 |
| (1-5)-2 | Disagree | 47.62 | 10 |
| (1-5)-3 | Agree | 19.05 | 4 |
| (1-5)-4 | Strongly agree | 4.76 | 1 |
| (6+)-1 | Strongly disagree | 20 | 1 |
| (6+)-2 | Disagree | 40 | 2 |
| (6+)-3 | Agree | 40 | 2 |
| (6+)-4 | Strongly agree | 0 | 0 |

In the data comparison between the 6+ year graduates and more recent graduates, more than 40% of more recent graduates agreed that testing prepared them for college.

Table 38 represents the number of graduates who have or currently suffer from testing anxiety.

**Table 38**

*Comparison by Years Since Graduation of Test Anxiety Sufferers*

| I suffer from testing anxieties. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 0 | 0 |
| (1-5)-2 | Disagree | 52.38 | 11 |
| (1-5)-3 | Agree | 23.81 | 5 |
| (1-5)-4 | Strongly agree | 23.81 | 5 |
| (6+)-1 | Strongly disagree | 0 | 0 |
| (6+)-2 | Disagree | 40 | 2 |
| (6+)-3 | Agree | 20 | 1 |
| (6+)-4 | Strongly agree | 40 | 2 |

Of our sample, 20.6% more of the 6+ year graduates recognize testing anxiety. Only 47.62% of recent graduates deal with significant testing anxiety.

Table 39 shows the percentage of those participants who felt that pressure to perform made them better students.

**Table 39**

*Comparison by Years Since High School Graduation on Students Feeling That Pressures Made Them Better Students*

| High-stakes testing (EOG/EOC/SAT/ACT) pressures made me a better student. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 23.81 | 5 |
| (1-5)-2 | Disagree | 47.62 | 10 |
| (1-5)-3 | Agree | 19.05 | 4 |
| (1-5)-4 | Strongly agree | 9.52 | 2 |
| (6+)-1 | Strongly disagree | 20 | 1 |
| (6+)-2 | Disagree | 20 | 1 |
| (6+)-3 | Agree | 60 | 3 |
| (6+)-4 | Strongly agree | 0 | 0 |

Table 39 shows that the older graduates agreed that pressure made them better students; more than double the number of students agreeing, 60% to 28.57%.

Table 40 displays the results of testing determining promotion or failure.

**Table 40**

*Comparison by Years Since High School Graduation of Student Perceptions of Determinations From Test Results*

| I thrive on the idea that a high-stakes test (EOG/EOC/SAT/ACT) can determine my promotion, retention, or educational future. | | | |
|---|---|---|---|
| # | Answer | % | Mode |
| (1-5)-1 | Strongly disagree | 33.33 | 7 |
| (1-5)-2 | Disagree | 38.10 | 8 |
| (1-5)-3 | Agree | 23.81 | 5 |
| (1-5)-4 | Strongly agree | 4.76 | 1 |
| (6+)-1 | Strongly disagree | 40 | 2 |
| (6+)-2 | Disagree | 20 | 2 |
| (6+)-3 | Agree | 40 | 1 |
| (6+)-4 | Strongly agree | 0 | 0 |

Sixteen percent more recent graduates agreed that they are comfortable with the fact that they are in control of their outcomes.

Table 41 displays the results of the chi-square test to determine the statistical significance of each survey question. To be statistically significant, the *p* value must be less than 0.05. Table 41 shows that of the 13 questions tested with chi-square, six showed to be statistically insignificant.

**Table 41**

*Results of Question Validation*

| Item | $Chi^2$ value | *p* value | Significant? |
|---|---|---|---|
| 4 | 20.72 | 0.00012 | y |
| 5 | 21.467 | 0.00008 | y |
| 6 | 21.467 | 0.00008 | y |
| 7 | 6.308 | 0.09756 | n |
| 8 | 5.385 | 0.14571 | n |
| 9 | 9.077 | 0.02829 | y |
| 10 | 23.538 | 0.00003 | y |
| 11 | 9.385 | 0.02459 | y |
| 12 | 13.077 | 0.00447 | y |
| 13 | 6.308 | 0.09756 | n |
| 14 | 6.615 | 0.08522 | n |
| 15 | 5.385 | 0.14571 | n |
| 16 | 6.923 | 0.07439 | n |

**Results for the Qualitative Phase of the Study**

Upon completion of the survey, students were asked to participate in an interview. Once consent to proceed with the interview was given, an email inquiring about the best time to conduct an interview via Zoom was sent. A Zoom link and invitation were sent, via email, for the agreed-upon time. Of the eight original participants agreeing to the interview, five followed through with the interview.

The interview began with a scripted introduction that explained the process, expectations, and student rights (Appendix F). Questions were presented, and time was allotted for thought and response. The Zoom session was recorded and transcribed. At the conclusion of the interview, students were asked if there were any questions about the interview or the process going forward. When these questions were addressed, students were thanked for their willingness to take part in the study. At that point, the interview session was complete, and no further interaction was necessary. The electronically signed

informed consent interview recordings and transcriptions were stored on a password-protected computer.

The following questions were used in the interview:

1. How do you describe the amount of time spent on test preparation?
2. How much time would you say was devoted to high-stakes test preparation?
3. Describe why you think that your school encouraged you to perform well or created an unreasonable amount of pressure.
4. What do you feel is the overall purpose of high-stakes testing?
5. How would you say that high-stakes testing made you a better student?
6. How do you feel about a single test score being an accurate or fair representation/gauge of your success or learning in a particular class?
7. What do you think would be a better representation to measure knowledge gained in a class or subject?
8. How would you say that high-stakes tests prepared you for postsecondary life (college or career)?
9. How would you say that high-stakes tests have improved your problem-solving ability?
10. Do you feel that high-stakes tests have improved your ability to think critically?
11. Rank skills that you feel are impacted by high-stakes tests; 1 being most impacted, 5 being least impacted. (judgment and decision-making, negotiation skills, critical thinking, fluency of ideas, complex problem-solving.)

## Interview Findings

### *Summary of Research Question 1: What impact does high-stakes testing have on career and college readiness?*

**Question 1: How do you describe the amount of time spent on test preparation?**

Student A: "I feel like the amount of time varies by the teacher. Most will give sample questions through the year and other teachers might give sample questions a week or 2 before the test."

Student B:

Most teachers would bring up the tests regularly, but some were in your face about it. The lessons were important to them, but the tests were the true focus. Some teachers use test-type questions daily. Some cram all the review and strategies into the last 2 weeks.

**Question 2: How much time would you say was devoted to high-stakes test preparation?**

Student A: "Once again, it depends on the teacher, but I would say a minimum of 2 weeks."

Student C: "It has been different for each level. High school usually waits until near the end of the semester to talk about it more."

Student D: "Close to test time, teachers use at least an hour every day."

**Question 3: Describe why you think that your school encouraged you to perform well or created an unreasonable amount of pressure.**

Student A:

I think the school wants us to do well for our future and for the school's reputation. A lot of the time teachers will say, "Do well because it reflects you and me!" I think they add a lot of pressure because these tests reflect students, teachers, and the school.

Student D: "A little bit of pressure helps. It helps me not to procrastinate!"

Student E: "Most of the motivation comes from the teachers; I don't think the school motivates me."

**Question 4: What do you feel is the overall purpose of high-stakes testing?**

Student A: "I think people want to continue to see growth and progress."

Student B: "I believe the purpose of testing is to grade the schools and their teachers. Students pass or fail, but the test scores mainly point out the successful teachers and the ones that haven't done so well."

Student E: "To see what you know and how well you have obtained the information."

**Question 5: How would you say that high-stakes testing made you a better student?**

Student A:

As a student, I feared the tests. I am a straight-A student and when I took those tests, I always worried about how bad I would mess up on the tests and how it would affect me later. I worried that they [the tests] wouldn't actually show my knowledge. The tests have made me doubt myself but also work harder to do good.

Student D: "I have benefited from tests by the way I study and by developing

strategies to study."

**Question 6: How do you feel about a single test score being an accurate or fair representation/gauge of your success or learning in a particular class?**

Student A:

I am not a fan of a test score summing up my knowledge. Some people are not good test takers and people can have bad days. These things will affect the score. A single score cannot represent knowledge or success. Scores should be composed by different areas.

Student B: "Students have different strengths. Sometimes it is not taking tests. A lot goes into a successful school year or semester. I think that effort can't be represented by one test, even if the score is good."

Student E: "One score should not represent how well you did overall."

**Question 7: What do you think would be a better representation to measure knowledge gained in a class or subject?**

Student A: "I think these tests help see growth but overall. I think the averaging of scores is good. No matter what system is in place, it will have faults."

Student D: "Should be composed of multiple tests and mostly projects that require the application of knowledge."

Student E: "Average of class tests and classwork."

***Summary of Research Question 2: How do high-stakes tests promote or improve 21st century skills?***

**Question 8: How would you say that high-stakes tests prepared you for postsecondary life (college or career)?**

Student A: "I would say that these tests have helped in some way. They have taught me time management on large tests."

Student B: "It's hard to pinpoint exactly how, but I'm sure it has. Maybe my drive or resilience. I know now how to find answers I need by elimination and using the information given."

Student D: "Development of strategies to study in a more effective way."

**Question 10: Do you feel that high-stakes tests have improved your ability to think critically?**

Student A: "I think these tests have helped my problem-solving and my thinking skills. Whenever I would not know an answer, I would use context clues to figure it out."

Student D: "I don't think it helps problem-solving. It limits the ability to think critically."

Student E: "Maybe a little bit. I don't know."

***Summary of Research Question 3: Which 21st century skills are impacted by high-stakes testing?***

**Question 11: Rank skills that you feel are impacted by high-stakes tests; 1 being most impacted, 5 being least impacted. (judgment and decision-making, negotiation skills, critical thinking, fluency of ideas, complex problem-solving)**

Student A: "Problem-solving, critical thinking, judgment and decision-making,

negotiation skills, fluency of ideas."

Student B: "Critical thinking, problem-solving, judgment, negotiation, fluency of ideas."

Student E: "Problem-solving, critical thinking, fluency of ideas, negotiation skills, judgment, and decision-making."

**Common Themes**

From the qualitative portion of the study came four common themes. As the interviews took place and the transcription began, these commonalities became more evident. Those commonalities are listed and placed in context to explain their position as common themes.

***Theme 1: Strategies***

Throughout the interview sessions, the most common reoccurring word in the conversations was strategies. It held different meanings for different students but was a regular topic. One student spoke of strategies for time management that were gained from testing sessions. Another boasted about study strategies that he had adopted due to testing. Finally, a student used the term strategy when speaking about coping mechanisms used to reduce anxiety derived from testing. Though very different in context, strategies are commonplace in testing situations.

***Theme 2: Representation***

As with strategies, representation was used in different contexts but was common, nonetheless. Representation was used in the context of test results being a representation of the levels of success of students, teachers, and schools. This context can be positive or negative. As a complaint, a student feels that a single score is not a representation of his

level of understanding or knowledge gained. In one example, a student mentioned ideas that he thought would be a better representation of his progress.

### *Theme 3: Progress*

Students used progress as a noun and a verb. As a noun, students mentioned student progress as the reason they feel high-stakes tests are still relevant. As a verb, progress was used in the context of testing showing how a student progresses toward proficiency or mastery of the content. Lastly, a student felt that multiple tests and projects throughout the year/semester would accurately show his progression.

### *Theme 4: Reputation*

Depending on the end of the spectrum, reputation can be construed as a positive or negative connotation. Reputation was used when referring to a school's results. When things are going well and growth is met, a reputation is great to have. Students mentioned anxiety due to a fear of having a reputation of struggling to show growth or to overcome it. Reputation was a double-edged sword when speaking of a teacher who has a reputation for success due to great teaching versus a teacher who has a reputation for spending unreasonable amounts of time trying to ensure that students are efficient test takers rather than preparing them with rigorous content.

## Summary

To be college and career ready, students should possess certain 21st century skills in order to succeed in the professional world and to proceed in postsecondary education. Such skills include problem-solving, critical thinking, fluency of ideas, decision-making ability, visualization, and sound written expression. Schools should incorporate these skills into learning and instruction.

The purpose of this study was to determine whether North Carolina high-stakes testing promotes college and career readiness. This research sought to determine how high-stakes testing impacts soft skills such as work ethic, adaptability, active listening, or growth mindset.

Evidence was gathered through student surveys to determine students' thoughts on the impact high-stakes tests have had on their educational journey. The students answered questions about the educational practices of their schools, their individual experiences with testing, and complaints and improvements that could make the process better.

Student data were compared by gender and by the number of years since high school graduation. These comparisons told different stories about the state of education, proving one of two things: education is constantly evolving or students are evolving. More than likely, both are accurate.

Female and non-binary students lead the charge in nearly every category: feeling physically sick, testing improving their drive to succeed, struggles making one a stronger student, and advantages to the pressures due to high-stakes testing. Students who graduated high school 6 years or more ago told a mixed story. They were in agreement that schools focused on the critical content and wanted the students to perform at their best level, no matter what that level was. Changing the tone, the data showed that test days were very stressful; students felt physically sick on test days; anxiety was very common; an excessive amount of time was spent in preparation; and high-stakes tests were mentioned very frequently.

Interviews held gave a more detailed story about students’ experiences. Students shared their own experiences, elaborating on points that were spoken of in the survey.

Through the process of interviewing and the analysis of the data, four commonalities are shown: strategies, representation, progress, and reputation.

Finally, the students ranked 21st century skills 1 to 5: 1 being most impacted by high-stakes testing and 5 being least impacted. Problem-solving and critical thinking led the way in all instances.

# Chapter 5: Discussion

## Introduction

After nearly 50 years and multiple realignments, high-stakes testing in North Carolina continues to be a topic of conversation and controversy. This study sought to determine if and how, after all the changes and all the resources that have been allocated, high-stakes testing impacts college and career readiness. This study intended to answer the following research questions:

1. What impact does high-stakes testing have on career and college readiness?
2. How do high-stakes tests promote or improve 21st century skills?
3. Which 21st century skills are most impacted by high-stakes testing?

## Discussion of Findings

Using a mixed methods approach to data collection, quantitative data through surveys were combined with qualitative data gathered through interviews. As the analysis took place, survey questions were validated and gauged for statistical significance with chi-squares, and comparisons were made based on gender and years since graduation.

Qualitative data were coded for common themes and compared with the quantitative data for triangulation. With the analysis complete, the data contributed to answering the research questions.

### *Research Question 1: What impact does high-stakes testing have on career and college readiness?*

Of the students surveyed, the majority, over 80%, agreed that their respective schools focused on teaching critical content and encouraged students to do their best without concern for negative ramifications. This being the case, the majority also stated

that test days were very stressful and they had been physically sick due to the anxiety that goes along with testing.

The interview data told a similar story. When asked why they felt that high-stakes tests were still being used, they agreed that gauging progress and teacher effectiveness were the two main reasons. When asked if the pressures of testing made them better students, one responded that the pressure eliminated his procrastination. Aside from that unique response, most felt that the pressure was not unreasonable, just a motivating factor.

When asked if they felt high-stakes testing made them better students, one stated that the fear of failure made her work harder, while another said testing made him create strategies that improved his study practice.

Based on the data, high-stakes testing had a positive impact on their future education. Though these are very stressful times, data show that students made adjustments to improve their experiences.

**Relating Findings to Previous Literature.** Many aspects were determined to be negative results stemming from high-stakes testing. Of those, the most spoken of were anxiety and stress, poor classroom performance due to a focus on test-taking strategies, use of a single data point in decision-making, student demographics and bias in tests, predetermined growth levels, inaccuracy, and lack of student seriousness (Cordogan, 2015). Throughout the interview process, almost all these aspects were mentioned; the most common were single data points and anxiety.

Teachers have noticed that high-stakes tests have led students to lose self-confidence (Wisdom, 2018). Students worried during testing periods and feared a lower

grade point average, poor achievement levels, and social-emotional health (Wisdom, 2018). Teachers have noted students' concerns about test performance and seen an increase in students' symptoms of anxiety: nausea, flushed skin, headaches, and stomach aches. Wisdom (2018) stated that stress and anxiety could alter a student's performance. High levels of pressure and low self-esteem could be the result. It has been suggested that test anxiety was greater in students taking high-stakes tests than those taking conventional classroom tests (von der Embse & Witmer, 2014). Students expressed fear of testing days. Poor outcomes and future implications were their concern.

Test anxiety is real and a struggle for many. Half of those surveyed in this study recognized test anxiety. Lowe (2014) stated that anxiety could impair memory and cognitive functions as well as contribute to poor school performance. Between 25% and 40% of students have experienced test anxiety during testing. More recently, the Anxiety & Depression Association of America (2016) stated that nearly 20% of students had high or severe test anxiety, while another 16% of students had moderate test anxiety.

Test anxiety has impacted grade point averages and academic and exam outcomes and has led to student withdrawal. Between 15% and 20% of withdrawals occur during the first 2 years of college (Connon et al., 2016). Teachers should not only teach content but encourage students to be curious learners while promoting lifelong learning (Szabo et al., 2016). This outweighs the ability to score well on a high-stakes test.

The National Council on Measurement in Education listed four strategies that are considered determinants for career and college readiness. Cognitive strategies include higher order thinking skills; key content knowledge in disciplines; key learning skills including time management, persistence, metacognition, goal setting, and self-awareness;

and key transition knowledge and skills including knowledge and awareness about navigation of college systems (Camara, 2013). Time management was also mentioned, along with improved study techniques.

***Research Question 2: How do high-stakes tests promote or improve 21st century skills?***

Students surveyed had strong opinions about the benefit, or lack thereof, of high-stakes testing. When asked if the struggles of high-stakes testing made them stronger students, 62% stated there was no positive correlation. Students did overwhelmingly agree, 75%, that an excessive amount of time was spent in preparation for the tests. As a follow-up question, students were asked if the pressures and struggles created a stronger sense of resilience. Nearly 75% stated that this was not the case. When asked if testing anxiety was an issue for them, the responses were evenly split.

Through interviews, students were asked specifically if high-stakes testing had made them better students and, if so, how. Students mentioned time management, drive, and resilience as being positively impacted by testing. Though mentioned negatively when speaking about excessive time spent in preparation, students added that it contributed to improved strategies for studying and testing.

Students were asked specifically if they felt that their problem-solving or critical thinking skills were improved. The majority agreed that there was an improvement, whether it be through strategies learned or using context. One student expressed concern that high-stakes testing limits the ability to think critically due to the test being multiple choice.

**Relating Findings to Previous Literature.** Soule and Warrick (2015) stated that 21st century skills are survival skills, no longer a luxury but a necessity. Being a

fundamental 21st century skill, critical thinking enables and requires students to use higher order thinking skills. Analysis, evaluation, and synthesis allow students to apply the knowledge gained to the real world (DeWitt et al., 2013). Halpern (1998) stated that critical thinking was purposeful, reasoned, and goal-directed. Making decisions, formulating inferences, and solving problems required this level of thinking.

Many still feel that high-stakes testing has a place in education and is relevant to determining student progress while keeping teachers and schools accountable. Such examinations can identify and close existent academic achievement gaps between identifiable subgroups (Lee & Reeves, 2012). These tests are still in practice as a standard to judge and compare the output of each school and district (ProCon.org, 2020). Churchill (2015) stated that without standardized testing, there was no accurate way to identify poor- or high-performing schools. Standardized tests were the best measure of accountability. Cordogan (2015) argued that there are many benefits to standardized tests. Aside from merely determining the mastery of standards, they are an instrument to evaluate students, teachers, and the school. The information gained could identify at-risk students and guide measures to improve the curriculum.

***Research Question 3: Which 21st century skills are impacted by high-stakes testing?***

Students were asked if high-stakes testing and the accompanying pressures made them better students. Sixty-five percent of those surveyed disagreed with the positive aspects gained from testing. When asked if they were driven by the control that the tests had by determining their promotion or retention, nearly 70% disagreed. When asked if the struggles made them better students and gave them the ability to better handle challenges, over 60% disagreed.

When students were asked how they felt about a single piece of data determining promotion or retention or being an accurate representation of their knowledge, the responses were very similar. One made the case for those who are not good test takers. It was stated that one could have a bad day or something could happen outside of their control, causing a poor result. Another felt that a more accurate representation of learning would be a composition of many assignments and tests or even multiple projects. Similarly, one expressed that with the amount of time and effort that go into a semester, one test is not a fair measure of the work put in.

Finally, students were asked to rank 21st century skills by the positive amount of impact they felt they received from high-stakes testing. In all cases, problem-solving and critical thinking were number one or two as most impacted. Judgment and decision-making and fluency of ideas were distant runners-up.

**Relating Findings to Previous Literature.** Jensen et al. (2014) stated that high-stakes tests are less likely to foster critical thinking. High-stakes assessments did not generate a skill set that ensured postsecondary success (Soule & Warrick, 2015). Sixty-eight secondary teachers, teaching 10th through 12th grades, were part of an action research study that determined that communication, collaboration, and critical thinking were the keys to being successful in a postsecondary life (McQueen, 2021).

Boatman (2021) was one of many who mentioned Conley's four keys to career and college readiness. Boatman credited critical thinking as the number one skill to becoming a problem solver. Being a fundamental 21st century skill, critical thinking enables and requires students to use higher order thinking skills. Analysis, evaluation, and synthesis allow students to apply the knowledge gained to the real world (DeWitt et

al., 2013).

Participants of the study also stated that they felt that PBL was the optimal way to include all these skills in their practice. They also stated that less than 25% of the curriculum includes 21st century skill promotion and that there is a lack of professional development for teachers in the integration of 21st century skill practice (Boatman, 2021).

Studies stated that PBL is a more effective instructional model for delivering a rigorous curriculum that is linked to 21st century skills as well as work-based learning. Tasks that engaged students in modeling or constructing arguments aided in the development of a deeper level of thinking. Students draw on previous knowledge and do something meaningful with it. Learning in one context and applying it in another demonstrates 21st century relevance (Hilton, 2015).

Teachers should not only teach content but also encourage students to be curious learners while promoting lifelong learning (Szabo et al., 2016). This outweighs the ability to score well on a high-stakes test. Teaching and learning should be connected to students' interests and to real-world problem-solving (Soule & Warrick, 2015).

Eighty-two percent feel that a mix of social, personal, and academic strengths was important. Further results stated that only 13% feel that test scores were important and 49% felt that standardized tests could not accurately measure children's education (Ferguson, 2017).

Many research and pilot projects have been done to determine the true potential for success through performance task-based assessments. The basis was to create a system where students could demonstrate multiple levels of proficiency including research, interpretation, communication, and accuracy throughout an assigned task

(Conley, 2015). The New York Performance Standards Consortium used performance tasks as a school-based assessment. As a part of their requirement, students presented their work to not only students and teachers but to local experts from the community (Knecht, 2007).

New Hampshire teamed up with the Center for Collaborative Education and the National Center for the Improvement of Educational Development to develop the Performance Assessment for Competency Education. This assessment was designed specifically to measure college and career competencies (Conley, 2015). Colorado, Kansas, and Mississippi created a similar assessment along with the University of Kansas called the Career Pathways Assessment System to measure high school students' readiness to enter college or the workforce. Real-world situations are the basis for measuring knowledge and skills for specific career pathways (Conley, 2015).

Envision Schools, a charter school in San Francisco, created a project-centered assessment as a culmination of their semester. Students completed a project throughout their coursework and their presentations were formally reviewed by teachers and peers. These projects were open-ended and challenged students to complete lengthy, multi-step activities. Being semester-long, these projects were very complex and required lots of time and resources (Conley, 2015).

Finally, the Summit Charter Network of schools required students to complete a project that included a digital portfolio of their work that provided evidence of the content knowledge, how to efficiently apply the knowledge in real-world applications, and the development of the skills associated with career and college readiness (Conley, 2015).

## Implications for Future Practice in Local Context

This study sought to determine if high-stakes testing has an impact on college and career readiness. With the quantitative portion of the study, no real surprises were identified on the surface. Many of the participants agreed that too much time was spent on test preparation; students do not agree with a single data point determining their mastery; and half of the students surveyed have experienced testing anxieties and the symptoms that go along with them. On a positive note, over 80% agreed that their respective schools encouraged them to do their best on the tests rather than focus on proficiency.

Policy makers, district leaders, administrators, and teachers, as well as other researchers, would benefit from reading this study. Nearly 50 years and millions of dollars have been allocated to finding the best tool for assessing students and keeping teachers accountable. While searching for the ideal assessment tool, all considerations should be viewed. This study's data suggest that multiple assessments and student choice could be the answer for improvement. While multiple assessment tools may be overwhelming financially as well as in human capital, an ideal instrument would be worth the allocation.

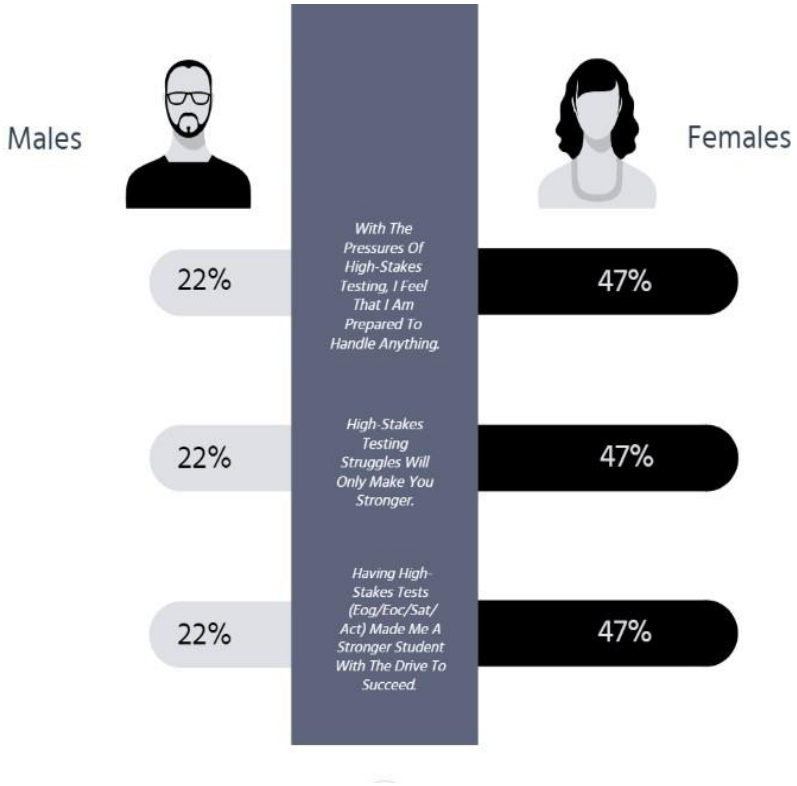
### *Implication 1: Assessments Based on Student Choice*

Data from this study show that female students have a much different opinion of high-stakes testing than male students. Female students, though prone to testing anxieties, feel that the pressures, struggles, and impacts of the results make them better, more resilient students. Implication 1 is the difference of opinion on testing by gender. Traditional testing models are considered objective and standardized. Developments in

society and a shift towards a constructivist learning environment have changed assessment in education (National Research Council, 1999). Newer learning aims to develop a setting to meet the challenges of higher education. The figure shows a comparison of results by gender concerning the perceived benefit of high-stakes tests to career and college readiness.

**Figure**

*Comparison of Male Responses Versus Females*

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The figure is a visual representation of the results from the quantitative portion of this study. Females feel that there is a positive impact from high-stakes testing, two to one, over male students concerning resilience, drive, and perseverance.

With the results from the study, data revealed testing has a more positive impact on promoting career and college readiness in female students; with improved resilience,

time management, and critical thinking being the beneficiaries. Halpern (1998) stated that critical thinking was purposeful, reasoned, and goal-directed. Making decisions, formulating inferences, and solving problems required this level of thinking. In preparation for all future endeavors, students should be able to visualize a problem, determine the relevance of the given information, and justify possible solutions (Conklin, 2012).

School districts should be prepared to be more flexible with instruction as well as assessment. As students evolve, practices that have been in place for 5 decades are not going to be sufficient. Instruction and determination of proficiency must fit the strengths of the students if that means multiple options.

***Implication 2: Multiple Projects for Proficiency***

Through qualitative data, students felt that single data points are not an accurate representation of their progress and learning. Students agreed that project-based assignments are more suited to gauge understanding and proficiency. PBLs are applicable for all ages and levels. They are learner-centered, learning is active, and there is collaboration. Ideally, problem-solving is gained from self-inquiry and reflection (Jacobsen, 2019). Studies stated that PBL is a more effective instructional model for delivering a rigorous curriculum that is linked to 21st century skills as well as work-based learning. Tasks that engage students in modeling or constructing arguments aid in the development of a deeper level of thinking. Students draw on previous knowledge and do something meaningful with it. Learning in one context and applying it in another demonstrates 21st century relevance (Hilton, 2015). Students should be taught the ability to apply or transfer knowledge from one context to another. Jensen et al. (2014) stated

that high-stakes tests are less likely to foster critical thinking. High-stakes assessments did not generate a skill set that ensured postsecondary success (Soule & Warrick, 2015).

Implication 2 is multiple projects to determine proficiency rather than multiple choice exams. Constructivist learning is based on a student's ability to use previous experiences to learn through inquiry and be successful critical thinkers. With teachers taking on the role of facilitators of learning, students are responsible for their own success. Such opportunities help students develop resilience and determination while creating problem solvers, critical thinkers, and students with the ability to use sound judgment to make decisions.

From the beginning of a student's educational journey, many opportunities are present to prove understanding through standardized tests (Conley, 2015). Skills that are created through constructivist learning practices will aid in the building of a student's capacity to be successful based on their ability to manipulate their basic understanding. Being a fundamental 21st century skill, critical thinking enables and requires students to use higher order thinking skills. Analysis, evaluation, and synthesis allow students to apply the knowledge gained to the real world (DeWitt et al., 2013). If content skills are lacking, the ability to critically think and problem solve can lead them to a reasonable solution (Jacobsen, 2019). Implication for practice would be maintaining a learning management system that would store student product portfolios that prove proficiency and mastery of the content standards. Serving a dual purpose, grading could be done periodically and be representative of quarter or semester grade reports.

To create an accurate method to assess both basic skills and the ability to succeed in the postsecondary world, there may be a need for a system of multiple assessments.

This system could be treated as a student's portfolio to determine where they are presently, how much progression has been made, and what strides must take place to be career and college ready (Conley, 2015). Such a system could eliminate the need for yearly multiple-choice exams and produce a living set of documents that paints an accurate picture of a student's performance and abilities. No longer would there be a need for a single piece of data that determines student proficiency or an adequate year's growth (Conley, 2015).

Jensen et al. (2014) stated that high-stakes tests are less likely to foster critical thinking. Participants of the study also stated that they felt that PBL was the optimal way to include all these skills in their practice (Boatman, 2021). Studies stated that PBL is a more effective instructional model for delivering a rigorous curriculum that is linked to 21st century skills as well as work-based learning (Hilton, 2015).

**Professional Development and Training.** Implementation and execution of a dual assessment system will take multiple rounds of professional development. This training will take place from the NCDPI level down to the school level. At the NCDPI level, creation and evaluation procedures will be the priority. At the district level, the focus will be on the promotion and delivery of the assessments. Administrators at the schools will be responsible for their staff preparing students and the recording and delivery of results.

The creation of the assessments will be arduous and time-consuming. Once the instrument is finished, monitoring, evaluation, and adjusting the assessments will be critical. District administrators will continue with professional development and training for the use of the learning management system that will store the results as well as the

student portfolios. School-level staff will improve their understanding and the efficient use of the chosen learning management system.

**Learning Management System.** Electronic portfolios that are created by students to prove mastery will need to be stored on a learning management system. Such a system will store the work for evaluation and maintain it throughout the semester or school year. Multiple years of student work can be stored and possibly used as an entrance requirement for college.

While the organization of the system will help teachers with grading, it will also help students by eliminating products being misplaced. Unlike high-stakes tests, students will have the luxury of discussing their grades and teacher comments along the way.

**Student Choice.** Assessment preferences refer to alternatives: portfolios, simulations, etc. Traditional multiple-choice tests assess memorization, lower order thinking skills. Alternative assessment methods focus on higher order thinking skills (Kececi, 2022). Student choice is recommended in the classroom, so it should be when determining mastery. To truly evaluate students at their best, the instrument used for evaluation should be ideal for their strengths. The choice of assessments is based on assumptions of students' strengths such as study habits, personality traits, thinking skills, and time management (Kececi, 2022). As seen in the data, female students are positively affected by the pressures of a single test, while male students feel that projects that require knowledge application are a more accurate measure of mastery.

Constructivism is built by experiential learning and hands-on activities, increasing student engagement and retention. Interaction, team building, and problem-solving are enhanced through constructivist activities (Chuang, 2021). Skills that are created through

constructivist learning practices will aid in the building of student capacity to be successful based on their ability to manipulate their basic understanding. If content skills are lacking, the ability to critically think and problem solve can lead them to a reasonable solution (Jacobsen, 2019).

Individuals learn and use higher order thinking skills to rely more on themselves and less on the assistance of others. This process often begins in a collaborative environment. Learning is continuous and interactive, with learners and teachers being active participants (Lewis, 2018).

Ideally, those who are on the project-based track could be grouped with other like students. Single-test students could be grouped as well. These options for testing could create in-school academies, similar to those in place for drama or business tracks.

**Recommendations for Further Research**

Based on the implications identified, I feel the need for more research based on gender-specific learning. Learning theories have been studied at length. Many studies have been done on how the human brain works, but results specific to gender are limited. Future studies could be specifically directed toward the differences between male and female learning.

This study revealed a difference in opinions about pressures and drive being improved by high-stakes testing. Larger sample sets could solidify these findings or create a more accurate representation of female versus male views.

Data also support the desire for grading to be done by projects to prove mastery of content. Further research could be done by implementing a pilot program that uses digital portfolios to gauge mastery. Similar sample sets could be studied with students from one

district continuing with regular testing, while the other implements PBL with digital portfolios. As long as demographics and backgrounds are similar, the data should be comparable. At the conclusion of the program, there should be significant information to make decisions going forward.

Similar studies could be performed that gauge the opinions of current high school students, their parents, high school teachers, institutions of higher education, as well as employers. With the ultimate goal being the production of individuals who are college and career ready, all stakeholders should be involved in determining the best avenue for that to take place.

**Limitations of the Study**

There were limitations recognized with the study. Sample size was probably the most significant limitation when decisions of such magnitude are being made. Though the number of participants was adequate for a preliminary study, a larger sample with a wider footprint may confirm or even give a differing outcome. While participants were from a Community College as well as a 4-year College, for a less regional result, a broader base would be more accurate.

Comparisons in the data were also made based on years since high school graduation. While the data collected was helpful and expressed an opinion from other decades, the number of those participants was limited. Collecting data from a more balanced sample would be more significant to the study results. An equal number of participants from each group would be ideal for an accurate representation.

**Conclusion**

The purpose of this study was to determine the relevance of high-stakes tests and

their contribution to career and college readiness. While the research detailed the history of accountability in North Carolina, the purpose was to determine whether North Carolina high-stakes testing promotes college and career readiness.

Quantitative data were collected via survey. Results shared students' opinions of and experiences with high-stakes tests. Students had very similar opinions about testing, such as anxieties, stress from test days and results, time spent in preparation, and whether the experience made them better students. As comparisons were made by years since graduation and by gender, differences began to surface. Younger students appeared to be less affected by testing anxiety, and female students felt a benefit from the pressures and struggles. Negative aspects were the driving force for them being better students.

Qualitative data were collected through interviews. Questions were directed more to the testing process, its usefulness, and possible improvements to the process. Students shared the positives and negatives of testing and expressed some changes that they felt would improve the accuracy of student accountability. First, students expressed a desire for their proficiency or mastery to be recorded by more than one assessment. Next, there was a consensus that project-based assessments, with applications, would give a more accurate representation of their understanding and knowledge gained.

While the intent was to determine if high-stakes tests contribute to career and college readiness, minimal evidence of such was recorded. Going forward, I hope this study will be used as a springboard for further research and policy improvements to create a better system for student assessment and accountability.

## References

Abrams, L. M., Pedulla, J. J., & Madaus, G. F. (2003). Views from the classroom: Teachers' opinions of statewide testing programs. *Theory Into Practice, 42*(1), 18-29.

Achieve, Inc. (2019). *How do assessments matter--and for whom? Making sense of the high school student's assessment experience.* Author. https://www.achieve.org/high-school-student-assessment-experience-2019

American Educational Research Association. (2000, July). AERA position on high stakes testing. http://www.aera.net/ about/policy/stakes.htp

Anxiety & Depression Association of America. (2016). Children and anxiety and depression. https://adaa.org/find-help/by-demographics/children-anxiety-depression

Atkinson, T. S. (2002). "We're not just whistling dixie": Policymakers' perspectives on state education reform. *Reading Research and Instruction, 41*(4), 289-308.

Au, W., & Gourd, K. (2013). Asinine assessment: Why high-stakes testing is bad for everyone, including English teachers. *The English Journal*, *103*(1), 14–19. https://www.jstor.org/stable/24484054

Baker, S. (2015). Desegregation, minimum competency testing, and the origins of accountability: North Carolina and the nation. *History of Education Quarterly, 55*(1), 33-57. https://doi.org/10.2307/24481687

Bandura, A. (1969). Social-learning theory of identificatory processes. *Handbook of socialization theory and research*, *213*, 262.

Betti, A., Biderbost, P., & García Domonte, A. (2022). Can active learning techniques simultaneously develop students' hard and soft skills? Evidence from an international relations class. *PLoS One, 17*(4), e0265408. https://doi.org/10.1371/journal.pone.0265408.

Blazer, C. (2011). *Unintended consequences of high-stakes testing. Information Capsule. Volume 1008.* Research Services, Miami-Dade County Public Schools. https://eric.ed.gov/?id=ED536512

Boatman, A. (2021). *Setting students up for success: The need for 21st century skills* (Publication No. 29241830) [Doctoral dissertation, Texas A&M University]. ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection. (2669508802).

Brewer, C., Knoeppel, R. C., & Lindle, J. C. (2014). Consequential validity of accountability policy. *Educational Policy, 29*(5), 711–745. https://doi.org/10.1177/0895904813518099

Brown, A. (2022). *Exploring collegiate Gen Z perceptions regarding 21st century communication skills* (Publication No. 29068676) [Doctoral dissertation, University of Kentucky]. ProQuest Central; ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Camara, W. (2013). Defining and measuring college and career readiness: A validation framework. *Educational Measurement: Issues and Practice*, *32*(4), 16–27. https://doi.org/10.1111/emip.12016

Care, E., Kim, H., Vista, A., Anderson, K. (2019). *Education system alignment for 21st century skills: Focus on assessment.* Brookings Institution.

Chuang, S. (2021). The applications of constructivist learning theory and social learning theory on adult continuous development. *Performance Improvement*, *60*(3), 6-14. https://doi.org/10.1002/pfi.21963

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE Open Medicine*, *7*(1). https://doi.org/10.1177/2050312118822927

Churchill, A. (2015, March 18). *Bless the tests: Three reasons for standardized testing.* Thomas B. Fordham Institute. https://fordhaminstitute.org/national/commentary/bless-tests-three-reasons-standardized-testing

College & Career Readiness & Success Center. (n.d.). *College and career ready definitions.* https://ccrscenter.org/ccrs-landscape/state-profile/new-jersey

Conklin, W. (2012). *Strategies for developing higher-order thinking skills, Grades 6-12*. Shell Education.

Conley, D. (2015). A new era for educational assessment. *Education Policy Analysis Archives*, *23*, 8.

Connelley, A. (2019, April 8). *Why does the US use standardized testing?* INcompassing Education. https://incompassinged.com/2019/04/08/why-does-the-us-use-standardized-testing/

Connon, H. A., Rash, J. A., Allen Gerwing, A. M., Bramble, B., Landine, J., & Gerwing, T. G. (2016). Post-secondary educators' perceptions of students' test anxiety. *The Canadian Journal for the Scholarship of Teaching and Learning*, *7*(1). https://doi.org/10.5206/cjsotl-rcacea.2016.1.9

Cordogan, S. (2015, 11). A Buyer's Guide to High-Stakes Test Data. *The Education Digest, 81*, 36-41.

Coşkun, K. (2019). Conditioning tendency among preschool and primary school children: Cross-sectional research. *Interchange*, *50*(4), 517-536. http://dx.doi.org/10.1007/s10780-019-09373-1

Counsell, S., & Wright, B. (2018, June 28). *High-stakes accountability systems: Creating cultures of fear*. Global Education Review. https://ger.mercy.edu/index.php/ger/article/view/390

Creswell, J. W. (2015). *A concise introduction to mixed methods research.* Sage.

Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching*. The National Commission on Teaching and America's Future.

Davis, S. H. (2007, April). Bridging the gap between research and practice: What's good, what's bad, and how can one be sure? *Phi Delta Kappan, 88*(8), 569–578.

Devedzic, V., Tomic, B., Jovanovic, J., Kelly, M., Milikic, N., Dimitrijevic, S., Djuric, D., & Sevarac, Z. (2018). Metrics for students' soft skills. *Applied Measurement in Education, 31*(4), 283-296. https://doi.org/10.1080/08957347.2018.1495212

Dewey, J. (1933). *How we think.* D.C. Health.

DeWitt, S. W., Patterson, N., Blankenship, W., Blevins, B., DiCamillo, L., Gerwin, D., Gradwell, J. M., Gunn, J., Maddox, L., Salinas, C., Saye, J., & Stoddard, J., Sullivan, C.C. (2013). The lower-order expectations of high-stakes tests: A four-state analysis of social studies standards and test alignment. *Theory and Research in Social Education, 41*(3), 382-427. https://doi.org/10.1080/00933104.2013.787031

DiBenedetto, C. A., & Myers, B. E. (2016). A conceptual model for the study of student readiness in the 21st century. *NACTA Journal, 60*(1), 28-35. https://www.nactateachers.org/attachments/article/2390/9%20DiBenedetto_NACTA%20Journal%20Special%20May%202016.pdf

Eelen, P. (2018). Classical conditioning: Classical yet modern. *Psychologica Belgica, 58*(1), 196–211. https://doi.org/10.5334/pb.451

Ferguson, M. (2017). A new push for integrating college and career preparation? *The Phi Delta Kappan, 99*(1), 42–43. http://www.jstor.org/stable/26388314

Gerwing, T. G., Rash, J. A., Gerwing, A. M., Bramble, B., & Landine, J. (2015). Perceptions and incidence of test anxiety. *Canadian Journal for the Scholarship of Teaching and Learning, 6*(3), 3.

Glavin, C. (2014, February 6). *Improving America's schools act.* K12 Academics. https://www.k12academics.com/us-education-legislation/improving-americas-schools-act

Gonzalez, A., Peters, M. L., Orange, A., & Grigsby, B. (2017). The influence of high-stakes testing on teacher self-efficacy and job-related stress. *Cambridge Journal of Education, 47*(4), 513–531. https://doi.org/10.1080/0305764X.2016.1214237

Gordon, J., & Patterson, J. A. (2008). "It's what we've always been doing." Exploring tensions between school culture and change. *Journal of Educational Change, 9*(1), 17-35.

Grissom, J. A., Kalogrides, D., & Loeb, S. (2017). Strategic Staffing? How Performance Pressures Affect the Distribution of Teachers Within Schools and Resulting Student Achievement. *American Educational Research Journal*, *54*(6), 1079–1116. https://www.jstor.org/stable/26642032

Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology*, *30*(4), 233–252. http://www.jstor.org/stable/30219846

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions, skills, structure training, and metacognitive monitoring. *American Psychologist, 53*(4), 449-455. https://doi.org/10.1037/0003-066X.53.4.449

Heise, M. (2017). From no child left behind to every student succeeds: Back to a future for education federalism. *Columbia Law Review*, *117*(7), 1859–1896. http://www.jstor.org/stable/44425412

Henry, P. (2007). The case against standardized testing. *Minnesota English Journal, 43*, 39-47.

Heubert, J., & Hauser, R. (Eds.). (1999). *High stakes: Testing for tracking, promoting, and graduation.* National Academy Press.

Higgins, S. (2014). Critical thinking for 21st-century education: A cyber-tooth curriculum? *Prospects, 44*, 559–574. https://doi.org/10.1007/s11125-014-9323-0

Hilton, M. (2015). Preparing students for life and work. *Issues in Science & Technology, 31*(4), 63-66.

Hughes, G., Behuniak, P., Norton, S., Kitmitto, S., Buckley, J. (2019). *NAEP validity studies panel responses to the reanalysis of TUDA mathematics scores.* American Institutes for Research and National Center for Education Statistics.

IEduNote. (2017, September 16). *4 Theories of learning*. IEduNote.com. https://www.iedunote.com/learning-theories

Jacob, B. A., & Levitt, S. D. (2003). Rotten apples: An investigation of the prevalence and predictors of teacher cheating. *Quarterly Journal of Economics, 118*(3), 843-877.

Jacobsen, M. (2019). *A multi-case study of a problem-based learning approach to teacher professional development* (Publication No. 22589729) [Doctoral dissertation, Michigan Technological University]. ProQuest Central; ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Jensen, J. L., McDaniel, M. A., Woodard, S. M., & Kummer, T. M. (2014). Teaching to the test…or testing to teach: Exams requiring higher order thinking skills encourage greater conceptual understanding. *Educational Psychology Review, 26,* 307-329. https://doi.org/10.1007/s10648-013-9248-9

Kececi, A., Dogan, C. D., & Gonullu, I. (2022). Assessment preferences of nursing and medical students: A correlational research. *Nurse Education in Practice, 60,* 103305-103305. https://doi.org/10.1016/j.nepr.2022.103305

Knecht, D. (2007). The consortium and the commissioner: A grass roots tale of fighting high stakes graduation testing in New York. *Urban Review: Issues and Ideas in Public Education, 39,* 1.

Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development.* Elsevier.

Koretz, D. (2008). *Measuring up: What educational testing really tells us*. Harvard University Press.

Kornhaber, M., & Orfield, G. (2001). High-stakes testing politics. In M. Kornhaber & G. Orfield (Eds.), *Raising standards or raising barriers: Inequality and high stakes testing in public education* (pp. 1-18). Century Foundation.

Lauen, D. L., & Gaddis, S. M. (2012). Shining a light or fumbling in the dark? The effects of NCLB's subgroup-specific accountability on student achievement. *Educational Evaluation and Policy Analysis*, *34*(2), 185–208. https://www.jstor.org/stable/23254110

The Leadership Conference on Civil and Human Rights. (2015, May 5). *Civil rights groups: "We oppose anti-testing efforts."* https://civilrights.org/2015/05/05/civil-rights-groups-we-oppose-anti-testing-efforts/

Leake, T. D. (2019). *The identifiable impacts of high-stakes testing on teacher self-efficacy* (Publication No. 27547482) [Doctoral dissertation, Gardner-Webb University]. ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Lee, J., & Reeves, T. (2012). Revisiting the impact of NCLB high-stakes school accountability, capacity, and resources: State NAEP 1990-2009 reading and math achievement gaps and trends. *Educational Evaluation and Policy Analysis, 34*(2), 209–231. https://www.jstor.org/stable/23254111

Lee, S. (Ed.). (2005). *Encyclopedia of school psychology*. SAGE Publications, Incorporated.

Lewis, C. J. (2018). Vygotsky and moral education: A response to and expansion of Tappan. *Educational Philosophy and Theory, 51*(1), 41–50. https://doi.org/10.1080/00131857.2018.1427576

Lin, C. (2020). *Mechanisms underlying associative learning: Classical conditioning paradigms and the functional neuronal changes that support acquisition* (Publication No. 28093554) [Doctoral dissertation, Northwestern University]. ProQuest Central.

Loveless, B. (2022). *Social learning theory: The complete guide*. Education corner. https://www.educationcorner.com/social-learning-theory-guide.html

Lowe, P. A. (2014). Should Test Anxiety be Measured Differently for Males and Females? Examination of Measurement Bias Across Gender on Measures of Test Anxiety for Middle and High School, and College Students. *Journal of Psychoeducational Assessment*, *33*(3), 238–246. https://doi.org/10.1177/0734282914549428

Madaus, G. F., & Clarke, M. (2001). The adverse impact of high stakes testing on minority students: Evidence from 100 years of test data. In G. Orfield, & M. L. Kornhaber (Eds.), *Raising standards or raising barriers? Inequality and high-stakes testing in public education.* The Century Foundation Press.

Martinez, C. (2022). Developing 21st century teaching skills: A case study of teaching and learning through project-based curriculum. *Cogent Education*, *9*(1). https://doi.org/10.1080/2331186x.2021.2024936

McKissick, T. P. (2021). *A quantitative, causal comparative study: project-based learning on college and career readiness* (Publication No. 28321216) [Doctoral dissertation, Grand Canyon University]. ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

McLeod, S. (2018, January 21). *What is operant conditioning and how does it work?* Simply Psychology. https://www.simplypsychology.org/operant-conditioning.html

McLeod, S. (2019). *Bruner – learning theory in education*. Simplypsychology.org. https://www.simplypsychology.org/bruner.html

McQueen, J. L. (2021). *An action research study of 21st-century career readiness skills of rural Texas public high school students* (Publication No. 28321887) [Doctoral dissertation, Northcentral University]. ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Measuring Teacher Effectiveness FAQ. (n.d.). https://www.rand.org/education-and-labor/projects/measuring-teacher-effectiveness/faq.html

Merriam, S. B., & Caffarella, R. (1999). *Learning in adulthood: A comprehensive guide* (2nd ed.). Jossey-Bass.

Mokher, C. G., Rosenbaum, J. E., Gable, A., Ahearn, C., & Jacobson, L. (2018). Ready for what? Confusion around college and career readiness. *The Phi Delta Kappan, 100*(4), 40–43. https://www.jstor.org/stable/26552484

Murillo Jr., E. G., & Flores, S. Y. (2002). Reform by shame: Managing the stigma of labels in high stakes testing. *The Journal of Educational Foundations, 16*(2), 93.

National Association of Colleges and Employers. (2016). Job outlook 2016: Attributes employers want to see on new college graduates' resumes. http://www.naceweb.org/s11182015/employers-look-for-in-new-hires.aspx

National Association of Colleges and Employers. (2019). *Career readiness defined*. Naceweb.org; National Association of Colleges and Employers. https://www.naceweb.org/career-readiness/competencies/career-readiness-defined/

National Research Council. (1999). *Testing, Teaching, and Learning: A guide for states and school districts*. National Academies Press. https://doi.org/10.17226/9609

North Carolina School Improvement Planning Implementation Guide. (2016). https://www.dpi.nc.gov/media/4632/download

North Carolina State Board of Education. (1999). *North Carolina standard course of study.* Author. http://www.ncpublicschools.org/curriculum

Oxford English Dictionary. (n.d.-a). Accountability. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/accountability

Oxford English Dictionary. (n.d-b). Educational reform. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/educational-reform

Oxford English Dictionary. (n.d.-c). Evaluative. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/evaluative

Oxford English Dictionary. (n.d.-d). Gateway. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/gateway

Oxford English Dictionary. (n.d.-d). High-stakes. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/high-stakes

Oxford English Dictionary. (n.d.-f). Narrowed. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/narrowed

Oxford English Dictionary. (n.d.-g). Standardized. In *Oxford English Dictionary*. Retrieved November 15, 2021, from https://www.oed.com/standardized

Patton, M. Q. (2003). Qualitative evaluation checklist. *Evaluation Checklists Project, 21*, 1-13.

Piaget, J. (1953). *Origins of intelligence in the child.* Routledge & Kegan Paul.

Pollard, T. L. (2014). *The impact of high-stakes testing on instructional practices: Perceptions of 3rd-5th grade teachers and administrators in north central Wyoming* (Publication No. 3620997) [Doctoral dissertation, University of Wyoming]. ProQuest Central; ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Pramling, I. (1988). Developing children's thinking about their own learning. *British Journal of Educational Psychology, 58*(3), 266–278. https://doi.org/10.1111/j.2044-8279.1988.tb00902.x

ProCon.org. (2020, December 7). Do standardized tests improve education in America? https://standardizedtests.procon.org/

Rains, T. (2014). *Standardized testing in Alabama and nationwide*. https://files.eric.ed.gov/fulltext/ED560223.pdf

Reid, A. (2011). *Learning theory overview*. Instructional Design Central. https://www.instructionaldesigncentral.com/learning-theory

Ritter, B. A., Small, E. E., Mortimer, J. W., & Doll, J. L. (2018). Designing management curriculum for workplace readiness: Developing students' soft skills. *Journal of Management Education, 42*(1), 80–103.

Soule, H., & Warrick, T. (2015). Defining 21st century readiness for all students: What we know and how to get there. *Psychology of Aesthetics, Creativity, and the Arts, 9*(2), 178-186. https://doi.org/10.1037/aca000017

Szabo, A., Ward, C., & Jose, P. E. (2016). Uprooting stress, coping, and anxiety: A longitudinal study of international students. *International Journal of Stress Management, 23*(2), 190–208. https://doi.org/10.1037/a0039771

Vervliet, B., Baeyens, F., Van den Bergh, O., & Hermans, D. (2013). Extinction, generalization, and return of fear: A critical review of renewal research in humans. *Biological Psychology, 92*(1), 51–58.

Veselak, K. M. (2018). *Teachers' beliefs about education in a high-stakes testing environment* (Publication No. 10815417) [Doctoral dissertation, Stony Brook University]. ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

Villares, E., & Brigman, G. (2019, January). College/career success skills: Helping students experience postsecondary success. *Professional School Counseling.* https://doi.org/10.1177/2156759X19834444

Vista, A. (2020). Data-driven identification of skills for the future: 21st-century skills for the 21st-century workforce. *SAGE Open, 10*(2), 215824402091590. https://doi.org/10.1177/2158244020915904

von der Embse, N., & Hasson, R. (2012). Test anxiety and high-stakes test performance between school settings: implications for educators. *Preventing School Failure. 56*(3), 180-187. https://doi.org/10.1080/1045988X.2011.633285

von der Embse, N. P., & Witmer, S. E. (2014). High-stakes accountability: Student anxiety and large-scale testing. *Journal of Applied School Psychology, 30*(2), 132–156. https://doi.org/10.1080/15377903.2014.888529

Western Governors University. (2020). *The five educational learning theories*. Author. https://www.wgu.edu/blog/five-educational-learning-theories2005.html#close

Williams, D. (2018, November 14). *Child development theories: B. F. Skinner*. First Discoverers. https://www.firstdiscoverers.co.uk/b-f-skinner-child-development-theories/

Wisdom, S. C. (2018). *Teachers' perceptions about the influence of high-stakes testing on students* (Publication No. 10973324) [Doctoral dissertation, Walden University]. ProQuest Central; ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection.

# Appendix A

## Survey Questions

## Q1 - Gender

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Male | 0.00% | 0 |
| 2 | Female | 0.00% | 0 |
| 3 | Non-binary / third gender | 0.00% | 0 |
| 4 | Prefer not to say | 0.00% | 0 |
| | Total | | 0 |

## Q2 - Years since High School Graduation

| # | Answer | % | Count |
|---|---|---|---|
| 1 | 1 to 5 | 0.00% | 0 |
| 2 | 6 to 10 | 0.00% | 0 |
| 3 | 11 to 15 | 0.00% | 0 |
| 4 | more than 16 years | 0.00% | 0 |
| | Total | | 0 |

## Q4 - My school system focused on teaching the material/standards.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q5 - Emphasis was placed on being our best.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q6 - High-stakes tests (End Of Grade/End Of Course/SAT/ACT) were rarely mentioned.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q7 - High-stakes testing (EOG/EOC/SAT/ACT) days were the most stressful days of my entire school year.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q8 - I have felt physically sick during High-stakes testing (EOG/EOC/SAT/ACT) days.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q9 - Having High-stakes tests (EOG/EOC/SAT/ACT) made me a stronger student with the drive to succeed.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q10 - We (our class) would spend days preparing (test-taking strategies, practice problems, etc.) for High-stakes tests (EOG/EOC//SAT/ACT).

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q11 - I would have never been prepared for college if not for High-stakes testing (EOG/EOC/SAT/ACT).

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q12 - I suffer from testing anxieties.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

## Q13 - High-stakes testing (EOG/EOC/SAT/ACT) pressures made me a better student.

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

**Q14 - I thrive on the idea that a High-stakes test (EOG/EOC/SAT/ACT) can determine my promotion, retention, or educational future.**

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

**Q15 - High-stakes testing struggles will only make you stronger.**

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

**Q16 - With the pressures of High-stakes testing, I feel that I am prepared to handle anything.**

| # | Answer | % | Count |
|---|---|---|---|
| 1 | Strongly Disagree | 0.00% | 0 |
| 2 | Disagree | 0.00% | 0 |
| 3 | Agree | 0.00% | 0 |
| 4 | Strongly Agree | 0.00% | 0 |
| | Total | | 0 |

**Q17 - Thank you so much for your participation in this survey and study that is being performed. Your responses and experiences will be used to improve the educational experiences for students in the future.**

**If you would be open to participate in a follow-up virtual interview for a continuation of this study and clarification of data, please leave your name and an email for contact.**

Thank you so much for your participation in this survey and study that is being performed. Your responses and experiences will be used to improve the educational experiences for students in the future.

If you would be open to participate in a follow-up virtual interview for a continuation of this study and clarification of data, please leave your name and an email for contact.

# Appendix B

## Interview Questions

*HIGH-STAKES TESTING: A STUDY OF THE RELEVANCE AND THEIR CONTRIBUTION TO CAREER AND COLLEGE READINESS*

Interview Questions

1. How much time would you say was devoted to high-stakes test preparation?
2. Describe why you think that your school encouraged you to perform well or created an unreasonable amount of pressure.
3. What do you feel is the overall purpose of high-stakes testing?
4. How would you say that high-stakes testing made you a better student?
5. How do you feel about a single test score being an accurate or fair representation/gauge of your success or learning in a particular class?
6. What do you think would be a better representation to measure knowledge gained in a class or subject?
7. How would you say that high-stakes tests prepared you for postsecondary life (college or career)?
8. How would you say that high-stakes tests have improved your problem-solving ability?
9. Do you feel that high-stakes tests have improved your ability to think critically?
10. Rank skills that you feel are impacted by high-stakes tests; 1 being most impacted, 5 being least impacted.

(judgment and decision-making, negotiation skills, critical thinking, fluency of ideas, complex problem-solving)

# Appendix C

## Community College Permission

Hello Mr. Cagle,

I have received your request and will be more than happy to assist you. Please review our Use of Human Subjects Policy, complete and return the attached form, and submit any other documentation you feel would be helpful, particularly any IRB or similar approval documentation from Gardner-Webb.

As soon as we receive your documentation, our review will proceed expeditiously.

Please let me know if you have any questions in the meantime.

Cindy

# Appendix D

## University Permission

Hi Frank,

The Catawba College Institutional Review Board (IRB) reviewed your research proposal entitled, *High Stakes Testing: A Study of the Relevance and Their Contribution to Career and College Readiness.* IRB approves your proposal and your IRB number is [2023-16]. You may now officially begin your research.

Please remember to adhere to the conditions and procedures as detailed in your proposal. If you make any changes to this protocol, you must submit a revised protocol to the Catawba College IRB for approval before implementing the changes.

We wish you much success in your scholarly pursuits!

Sarah K. Jackson, PhD
Co-Chair, IRB
Assistant Professor
Dept of Communication
(She/Her/Hers)

# Appendix E

## Participant Invitation Email

College Student,

Congratulations on your choice to continue your educational journey. Whether for a four-year path or desire to gain certification, your education is an asset that can never be taken away. I applaud you for taking the initiative to continue to grow.

I too am continuing my educational journey as a doctoral candidate. My hope is that you will take part in my process by participating in a study. My study is ***High-Stakes Testing: A Study of the Relevance and Their Contribution to Career and College Readiness.***

The study begins with an anonymous survey. A link to the study will be delivered to you through the registrar's office. There is also an option for a follow-up interview, if you choose. If you decide to end your participation at the conclusion of the study, that is acceptable.

Thank you in advance for your consideration to participate.

Frank Cagle
Doctoral Candidate
Gardner-Webb University

# Appendix F

## Interview Script

Thank you for agreeing to take part in the interview portion of this study. The interview will be recorded and then transcribed so that I can have an accurate record of our interview. I assure you of your confidentiality. You will be identified with only a number such as *Participant 1.* All collected data will be stored on a password protected computer.

If there is a question that you don't feel comfortable answering, let me know and we will move on. If you wish to discontinue the interview at any time, let me know, we will cease, and your recording will be destroyed. There is no penalty for withdrawing from the interview.

Questions for this interview were generated based on the responses received from the survey. The purpose of the interview is to provide clarification and/or a deeper understanding of the impact of high stakes testing on your college and career readiness.

Do you have any questions for me before we begin?