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PREDICTIVE ABILITY OF ACT ASPIRE FOR ACT AT STAR CITY HIGH SCHOOL

A Dissertation Submitted
to the Graduate College
Arkansas Tech University

in partial fulfillment of requirements
for the degree of

DOCTOR OF EDUCATION

in School Leadership

in the Center for Leadership and Learning
of the College of Education

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1 Corinthians 13:13 And now these three remain: faith, hope and love. But the greatest of these is love.

This work is dedicated to my wonderful parents: Roger and Verna Williamson. I am eternally grateful for the life lessons you instilled in me that made this journey possible.

To my wife, Shele, thank you for always supporting me unconditionally. Your love provides the fuel that gives me the strength to believe I can do anything. To my sons, Kasius and Kyas, the best job I ever had or will have is being your DAD. I am so thankful God blessed me with both of you. I look forward to watching you grow and blossom into wonderful young men destined for greatness. Team Williamson is my everything and I love you with all my heart.

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Abstract

Arkansas adopted the ACT ASPIRE as their summative assessment in 2015. ACT ASPIRE claimed their assessment results could accurately predict the composite scores on the ACT. The purpose of this study was to determine the relationship between students' scores on the ACT ASPIRE and the ACT for students in the Star City School District, as well as determining if the ACT ASPIRE accurately predicted eleventh grade students' scores on the ACT. The findings revealed a significant relationship between ACT ASPIRE (ninth/tenth) grade scores and ACT scores. There was a significant difference between ninth grade mean scores and tenth grade mean scores for ACT ASPIRE. Further, ACT ASPIRE (ninth/tenth) scores significantly predicted eleventh grade ACT composite scores.

Keywords: ACT ASPIRE, ACT

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Chapter I: Introduction

Background of Problem

In 2008, the National Governors Association (NGA), Council of Chief State School Officers (CCSSO), and Achieve, Inc. emphasized the importance of upgrading state standards in mathematics and language arts to ensure students are prepared to compete in a global educational market (National Governors Association [NGA], Council of Chief State School Officers [CCSSO], & Achieve, Inc., 2008). In 2009, the NGA and CCSSO joined with the Bill and Melinda Gates Foundation to create a consortium with the goal of creating the Common Core State Standards (CCSS) to decrease widespread disparity within K-12 academic standards throughout multiple states (Peterson & Kaplan, 2013). First, the college and career readiness standards were developed and then integrated into the K-12 standards (Common Core State Standards Initiative [CCSSI], 2018). The Obama Administration encouraged states to adopt college and career readiness standards by offering a waiver plan and relief from the accountability mandates in the No Child Left Behind legislation (Fleming, 2011). Presently, “41 states, the District of Columbia, four territories, and the Department of Defense Education Activity have adopted the CCSS and are implementing the standards according to their own timeline” (CCSSI, 2018, para. 27).

Arkansas used a four-year timeline to implement CCSS to all public schools (Griffin, 2015a). The multi-year process allowed school districts to develop curriculums, provide professional development opportunities for teachers, and transition from the Arkansas Benchmark assessment to an updated CCSS aligned assessment (Griffin, 2015a). Arkansas contracted with the Partnership for Assessment of Readiness for

College and Careers consortium (PARCC) group to provide a CCSS aligned summative assessment to test college readiness and general knowledge for grades third through tenth as required by No Child Left Behind (Griffin, 2015b). During the 2014-2015 school year, public schools in Arkansas administered the PARCC assessment for grades third through tenth (Griffin, 2015a).

Bidwell (2014) described CCSS as controversial educational standards and warned they would have political implications. Indeed, Arkansas experienced political pushback regarding CCSS and the PARCC assessment. Governor Asa Hutchinson used an executive order to create the Governor's Council on Common Core Review (Arkansas Governor's Office, 2015a), which was made up of governor-appointed "Arkansans who are committed to high standards in education and who have experience with CCSS, including educators, parents, business leaders and students" (Arkansas Governor's Office, 2015a, para. 3). The 16-member council conducted five days of review hearings and traveled to nine cities for community listening tours to gather evidence from stakeholders about CCSS implementation, CCSS math standards, CCSS ELA standards, PARCC assessment, and data privacy (Griffin, 2015a).

During the hearings, Dr. Debbie Jones, assistant commissioner for learning services at the Arkansas Department of Education, outlined several reasons for the state's adoption of the CCSS and subsequent PARCC assessment (Griffin, 2015a). Dr. Jones identified high college remediation rates, low college graduation rates, and a disgruntled business industry as catalyst for the creation and implementation of the new standards (Griffin, 2015a). Stacy Smith, director of curriculum and instruction at the Arkansas Department of Education, indicated the need for standards and assessment change

stemmed from 53% of graduating seniors in Arkansas going to college and needing remediation (Griffin, 2015a). All involved parties wanted to increase the readiness level of Arkansas students as they transitioned to higher education. Ultimately, the committee recommended leaving PARCC for ACT ASPIRE. The committee highlighted the ACT's national relevance, the reduced amount of testing time the ASPIRE would offer, and ACT's importance to students as reasons for the recommendation (Arkansas Governor's Office, 2015b).

ACT ASPIRE (2016a) claimed that the ASPIRE test accurately predicted students' scores on the ACT. The Scholastic Aptitude Test (SAT) and American College Testing (ACT) both serve as standardized admissions assessments for college (Atkinson & Geiser, 2009). Students have the ability to take either the ACT or SAT, or both, but the Arkansas Department of Education only provides a free ACT opportunity for eleventh grade students (Arkansas Department of Education [ADE], 2017a). The ACT measures what students have learned in high school and provides detailed information about academic strengths and weaknesses (Atkinson & Geiser, 2009). ACT provides a minimum score per subject area for students to reach, which indicates their ability to be academically successful during their first year of college. (Atkinson & Geiser, 2009).

Statement of the Problem and Purpose of the Study

Students in Star City, Arkansas are achieving low subject level and composite scores (~19) on the ACT exam (Arkansas Department of Education [ADE], 2017b). This problem affects admission status, course placement, scholarship opportunities, and quality educational career endeavors for those students (Arkansas Department of Higher Education [ADHE], 2014). In 2015, Governor Asa Hutchinson accepted a

recommendation from the Common Core Review Council and the State School Board, who voted to replace the PARCC test with the ACT ASPIRE exam as the state's assessment platform for measuring students' general knowledge of English, mathematics, science, and writing (Hart, 2015a). While ACT ASPIRE (2016a) claimed that the ASPIRE test accurately predicted students' scores on the ACT, the relationship between students' scores on the two exams has never been assessed for the students in the Star City School District. Thus, the purpose of this quantitative study was to determine the relationship between the students' scores on the ACT ASPIRE and the ACT for students in the Star City School District, as well as determining what best predicts eleventh grade students' scores on the ACT.

Definition of Terms

For the purposes of this study, key terms were defined as follows:

- *ACT ASPIRE*: A test that includes a vertically scaled battery of achievement tests designed to measure student growth in a longitudinal assessment system for grades third through tenth in English, reading, writing, mathematics, and science (ACT ASPIRE, 2016a).
- *ACT*: A national standardized assessment that serves as a measurement of aptitude and college readiness. The test consists of four parts (English, mathematics, science, and reading). The ACT assessment takes four hours to complete (ACT, 2016).
- *Arkansas Department of Education (ADE)*: "...is a dedicated service agency that provides leadership, support and service to schools, districts and communities so every student graduate prepared for college, career, and

community engagement” (Arkansas Department of Education [ADE], 2014a, para. 2).

- *Arkansas Department of Higher Education (ADHE)*: “The mission of the Arkansas Department of Higher Education is to advocate for higher education; to promote a coordinated system of higher education in the state; and to assist each of the publicly and locally supported institutions of higher education in the state in improving the delivery of higher education services to the citizens of Arkansas” (Arkansas Department of Education [ADHE], 2018, para. 1).
- *Common Core State Standards (CCSS)*: CCCS are internationally benchmarked standards that ensure all students are held to consistent expectations which will prepare them for college and career readiness (CCSSI, 2018).
- *No Child Left Behind (NCLB)*: No Child Left Behind was signed into law by President George W. Bush in 2002. The law requires states to test students in reading and mathematics in grades third through eighth and once in high school. Schools were required to make “adequate yearly progress” with achievement targets for their students (Ahn & Vigdor, 2014).
- *Partnership for Assessment of Readiness for College and Careers (PARCC)*: “... a collaboration of states that share a commitment to developing new-era assessments that measure students’ readiness for college and career” (Partnership for Assessment of Readiness for College and Careers [PARCC], 2018a, para. 1)

- *PARCC Assessment*: "...computer-based [assessment that] uses interactive questions to determine whether students have mastered the fundamentals, as well as higher-order skills such as critical thinking, problem solving and analyzing sources to write arguments and informational essays" (Partnership for Assessment of Readiness for College and Careers [PARCC], 2018b, para. 5) .
- *Summative Assessments*: Assessments administered at the conclusion of a unit or instructional period to measure student readiness and knowledge (Kibble, 2017).

Research Questions

The following research questions will be explored in this study:

1. Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?
2. Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?
3. Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?
4. How often do students' ACT scores fall in the predicted range given by ACT ASPIRE?

Significance of the Study

The findings from this study have the potential to affect several stakeholder groups involved in the public-school educational system in the state. The Arkansas executive and legislative branches collaborated to adopt the ACT ASPIRE, and ACT

serves as the state summative assessment options for satisfying the NCLB legislation.

The research from this study will provide valuable data for them to review and determine if that was a sound decision. The Arkansas Department of Education (ADE) has invested enormous time and resources into securing and providing ACT ASPIRE as the summative assessment requirement. Learning more about the relationship between ACT ASPIRE and ACT could help educators in Arkansas prepare students to achieve higher scores on the ACT. The assessment and accountability divisions utilize the data from ACT ASPIRE to measure student proficiency and growth. They both benefit from having an assessment that is accurately predicting students' performance on the ACT.

The Curriculum and Instruction Divisions at the ADE can use this information to evaluate the effectiveness of the Arkansas state standards to prepare students for college and career readiness. Teachers can create data driven academic units as well as provide individual student success plans derived from ACT ASPIRE information. Students can identify areas of growth and improvement to work towards targeted skills and knowledge deficiencies, which will aid in their ability to improve both their ACT ASPIRE scores and, ultimately their ACT scores. Parents could use the findings to support the school and their students in areas of low performance and academic skill deficiencies.

Assumptions

In this study, it was assumed that the ACT ASPIRE assessment is a valid and reliable measurement to test the knowledge of ninth and tenth grade students. Secondly, it was assumed that the ACT test results are accurate and represent a true measurement of student academic ability and knowledge. Finally, it was assumed that students gave their best effort on the ACT APSIRE and ACT when they were tested.

Limitations

The information found in this study may not be generalizable to the rest of the public schools in Arkansas. By considering the data collected for this study, it is from Star City students only, the findings of this study can only be suggestive as it pertains to the general education community. Moreover, private and charter school districts are not required to take part in the ACT ASPIRE summative assessment each year; thus, making it difficult to gain an accurate interpretation on how viable the results could be for students in Arkansas private and charter schools. There are also students who moved out of the district. It would be difficult to retrieve their information without identifying who they were, and this study will not be identifying individual students.

Delimitations

This study included the graduating class of 2019 in the Star City School District and did not include any other classes or school districts. Further, the summative assessment tool used for this study was the ACT ASPIRE, and no additional or alternative summative assessment scores were used. The ACT scores used in this study came from the ACT examination which were provided by the state during the spring semester of the students' eleventh grade year, the Arkansas Department of Education (ADE) provides an opportunity for all students in public and charter schools to take a free ACT during the spring semester of the eleventh-grade year (ADE, 2017a).

Chapter Summary

Chapter I provided the background of the problem and the purpose of this study. Further, this chapter outlined the limitations and defined key terms, as well as discussed, the significance of the study. Chapter II provides a review of the literature regarding high

stakes testing. The literature review will provide information about the high stakes testing history, how it is used for accountability, the influence of No Child Left Behind legislation, and ACT ASPIRE and ACT programming information. Chapter III provides an overview of the method used for this study, including a description of the research design and participants. Chapter IV presents the results from the research data analyses. Finally, Chapter V includes a discussion of the results and implications for the findings including recommendations for the university and future research.

Chapter II: Literature Review

Education has always presented a certain level of responsibility and pressure for teachers and students. “The teacher is responsible to every child placed in his care for that child’s development, intellectually, morally, and physically” (Michigan Farmer, 1899, p. 82). Good educators embrace their mission to raise, teach, support, and prepare students for every field of human endeavor. Teachers rely on formative and summative assessments to track student progress and cultivate positive relationships with both student and parent stakeholder groups (Hollingworth, 2008). Teachers depend on students to provide sufficient effort on assessments to collect useful data. Sometimes, teachers find it difficult to get students to appreciate the importance of testing. The purpose of this literature review has to provide information about accountability in schools, including high-stakes testing. The focus of the literature review included an overview of the study’s conceptual framework, along with information on four major concepts: history of standardized testing, accountability, legislation, and assessment types.

Conceptual Framework – Accountability

The conceptual framework of a study communicates the researcher’s direction for the study by combining concepts, empirical research, and relevant theories to validate the significance of the problem statement and research questions (Rocco & Plakhotnik, 2009). Additionally, conceptual frameworks assist the researcher in identifying the appropriate variables and concepts in a given study (Imenda, 2014). Educational accountability provides the foundation and central concept for this study. Madaus and Stufflebeam (1984) explained educational accountability as a system that holds

individuals, students, teachers, and administrators responsible for their academic performance. Historically, accountability in education serves as quality assurance through assessment results and feedback (Madaus & Stufflebeam, 1984). The practice of using high-stakes testing data results as an instrument to measure accountability continues to be the preferred model for federal and state education departments, which are currently utilized for testing purposes. The sustained relationship between testing and accountability is the foundation for this study.

Kuehl (2012) noted, President Reagan and his administration were instrumental in setting the modern precedent for accountability and structuring education reform, by generating a support network of public opinion that agreed with the emphasis on local responsibility. In order for demands of accountability to affect individual student success, schools need to provide clarity for stakeholders on targeted performance and educational accountability through organized programs, in addition to standardized assessments (Teo & Osborne, 2014). Schools could provide literature or reports to parents that explain student progress and college readiness based on assessment outcomes and student performance. Local administrators and teachers are vital to the success in relation to the accountability and their commitments concerning the implementation and promotion for the accountability system (Werts et al., 2013). Trust is an essential component to creating successful accountability systems (Oneill, 2013). By providing accountability in education, it relies on institutions communicating trustworthy evidence that can be analyzed by the groups responsible for monitoring answerability (Oneill, 2013). Standardized tests and high-stakes testing are ways in which this is accomplished.

Consistent with Imenda's (2014) assertion, the conceptual framework can effectively assist the researcher in gathering, clarifying, and explaining data. This study utilized the concept of accountability to make connections between school accountability, the Arkansas state assessment tool (ACT ASPIRE), and the predictive ability of that assessment tool for student outcomes (students' ACT student composite scores).

History of Standardized Testing

Standardized testing has roots in performance assessments for children. In the early 1900s, French psychologist Alfred Binet created the intelligence quotient (IQ) assessment to measure the level of developmental disablement in young children (Au & Gourd, 2013). Binet's testing was not designed to measure hereditary or innate intelligence, but rather provided a mechanism for identifying children who potentially could benefit from precise early interventions (Au & Gourd, 2013). Schools used the results from Binet's test to develop academic programs for lower performing students (Benjamin, 2009).

Several United States (U.S.) psychologists made significant revisions to Binet's assessment model (Boake, 2002). In 1910, Henry Goddard introduced the Binet-Simon test in America (Franklin, 2007). He translated the Binet-Simon test and used it to measure the intelligence of the feeble-minded children who attended his New Jersey training school. Goddard successfully promoted the Binet-Simon test and convinced other American physicians to use it (Benjamin, 2009). Goddard was the first person to introduce intelligence testing to the public schools (Benjamin, 2009). Later, Lewis Terman adjusted the age range of the test from children to adults and transitioned the mental age to the intelligence quotient (IQ) as the accepted composite score (Boake,

2002). The Stanford-Binet test measured the complete range of individual variances in intelligence (Minton, 1998). Terman's initial testing sample size consisted of about 1,000 students from public schools near Stanford University (Beauvais, 2016). In contrast to Binet's original focus, Terman believed it was important to identify higher performance because they were more likely to provide strong leadership (Minton, 1998). Terman and Robert Yerkes, the president of the American Psychological Association, worked together to administer intelligence test to approximately 1.75 million Army recruits during World War I (Minton, 1998). The results from the intelligence test were used to identify job assignments or, in some cases, be discharged from duty (Minton, 1998). Terman capitalized on his success with the Army testing and secured financial support to create the National Intelligence Test for grades three to eight (Minton, 1998).

Public education used various types of exams to collect information from students prior to the introduction of the IQ metric (Neill, 2016). The emergence of the IQ assessment as a consistent mechanism for gathering students' basic academic ability enhanced the concept of standardized testing (Neill, 2016). By 1932, 75% of the 150 large school systems in the United States implemented intelligence testing to place students in ability groups (Au & Gourd, 2013). The researcher included the influence IQ testing had on public schools by incorporating those types of assessments to assign student ability grouping. This set the path to connect testing and accountability.

Testing and Accountability Today

Testing and accountability are important to this study because schools utilize testing results to validate how successful their academic programs are performing by

highlighting student achievement (William, 2010). The following sections outline the rise of using testing for accountability in the U.S., starting in the 1980s.

A Nation at Risk. The relationship between education and high stakes testing has evolved over time. “The modern-day, high-stakes standardized testing movement can effectively be traced back to the 1983 publication of the National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform*” (Au & Gourd, 2013, p. 14). *A Nation at Risk* characterized the alarming reality American education was declining in innovation, creation, work-force readiness, and college readiness (Gardner et al., 1983). The researchers for *A Nation at Risk* identified several educational dimensions they considered ‘risk’ and provided a list of 13 indicators to justify their findings. They compared international student achievement on standardized assessments with American students. The data indicated students from industrialized nations outperformed American students in reading, writing, mathematics, and comprehension (Gardner et al., 1983).

There were several dissenting perspectives about *A Nation at Risk*. During his campaign, President Regan’s educational focus centered on eliminating the Department of Education (Guthrie & Springer, 2004). His appointed Secretary of State emphasized curricular reforms and highlighted a decline in student achievement (Guthrie & Springer, 2004). Guthrie and Springer (2004) declared the educational health of the nation described in *A Nation at Risk* was politically driven and predetermined. Further, the data presented in *A Nation at Risk* was biased and premeasured from the beginning of the process (Kamenetz, 2018). Kamenetz (2018) asserted that the authors of *A Nation at Risk* perceived a decline in the American Education system and then created a report with data

to match their narrative. *A Nation at Risk* provided information but failed to highlight positive achievements. Kamenetz (2018) pointed out that the United States graduated more students from high school, had more students attend college, and the top students were leading the world in academic achievement at the time *A Nation at Risk* was written (Kamenetz, 2018).

While the circumstances surrounding the reason behind *A Nation at Risk* have been challenged, its influence can still be linked to the current American educational accountability system. The recommendation and implantation strategies outlined in *A Nation at Risk* became the catalyst for K-12 education to make standardized assessments a priority (Guthrie & Springer, 2004). Recommendation B, Standards and Expectations, in *A Nation at Risk* suggested:

Standardized tests of achievement (not to be confused with aptitude tests) should be administered at major transition points from one level of schooling to another and particularly from high school to college or work. The purposes of these tests would be to; (a) certify the student's credentials; (b) identify the need for remedial intervention; and (c) identify the opportunity for advanced or accelerated work.

The tests should be administered as part of a nationwide (but not Federal) system of State and local standardized tests. This system should include other diagnostic procedures that assist teachers and students to evaluate student progress. (Gardner et al., 1983, p. 476)

Thus, *A Nation at Risk* was the beginning of the current testing and accountability climate educators know today. In the following section, the researcher reviewed recent legislative initiatives involved with testing and accountability.

No Child Left Behind. The No Child Left Behind (NCLB) legislation emphasized the connection between testing and accountability (Payne-Tsoupros, 2010). The foundation of NCLB can be traced back to *Brown v. Board of Education* and the Elementary and Secondary Education Act of 1965 (U.S. Department of Education, 2004a). President George W. Bush signed NCLB into law in 2002 (U.S. Department of Education, 2004a). NCLB was designed to provide academic accountability and flexibility along with support for local school districts (U.S. Department of Education, 2004a). This legislation required all public schools to administer summative assessments for students in grades third through eighth in mathematics and reading (Husband & Hunt, 2015). Additionally, schools had to test students in grades tenth through twelfth one time (Husband & Hunt, 2015).

NCLB endorsed the concept that competition between schools will improve the productivity and proficiency of the education system (Aske, Connolly, & Rhonda, 2013). NCLB echoed the importance of schools providing education and having an accountability program that monitors student progress along with ensuring local districts are achieving adequate yearly progress (U.S. Department of Education, 2004b). NCLB legislation intended to adjust the viewpoint from individual student accountability to include institutional responsibility and provide a quality educational experience including school choice for families (Aske et. al, 2013).

Supporters believed NCLB provided an avenue to ensure American children enjoy a level playing field (Aske, Connolly, & Corman, 2012). NCLB endorsed a school voucher program which allowed parents to receive a publicly financed certificate that could be applied to the cost of attendance for a private or charter school (Rawls, 2001).

This allowed parents who had students in schools that were selected for improvement, corrective action, or redistricting to transfer their child to another school (U.S. Department of Education, 2009a). However, some critics were concerned that NCLB's voucher system was designed to undermine and decrease public school opportunities by allowing families to offset the cost of moving students from a failing public school to a private school (Paul, 2004). NCLB also received criticism about curriculum. Groen (2012) suggested that NCLB's emphasis on testing English and mathematics contributed to the curriculum decline in science, history, art and music. Schools increased instructional time for English and mathematics because of the accountability measures, which led to decreasing the importance of core subjects like science/social studies, and reducing art/music's role to elective status in the course selection process (Groen, 2012).

Adequate yearly progress (AYP). NCLB educational accountability required every state to, "...set standards for grade-level achievement and develop a system to measure the progress all students and subgroups of students in meeting those state-determined grade-level standards" (U.S. Department of Education, 2004c, para. 2). Standards-based assessment changed the lens of accountability from educational equality to local responsibility; specifically, administrator, teacher, and student stakeholders (Ellison, 2012). Adequate Yearly Progress (AYP) is the accountability guide NCLB utilized to monitor school improvement (U.S. Department of Education, 2009b). AYP works to ensure schools are establishing protocols to assist low-performing students to achieve high levels of academic success (U.S. Department of Education, 2009b).

AYP was the foundation for the NCLB accountability system (Wiener & Hall, 2004) which remains important today. AYP requires states to adopt clear academic

standards, provide an assessment to evaluate student progress, and allocate time and resources toward making improvements for students who are not experiencing academic gains or success (Wiener & Hall, 2004). There are three-steps for measuring if schools achieved AYP, including (a) determining student performance based on the state assessment, (b) providing feedback to schools that includes the number of students that scored proficient and advanced on the assessment, and (c) deciding about the school's improvement status over the past academic year (U.S. Department of Education, 2009b).

AYP in Arkansas. The Arkansas Department of Education commissioned the Arkansas Comprehensive Testing, Assessment, and Accountability Program (ACTAAP) to develop guidelines to comply with the NCLB academic standards and assessment requirements outlined in AYP (Arkansas Department of Education [ADE], 2014b). ACTAAP developed a single assessment program designed to test every student enrolled in Arkansas public schools (ADE, 2014b). Arkansas students' performance level (below basic, basic, proficient, and advanced) originated from their individual scores on the ACTAAP assessment (ADE, 2014b). Under NCLB, Arkansas schools achieved AYP by demonstrating they tested at least 95% of their students, met the state requirement for percentage of students scoring proficient or advanced in every sub-group, and met the graduation rate for high school or the attendance rate for elementary (ADE, 2014b).

Arkansas created standards and an assessment to measure those standards because of the NCLB and AYP guidelines. The ACTAAP performance and subsequent ACT performance by students contributed to the state review of standards/assessments, which set the foundation for this study. The researcher introduced the updated ADE assessment requirement later in the literature review.

The Every Student Succeeds Act (ESSA). On December 10, 2015, President Barack Obama signed the Every Student Succeeds Act (ESSA) into law (U.S. Department of Education, 2018). ESSA replaced NCLB as the standard legislation for K-12 public education and accountability (The Understood Team, 2018). ESSA transferred decision-making power about school districts from the federal government to state and local educational organizations (Meredith, 2016). This transformation empowers districts with the autonomy to make decisions about local accountability and allocation of funds for educational use (WD&S Publishing, 2017). The Arkansas Department of Education commissioner, Johnny Key, submitted the ESSA Arkansas state plan to the Secretary of Education in September 2017 (Arkansas Department of Education [ADE], 2017c).

There are several differences in NCLB and ESSA; however, for this study, the difference that had the most impact was the annual testing requirement. NCLB did not allow states the opportunity to utilize assessments other than their own test (The Understood Team, 2018). ESSA allows states the option of using nationally recognized assessments for their annual testing requirement (The Understood Team, 2018). Arkansas used this updated testing selection process to create a partnership with ACT to administer the ACT ASPIRE to all the public schools. ESSA created the pathway (explored in this study) for making it possible for schools to use ACT ASPIRE to satisfy accountability requirements.

ACT

In 1959, the American College Testing Program (ACT) began with the purpose of producing an assessment with the capability of accurately measuring potential college

bound students' academic achievement (Kelly, 2014). The ACT was designed to predict college readiness, which changed the focus of testing from aptitude to academic achievement, skills mastery, and knowledge taught in grade school (ACT, 2018a). Currently, colleges in the U.S. use ACT results for admissions decisions and course placement (ACT, 2017).

Creation of the ACT. Dr. Everet Franklin Lindquist was a pioneer in the world of standardized educational assessments (Holmgren, 2009). Dr. Lindquist's standardized assessment journey started with monitoring a statewide educational competition known as the Iowa Academic Meet (Kelly, 2014). The meet was for high school students in Iowa and became popularly known as the "Brain Derby" (Holmgren, 2009). Lindquist and his associates decided to change the Brain Derby from a competition to an opportunity for grade schools to create individualized instruction for students and they created the Iowa Every-Pupil Achievement Tests (Kelly, 2014). Lindquist and his associates created the Iowa Tests of Basic Skills (ITBS) and Iowa Tests of Educational Development (ITED) to assist schools in aiding those students in their development of critical thinking and problem-solving skills (Holmgren, 2009). The combination of Lindquist's ability to write standardized assessments and scan for accuracy of over 40,000 sheets per hour, which created an opportunity to explore a new assessment (Holmgren, 2009).

In the summer of 1959, Ted McCarrell and Lindquist created the American College Testing Program (ACT) and produced an assessment with the purpose and capability of accurately measuring potential college bound students' academic achievement (Kelly, 2014). The ACT was designed to predict college readiness and

changed the focus of testing from aptitude to academic achievement, skills mastery, and knowledge taught in grade school (ACT, 2018a). The first ACT test was administered to 75,460 aspiring college students (Lindsay, 2015). The format included English, mathematics, social studies, and natural sciences (Kelly, 2014). Students were allotted 45 minutes for each individual section of the exam (Lindsay, 2015). There were individual scale scores (0-36) awarded for all four areas (Kelly, 2014). The total score became the composite of the four individual scores (ACT, 2018a). The method section of this study will provide an explanation for the ACT sub-categories and example questions for each sub-category.

Mission, purpose and claims. ACT's purpose is to measure students' college and career readiness in English, mathematics, science, and reading to assist them in creating educational plans (ACT, 2017). ACT can accomplish accurate measurements by creating a curriculum-based assessment that is aligned with college and career readiness standards (ACT, 2017). ACT currently uses the CCSS (the researcher outlined CCSS in Chapter I) to satisfy their need to align with college and career readiness standards. Based on the information provided by the student, ACT is confident in their ability to deliver accurate results from the assessment (ACT, 2017).

ACT asserted that their assessment measures educational achievement, academic knowledge, and school program effectiveness; predicts college readiness; and provides insight for student development and career paths (ACT, 2017). ACT noted that students' results on the exam can support high schools' ability to provide input in academic advising and counseling (ACT, 2017). Colleges use ACT results for admissions decisions and course placement (ACT 2017). Students can also use ACT data to validate

how well they can apply information and what they learned in school (ACT, 2017).

Further, students, parents, and educators can also use this information to increase college and career awareness about potential options post high school (ACT, 2017).

Development. ACT utilizes a multi-step process to develop their assessment. ACT secured all published state standards, reviewed textbooks from the state approved courses, and consulted secondary and post-secondary educators to gain input about the basic academic requirements presented in said textbooks and frameworks (ACT, 2017). Additionally, ACT administered a survey to college faculty members that contained questions evaluating the appropriateness of the content used on the assessment to measure college readiness (ACT, 2017). ACT continues to refine the test development process for curriculum studies in English, mathematics, reading, science, and writing by reviewing the information gathered from tests, state curriculums, national standards, surveying instructional practices, and consulting with content experts (ACT, 2017). ACT described this method of test development as content specifications (ACT, 2017). ACT also utilized statistical specifications that identifies difficulty level for the constructed items (ACT, 2017).

ACT employs item writers from diverse backgrounds to develop exam questions that are culturally, ethically, and regionally neutral in language to provide a fair and equitable opportunity for all test takers (ACT, 2017). ACT writers submit items that comply with the test specifications outlined by ACT's requirement for content, difficulty level, and style (ACT, 2017). ACT (2017) required item writers to submit questions identified as units to the development staff for review with guidelines (e.g., all English and reading questions must be prose passages, and science questions can be passage,

graphs/tables). Items are reviewed by a content panel consisting of high school teachers, content experts, and college faculty to ensure questions are content appropriate, grade-level aligned, and educationally relevant (ACT, 2017).

ACT performs an item analysis on all unit submissions to categorize the questions into low and high performing groups, based on the number of correct and incorrect answers by students in the same content area (ACT, 2017). The purpose of the item analysis is to identify effective questions and eliminate those items that are too difficult, too easy, or contains any discriminating features (ACT, 2017). ACT places all items that pass the review process into a pool to be potentially selected for future exams (ACT, 2017). ACT also has a writing section available for testers, but it is not required for all test-takers and will not be used for this study.

Scoring. ACT calculates the number of raw or correct answers a participant earns and converts those into a scale score that ranges from 1 to 36 in each sub category (ACT, 2017). The participants' composite score is the average of all four sub-scores including English, mathematics, science, and reading. (ACT, 2017). The recommended composite scores for each subject area ACT identifies as college ready are in Table 6 of the methods section for this study. Educators incorporate the results from the ACT to provide timely intervention for students in need of support (ACT, 2017).

National career readiness certificate. The National Career Readiness Certificate (NCRC) contains a WorkKeys assessment that allows participants to earn workplace credentials for a post-high school career (ACT, 2018a). Participants can take assessments in applied mathematics, graphic literacy, workplace documents, business

writing, fit, and talent (ACT, 2018a). This program is a part of the ACT suite; however, it will not contribute to this study.

ACT ASPIRE

The ACT ASPIRE is a summative assessment that measures student growth starting in third grade and continuing through early high school (EHS) covering English, mathematics, reading, writing and science (ACT ASPIRE, 2016b). Participants can take the ACT ASPIRE using paper-and-pencil, or computer-based (ACT ASPIRE, 2016b). ACT ASPIRE measures student achievement and monitors college and career progress/readiness (ACT ASPIRE, 2016b). The ACT ASPIRE assessment aligns with CCSS (ACT ASPIRE, 2016b). ACT ASPIRE was generated by combining academic research and empirical data to effectively build an assessment that performed for the intended audience, measured consequences, and revealed projected assessment outcomes (ACT ASPIRE, 2016b).

ACT ASPIRE makes two primary claims and three secondary claims (ACT ASPIRE, 2016b). The primary claims are that the exam measures student readiness on a college trajectory and career readiness trajectory (ACT ASPIRE, 2016b). The secondary claims are that the exam provides educators with instructional assistance, provides empirical data for accountability purposes, and provides implications about international comparisons (ACT ASPIRE, 2016b).

ACT ASPIRE developed performance level descriptors (PLDs) to provide detailed explanations about student progress across multiple grades (ACT ASPIRE, 2016c). There are four PLDs for each grade level: in need of support, close, proficient, and exceeding (ACT ASPIRE, 2016c). ACT ASPIRE designated ‘proficient’ as the cut

score that aligns to the ACT readiness benchmark at each grade level (ACT ASPIRE, 2016c). PLDs are a critical element involved in creating standards that decide the minimum expectations for students to establish a foundation and prove they can incorporate the requisite knowledge and skills needed for ready or exceeding (ACT ASPIRE, 2016c). ACT ASPIRE suggested educators use PLDs to differentiate instruction, identify target performance levels, and track student growth/proficiency (ACT ASPIRE, 2016c).

ACT ASPIRE uses scale scores to report student performance (ACT ASPIRE, 2016d). The scores begin with 400 and move upward, which makes the ACT ASPIRE the only assessment with scores done in this capacity (ACT ASPIRE, 2016d). To create the scale, ACT ASPIRE facilitated an assessment for students comprised of items from multiple grades/grade level using four isolated scaling tests (ACT ASPIRE, 2016d). The first scaling test was grades third through fifth, followed by grades fifth through seventh, and then grades seventh through EHS, and finally EHS along with ACT test (ACT ASPIRE, 2016b). Eventually, ACT ASPIRE created a single vertical scale for each subject (ACT ASPIRE, 2016d).

The scale used in ACT ASPIRE is a longitudinal scale (ACT ASPIRE, 2016d). Longitudinal designs collect data from the same people over a length of time (Wilson & Joye, 2017). ACT ASPIRE collects data from each cohort from the third through tenth grades (ACT ASPIRE, 2016d). ACT ASPIRE incorporates a scaling system that collects data from students over time and provides a direct comparison for students per grade level (ACT ASPIRE, 2016d). ACT ASPIRE's use of the longitudinal design is beneficial for this study because it collects data from ninth and tenth graders. Table 1 is an example

of the scale score system utilized by ACT ASPIRE for mathematics (ACT ASPIRE, 2016e).

Table 1

ACT Scale Scores

Tested Grade	Subjects	Low Score	High Score	Benchmark
3	Mathematics	400	434	413
4	Mathematics	400	440	416
5	Mathematics	400	446	418
6	Mathematics	400	451	420
7	Mathematics	400	453	425
8	Mathematics	400	456	422
9	Mathematics	400	460	428
10	Mathematics	400	460	432

ACT ASPIRE provides a three-digit composite score by taking the average of the English, mathematics, science, and reading sub-category scores (ACT ASPIRE, 2016b). ACT ASPIRE administers assessments and collects data for grades third through tenth, but they only provide composite scores for grades eighth through tenth (ACT ASPIRE, 2016f). Table 2 provides a detailed example of ACT ASPIRE composite scores (ACT ASPIRE, 2016f).

Table 2

ACT ASPIRE Composite Score Examples

Tested Grade	Subjects	Low Score	High Score	Benchmark
8	Composite	400	449	n/a
9	Composite	400	452	n/a
10	Composite	400	452	n/a

Relationship Between Act ASPIRE and ACT

ACT is responsible for developing, creating, and delivering the ACT ASPIRE assessment and ACT exam (Johnson, 2015). ACT ASPIRE evaluates student knowledge based on CCSS, and measures ACT readiness, which leads to providing information about each student's college readiness (Edwards, 2015). ACT ASPIRE claims their assessment is the lone exam directly attached to the ACT (ACT ASPIRE, 2016a). ACT was instrumental in developing CCSS and those standards are anchored to the college and career readiness items, which are used in the development process for ACT ASPIRE (ACT ASPIRE, 2016a). ACT and ACT ASPIRE both identified score benchmarks that provide evidence of knowledge and skills mastery for students, and their progress towards college readiness (Clough & Montgomery, 2015). ACT's active role in the development of the CCSS created a relationship with states, which allowed them to make both the ACT ASPIRE and ACT a part of the statewide assessment systems (Clough & Montgomery, 2015).

ACT ASPIRE provides ninth and tenth grade students a progress report that contains a predictive ACT score based on their performance on the assessment (Johnson, 2015). The predictions anticipate students taking the ACT two years after their ninth-

grade year and one year after their tenth-grade year (Allen & Liu, 2016). ACT ASPIRE declares their assessment can accurately predict student scores on the ACT (ACT ASPIRE, 2016a). Edwards (2015) believed that improved ACT ASPIRE scores directly creates improved ACT scores. The “...predicted ACT score ranges are based on estimates of the 25th and 75th percentile of the ACT score distribution, for each possible ACT ASPIRE score” (Allen & Liu, 2016, para. 3). Edwards (2015) provided ACT ASPIRE composite scores and connecting them to the ACT predictive composite scores in general ranges. These ranges are listed in Table 3.

Table 3

ACT ASPIRE Score Ranges

Assessment	Range	Assessment	Range
ACT ASPIRE	400-420	ACT	1-16
ACT ASPIRE	420-430	ACT	12-24
ACT ASPIRE	430-440	ACT	20-32
ACT ASPIRE	440+	ACT	26-36

Edwards (2015) pointed out that ACT ASPIRE is a new assessment and lacks the time and data to provide an accurate predication for the ACT. Additionally, ACT ASPIRE has more than just multiple-choice questions, which could cause students to increase their scores based on question variability, and create a false predictive reading (Edwards, 2015). ACT ASPIRE (2016b) uses a variety of question types including selected-response/multiple choice items (one correct answer), constructed-response (students generate answer), and technology-enhanced (computer interface questions). The possible predictive ability of the ACT ASPIRE for the ACT was a major contributor to the creation and development of this study.

ACT ASPIRE in Arkansas

Arkansas Governor Asa Hutchinson received a recommendation from his Council for a Common Core review to terminate the state testing contract with PARCC and move towards creating a partnership with ACT and ACT ASPIRE on June 8, 2015 (Arkansas Governor's Office, 2015b). Governor Hutchinson sent the recommendation to the State Board of Education to review and vote on the measure. The State Board of Education rejected this idea by a vote of 7-1 (Hardy, 2015). The state board was concerned with the selection process, the lack of established procurement process, and by switching to another assessment after one year, it could make it difficult to measure true student progress (Brantley & Hardy, 2015). Governor Hutchinson sent a letter to the ADE directing them to withdraw from PARCC immediately, because the state had failed to comply with a key term in the memorandum of understanding (MOU) with the testing company, which required written confirmation for a continued commitment of participation (Hart, 2015b). Governor Hutchinson's directive for the ADE to withdraw from PARCC helped clear the path for the state to adopt the ACT ASPIRE assessment.

State assessment adoption. Governor Hutchinson and the Common Core Council supported ACT ASPIRE because of national recognition for ACT, minimal testing time for students, and relevance for students (Buck, 2015). The ACT ASPIRE assessment takes four to four-and-half hours of total testing time for students (Arkansas Department of Education [ADE], 2014c). ACT ASPIRE's inclusion of a science section as a part of the assessment was another benefit the state did not experience with PARCC (Arkansas Department of Education [ADE], 2015a). Moreover, ACT ASPIRE's

connection to ACT (ACT ASPIRE, 2016a) could make it easier for students to understand how important the assessment is for their future.

Governor Hutchinson appointed three new members to the State Board of Education and reemphasized his desire to adopt ACT ASPIRE as the state assessment in route to requesting a follow up vote (Brantley & Hardy, 2015). In July 2015, the State Board of Education voted 4-2 in favor of adopting ACT ASPIRE and ACT (Brantley & Hardy, 2015). The state entered a contract with ACT and ACT ASPIRE to begin testing in the spring of 2016. The new agreement made it possible for every student in public and charter schools to participate in ACT (ADE, 2015a).

Current use of the test. Arkansas mandates that all public and charter school students in grades third through tenth take the ACT ASPIRE summative assessment each spring (Arkansas Department of Education [ADE], 2015b). There is also a state-funded ACT opportunity for all eleventh graders in public and charter schools (ADE, 2015b). The combination of the ACT ASPIRE third-through-tenth requirement and the eleventh-grade opportunity is the foundation for this study. The researcher included information in the methods section about ACT ASPIRE and ACT. ACT ASPIRE included an option for schools to utilize their periodic assessments both classroom and interim (ADE, 2015b). The researcher excluded the periodic assessment information from this study.

ACT ASPIRE assesses students in English, mathematics, science, and writing over the course of a four to four-and-half hour time period (ADE, 2017a). Arkansas school districts have the autonomy to create a testing schedule within a predetermined window (April 9-May 11) and provide testing accommodations for students that qualify for a specific need (ADE, 2014b). The ACT ASPIRE is an aligned system that can track

college and career readiness, along with providing feedback to teachers and students that can make it possible for them to address gaps in learning and knowledge (ADE, 2017a). Students (third through tenth) take a computer-based ACT ASPIRE assessment (ADE, 2014b).

ACT ASPIRE scores are the primary data mechanism used for school accountability by the Arkansas Department of Education (Arkansas Department of Education [ADE], 2018). The formula includes weighted achievement for mathematics and ELA (35%), content growth (35%), graduation rate (15%), and school quality/success (ADE, 2018). Schools earn points through individual ACT ASPIRE scores in three of those categories and are assigned an ESSA index letter grade based on student performance and outcomes for the ACT ASPIRE (ADE, 2018). The ACT ASPIRE is important for public schools to satisfy their ESSA requirements, prepare students for college and career readiness, and provide valuable information about the growth and progress for students.

Conclusion

The literature review revealed accountability as the appropriate conceptual framework for this study. Conceptual frameworks assist the researcher in identifying the appropriate variables and concepts in a given study (Imenda, 2014). In education, accountability serves as quality assurance through assessment results and feedback (Madaus & Stufflebeam, 1984). The accountability variables identified for this study include legislation, assessment requirements, and assessment types (ACT ASPIRE and ACT). The literature identified the IQ assessment as the genesis for using standardized test to measure student ability. The emergence of the IQ assessment as a consistent

mechanism for gathering students' basic academic ability enhanced the concept of standardized testing (Neill, 2016).

A Nation at Risk influenced the inclusion of standardized assessments in public school education. The recommendation and implantation strategies outlined in *A Nation at Risk* became the catalyst for K-12 education to make standardized assessments a priority (Guthrie & Springer, 2004). *A Nation at Risk* eventually led to legislation that required yearly summative assessments for accountability. The No Child Left Behind (NCLB) legislation emphasized the connection between testing and accountability (Payne-Tsoupros, 2010). The literature review named AYP as the accountability vehicle used to conciliate the assessment requirements outlined by NCLB. Adequate Yearly Progress (AYP) is the accountability guide NCLB utilized to monitor school improvement (U.S. Department of Education, 2009b). Eventually, ESSA replaced NCLB as the standard legislation for K-12 public education and accountability (The Understood Team, 2018). NCLB and ESSA created the circumstances necessary for Arkansas to require a summative assessment for all students; thus, it paved the pathway for the adoption of the ACT ASPIRE.

Chapter Summary

The literature review contained information for the ACT and ACT ASPIRE. The ACT asserts that their assessment measures educational achievement, academic knowledge, and school program effectiveness; predicts college readiness; and provides insight for student development and career paths (ACT, 2017). Additionally, the ACT ASPIRE is a summative assessment that measures student growth starting in third grade and continuing through early high school (EHS) covering English, mathematics, reading,

writing and science (ACT ASPIRE, 2016b). ACT and ACT ASPIRE both have identified score benchmarks that provide evidence of knowledge and skills mastery for students, and their progress towards college readiness (Clough & Montgomery, 2015). ACT ASPIRE declares their assessment can accurately predict student scores on the ACT (ACT ASPIRE, 2016a). The predictive ability and credibility of the ACT ASPIRE is important to this study. The researcher utilized the literature review to examine the relationship between the two assessment types (ACT and ACT ASPIRE) to support the purpose and formulate the hypothesis' used to drive the research for this study.

The literature review outlined the close relationship that accountability shares with assessments. The researcher used the literature review to document multiple levels of connection between accountability, legislation, and assessments. Chapter III will reveal more information about the research study hypotheses, process, and instruments used to collect data for this study.

Chapter III: Research Methodology

Introduction

This chapter outlines the methodology used in this study. The purpose of this study was to examine the relationship between the students' ACT ASPIRE and ACT scores for the students in the eleventh grade in Star City School District. In this chapter, the research design, participants, sampling, data collection methods, instruments, and data analysis are presented.

Research Questions and Hypotheses

The research questions and hypotheses for this study are as follows:

- RQ1: Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?
 - H1: Higher ACT ASPIRE composite scores will be related to higher ACT composite scores.
- RQ2: Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?
 - H2: There is no difference between the ACT ASPIRE composite scores for 9th and 10th graders.
- RQ3: Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?
 - H3: 9th and 10th grade ACT ASPIRE composite scores significantly predict 11th grade ACT composite scores.
- RQ4: How often do students' ACT scores fall in the predicted range given by ACT ASPIRE?

- H4: ACT ASPIRE correctly predicts the ACT composite scores for most Star City students.

Research Design

This was a quantitative descriptive non-experimental study that aimed to examine the relationship between the students' ACT ASPIRE and ACT scores for students in the eleventh grade in Star City School District. Non-experimental designs allow the researcher to evaluate the variables within the study in a natural state without incorporating interventions, or controlling the conditions (Radhakrishnan, 2013). In contrast, experimental designs introduce interventions and manipulate variables (Wilson & Joye, 2017). Interventions include anything that was given to the participants during the trial to see how it would affect them during the observation period (Killam, 2013). This study was observational and analyzed data that was collected from ACT ASPIRE and ACT scores. The non-experimental design was the best fit because there were no interventions introduced during this study.

Participants

Wilson and Joy (2017) defined a cohort as a group of people that share something. The eleventh-grade cohort is the population for this study. The eleventh-grade cohort in the Star City School District were the first group of students to take the ACT ASPIRE in ninth and tenth grades, and then the statewide ACT in the eleventh grade. This was a census study because it included all participants in the population that met the selection criteria (Horne, 2018). Specifically, the study included all eleventh-grade students that took the ACT ASPIRE in the ninth grade (April 2016), tenth grade (April 2017), and the state administered ACT (February 2018). Any students who did not

take the exams at the times mentioned above were excluded from the study. The results of this study could be generalizable to the other public and charter schools in Arkansas because the entire state eleventh grade cohort shared the same testing pattern used in this study.

Context of the study. Star City High School (SCHS) is located in Southeast Arkansas. Star City is an agricultural community with a population of 2,091 residents (Arkansas Hometown Locator, 2018). Star City is the county seat for Lincoln County (Arkansas Hometown Locator, 2018). The average household income is \$67,036 and the average home value is \$159, 963 (Arkansas Hometown Locator, 2018). The Star City School District (SCSD) is the only school district in Lincoln County, and it has an elementary school (Jimmy Brown Elementary K-5), middle school (Star City Middle School 6-8), and Star City High School (SCHS) (Arkansas Hometown Locator, 2018). Star City SCHS houses grades ninth through twelfth. There are 489 students attending SCHS: 124-ninth graders, 126-tenth graders, 118-eleventh graders, and 120-twelfth graders. The participants for this study included 118 students from the eleventh-grade cohort. The student demographics for the eleventh-grade cohort are 52% female, 48% male, 67% White, 22% Black, 0.05% Hispanic/Latino, 0.02% Asian, 0.025% Native American, and 0.02% Two or More Races. The free and reduced lunch population for this cohort of eleventh grade students is 64.4.%. Table 4 lists the demographic percentage breakdown for SCHS and the graduating cohort used in this study.

Table 4

SCHS Demographics

Demographic Type	SCHS Overall	2019 Graduating Class <i>N</i> = 118	Eleventh Grade Cohort for this Study <i>N</i> = 94
Gender			
Male	49.38%	48%	55%
Female	50.62%	52%	45%
Race			
White	70.19%	67%	71%
Black	20.37%	22%	19%
Hispanic/Latino	4.94%	0.05%	0.05%
Asian	0.62%	0.02%	0.01%
Native American	0.41%	0.025%	0.01%
Two or more races	2.47%	0.02%	0.02%
Free and Reduced Lunch Percentage	63.58%	64.4%	54%

Note. This information came from Star City School District.

Star City School District's low-test performance on the ACT ASPIRE is a concern. The Office for Education Policy (OEP) at the University of Arkansas released awards for high achieving schools by region based on their ACT ASPIRE scores from the previous school year (Office for Education Policy [OEP], 2017). The Star City School District was included with schools from the Southeast Region in this report. The OPE (2017) identified the top five schools per region, and the Star City School District was not one of the top five schools in the southeast region. Additionally, the southeast region was the lowest performing region in the state (OEP, 2017).

Sampling and Data Collection

The researcher used existing ACT ASPIRE and ACT data for all students in the eleventh grade who met the selection criteria for this study. The researcher requested permission in writing from the Star City School District superintendent to use the eleventh-grade cohort in this study. The researcher gained approval from the Arkansas Tech University (ATU) Institutional Review Board (IRB) for this project. Upon approval, the researcher contacted the district testing coordinator and high school counselor to retrieve the data needed for this study. The requested data consisted of the ACT ASPIRE scores for mathematics, literacy, science, and reading, as well as the ACT ASPIRE composite scores for tests taken by the eleventh-grade cohort when they were in the ninth and tenth grades. Additionally, the researcher requested the state administered ACT mathematics, literacy, science, reading, and composite scores for the students in the eleventh-grade cohort. The researcher also requested the following demographic information: gender, race/ethnicity, free/reduced lunch status (FRLS), and grade point averages (GPA). The researcher advised the district testing coordinator and high school counselor to remove student names and ID numbers to ensure there were no identifying markers that could potentially breach the confidentiality of the participants. The district testing coordinator utilized the ACT ASPIRE testing portal to extract the data and provide the information to the researcher. The high school counselor provided the ACT and demographic data. The researcher requested that both sets of data (ACT ASPIRE and ACT) be delivered in an excel spreadsheet.

Instruments

The two exam instruments used in this study were the ACT and ACT ASPIRE. The ACT is an exam that measures what students have learned in high school and

provides detailed information about academic strengths and weaknesses; it is used as a standardized admission assessment for college in the U.S., as it helps indicate students' ability to be academically successful during their first year of college (Atkinson & Geiser, 2009). The ACT ASPIRE exam measures benchmark readiness for grades third through tenth to provide schools with information about student grade level ability in English, mathematics, science, and reading (ACT ASPIRE, 2016b). ACT ASPIRE (2016a) claimed that the ASPIRE test accurately predicts students' scores on the ACT. A more detailed description of each test is provided below, along with validity and reliability information for each test.

ACT. The ACT exam contains four different core academic sections with an optional writing section (ACT, 2018b). The English section is to be completed in no more than 45 minutes, and contains 75 questions that evaluates language skills, basic English understanding, and writing structure knowledge (ACT, 2018b). The mathematics section is to be completed in no more than 60 minutes and contains 60 questions that cover all mathematics courses (i.e., Algebra I, Algebra II, Geometry) prior to twelfth-grade (ACT, 2018b). The reading section is to be completed in no more than 30 minutes and contains 40 questions that measures reading comprehension skills by requiring students to read passages and answer questions about them (ACT, 2018b). Test takers have the option of taking a writing portion of the exam that is scored separately from the other four sections (ACT, 2018b). Table 5 provides sample questions for the ACT in English, science, mathematics, and reading. The sample questions provide the reader with examples of question prompts in each of the four core subject areas (ACT, 2018b).

Table 5

Sample ACT Questions

Subject/Question		Answers			
English	A.	B.	C.	D.	
Which choice would most effectively introduce the rest of this paragraph?	No Chance	There seemed to be no explanation for why mom ran our household the way she did.	Our household didn't run according to a typical schedule.	Mom ran our household in a most spectacular manner.	
Science	A.	B.	C.	D.	
Which of the following statements about meteorite craters on Europa would be most consistent with both scientists' views?	No meteorites have struck Europa for millions of years.	Meteorite craters, once formed, are then smoothed or removed by Europa's surface processes..	Meteorite craters, once formed on Europa, remain unchanged for billions of years.	Meteorites frequently strike Europa's surface but do not leave any craters.	
Mathematics	A.	B.	C.	D.	E.
A car averages 27 miles per gallon. If gas costs \$4.04 per gallon, which of the following is closest to how much the gas would cost for this care to travel 2,727 typical miles?	\$44.44	\$109.08	4118.80	\$408.04	\$444.40
Reading	A.	B.	C.	D.	
It can reasonably be inferred that which of the following	Mother Mason	Father Mason	Abshu as a child	Abshu as an adult	

characters from
the passage lives
according to
Abshu's
definition of a
life fully lived?

ACT validity. ACT (2017) suggested that there are logical, empirical, and theoretical components involved in providing specific interpretations about validity and test scores. The 2017 ACT technical manual summarizes validity with three methods of evidence: construct, criterion, and content (ACT, 2017). ACT described the development process and provided example case studies to establish proof about the validity of the test and results.

Construct oriented evidence. The construct described the idea the researcher is interested in evaluating (Wilson & Joy, 2017). ACT suggested their assessment is closely connected to high school and college curriculum and theorizes that students' performance on the exam should reflect the courses they took and the grades they made upon completing these courses (ACT, 2017). During the registration process, ACT researchers collect course/grade information to measure the relationship between the reported grades and the ACT subject-level scores (ACT, 2017). ACT provided research revealing scale score means and standard deviations concerning the relationship between high school performance and ACT assessment performance (ACT, 2017). This process is an example of construct-oriented evidence (Wilson & Joye, 2017).

Criterion oriented evidence. The ACT developed college readiness benchmark scores in English, mathematics, science, and reading (ACT, 2017). ACT suggested their multiple-choice assessment and subsequent benchmark scores represented the academic ability students needed to achieve first-year college course success (ACT, 2017). Heale

and Twycross (2015) presented three-ways a study can obtain criterion status and identify predictive validity as one of them. Predictive validity requires the instrument to have high correlations with future criteria (Heale & Twycross, 2015). Table 6 details the ACT academic sub-score benchmark per subject and the predictive first-year college corresponding grade (ACT, 2017).

Table 6

ACT Sub-Score Benchmark Per Subject

ACT	Benchmark	First-Year College Course	First-Year College Grade	First-Year College Grade
English	18	Composition I	50% chance of B or higher in First-year college course	75% chance of C or higher in first-year college course
Mathematics	22	College Algebra	50% chance of B or higher in First-year college course	75% chance of C or higher in first-year college course
Science	22	Biology	50% chance of B or higher in First-year college course	75% chance of C or higher in first-year college course
Reading	23	Reading and Social Science Courses	50% chance of B or higher in First-year college course	75% chance of C or higher in first-year college course

Content oriented evidence. Researchers can evaluate content validity by reviewing individual items on a test (Wilson & Joy, 2017). Researchers also examined the individual items to confirm all facets of the construct were represented, with the understanding that content is about logic and not about statistics (Wilson & Joy, 2017). The list that ACT utilizes to deliver the test specifications, technical quality, and testing

forms needed to satisfy content validations including: Subject-Matter Experts (SMEs); academic research on skill targets, sequencing of skills, and grade placement; data and evidence of student understanding collected from the ACT test; the ACT national curriculum survey; and a survey of standards and frameworks (ACT, 2017). ACT believed the most effective way to predict achievement in college is to assess students' academic skills and ability (ACT, 2017). The assessment must reflect the content and cognitive requirements students will encounter when they enroll in higher education institutions (ACT, 2017). During the development process, test questions are methodically studied at least 16 times to ensure they satisfy the minimum threshold for testing content which is reflective in the high school and college curriculum (ACT, 2017). The ACT test specifications and development process provides content-oriented validity evidence (ACT, 2017).

ACT reliability. Coefficient alpha and the standard error of measurement (SEM) were calculated to provide reliability estimates for the ACT test (ACT, 2017). Coefficient alpha provides reliability estimates for number of correct (raw) scores (ACT, 2017). Table 7 provides the coefficient alpha reliability estimates for each subscale of the ACT (ACT, 2017, p. 148).

Table 7

Scale Score Reliability for the ACT Test Scores

Test	Number of Items	Reliability Estimate		
		Median	Minimum	Maximum
English	75	0.89	0.88	0.90

Mathematics	60	0.89	0.87	0.91
Reading	40	0.86	0.86	0.86
Science	40	0.85	0.83	0.87

The ACT ASPIRE assessment measures benchmark readiness for grades third through tenth to provide schools with information about student grade level ability in English, mathematics, science, and reading (ACT ASPIRE, 2016a). The ACT ASPIRE assessment also measures college readiness by providing a three-digit score scale which predicts the students composite score on the actual ACT in English, mathematics, science, and reading (ACT ASPIRE, 2016a). The assessment consists of several types of questions that include constructed response, selected response, and technology-enhanced (ACT ASPIRE, 2016a). ACT ASPIRE has interim and classroom assessment; however, they will not be used for this study. Table 8 provides examples of early high school questions that are on the ACT ASPIRE assessment.

Table 8

Sample ACT ASPIRE Questions

Subject/Question		Answers			
English	A	B	C	D	E
At this point, the writer wants to emphasize the pleasing effect of the tapestries in Cora's workshop. Which choice best accomplishes that goal?	No Change	Had been hung on the walls	Adorned the walls with a multicolored elegance	Covered the walls completely	
Mathematics	A	B	C	D	E

Some police officers estimate the speed, in miles per hour, of a car that skids to a stop on a dry asphalt road by multiplying the length of the skid, in feet, by 30 and then taking the square root of the product. According to this method, which of the following values is closest to the estimated speed, in miles per hour, of a car that made a 200-foot skid?	15.2	42.4	44.4	77.5	190.5
Science	A	B	C	D	
In Experiment 2, what percent of the plants flowered in response to the photoperiod of 16 hr of light followed by 8 hr of darkness?	0	93	95	100	
Reading	A	B	C	D	
A main theme of the passage is that it is important to:	Keep searching for heroes.	Keep pursuing one's dreams.	Be willing to adjust one's goals.	Be willing to follow important advice.	

ACT ASPIRE validity. The ACT ASPIRE (2016b) provided a descriptive sample size of 122 district and 263 schools where they tested the relationship between the ACT EXPLORE, ACT PLAN, and ACT ASPIRE scale scores in English, mathematics, and science for students in grades eighth, ninth, or tenth to evaluate if those tests accurately measured academic achievement. ACT ASPIRE pointed to the test development process and the content descriptions for the individual subject areas as confirmation their assessment was addressing the desired material (ACT ASPIRE, 2016b). ACT ASPIRE scale scores provided evidence about students' grade level ability and college readiness along with an indication of how they performed in English, mathematics, reading, and science (ACT ASPIRE, 2016b). Table 9 describes the correlation between ACT Explore/ACT Plan scale scores and ACT ASPIRE scale scores (ACT ASPIRE, 2016b, p. 263).

Table 9

Correlation Between ACT/Explore/ACT Plan Scale Scores and ACT ASPIRE Scale Scores

Sample/Grade	English	Mathematics	Reading	Science	Composite
ACT Explore- ACT Aspire/8	.75	.72	.70	.69	.85
ACT Explore- ACT Aspire/9	.76	.75	.66	.70	.82
ACT Explore- ACT Aspire/10	.78	.77	.65	.69	.84

ACT ASPIRE (2016b) utilized the process of equating, scaling, and scoring as convergent validity to provide evidence that their scoring achieved the desired

interpretation of scoring outcomes. Wilson and Joye (2017) defined convergent validity as a measurement that correlates with comparable or contrasting constructs that can be positive or negative providing the value is strong. ACT ASPIRE relies on scores to provide accurate information about English, mathematics, science, and reading for college and career readiness, as well as subject area knowledge, so they can deliver creditable data to educational institutions (ACT ASPIRE, 2016bF).

ACT ASPIRE reliability. Coefficient alpha and the standard error of measurement (SEM) are calculated to provide reliability estimates for the ACT ASPIRE by grade and subject (ACT, 2017). Table 10 provides the scale score coefficient alpha reliability estimates for each subscale of the ACT ASPIRE assessment (ACT ASPIRE, 2016b, p. 228).

Table 10

Scale Score Reliability Coefficient by Grade and Subject

Subject	Grades						
Subject	3	4	5	6	7	8	EHS*
English	0.79	0.76	0.78	0.82	0.82	0.84	0.89
Mathematics	0.80	0.67	0.71	0.79	0.84	0.88	0.88
Reading	0.85	0.85	0.84	0.84	0.81	0.83	0.87
Science	0.88	0.84	0.85	0.88	0.89	0.87	0.87
Composite*						0.95	0.96

Note. Composite scores are not reported below grade 8. *EHS (Early High School) includes ninth and tenth grade students (ACT ASPIRE, 2016b).

Data Analysis

Table 11 outlines the variables and planned statistical analysis for each hypothesis in this study.

Table 11

Statistical Analysis Methods

Research Question	Hypothesis	Variables	Statistical Test
Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?	Higher ACT ASPIRE composite scores will be related to higher ACT composite scores.	V1- ACT ASPIRE composite scores V2- ACT composite scores	Correlation
Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?	There is no difference between the ACT ASPIRE composite scores for 9th and 10th graders.	IV—grade (9th, 10th) DV-ACT ASPIRE composite score	T-test
Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?	9th and 10th grade ACT ASPIRE composite scores significantly predict 11th grade ACT composite scores.	IV-9th grade ACT ASPIRE composite scores IV-10th grade ACT ASPIRE composite scores DV-11th grade ACT composite scores	Multiple Regression
How often do students' ACT scores fall in the predicted range	ACT ASPIRE correctly predicts the ACT composite score for most Star City students.	V1--ACT Range from ACT ASPIRE	Hand count/ frequency/ percentage

Summary

Chapter III provided an overview of the method used for this study, including a description of the research design and participants. Moreover, Chapter III outlined the validity and reliability of the instruments used to collect data for this study, as well as a plan for data analysis.

Chapter IV: Results

The purpose of this study was to determine the relationship between students' scores on the ACT ASPIRE and the ACT for students in the Star City School District, as well as determining what best predicted eleventh-grade students' scores on the ACT. The researcher used the following questions to guide this study:

1. Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?
2. Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?
3. Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?
4. How often do students' ACT scores fall in the predicted range given by ACT ASPIRE?

Research Questions

The following section outlines the analysis of data and findings for each individual research question in this study. First, the exploration of the relationship between ACT ASPIRE composite scores and ACT Composite scores were examined. Next, the investigation of the ninth grade ACT ASPIRE scores and the tenth grade ACT ASPIRE scores were discussed. Then, an examination of the ninth grade ACT ASPIRE scores, tenth grade ACT ASPIRE scores, and the ACT Composite scores were presented. Finally, an analysis of the accuracy and frequency of the ACT predictor scores based on the ninth and tenth grade ACT ASPIRE scores were presented.

Research Question 1

The first research question was: *Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?* The purpose of this question was to identify if there was a significant positive, or negative relationship between the ACT ASPIRE composite scores and the ACT composite scores. The results of this research question could significantly influence the rest of the study. If there is no significant relationship between the ACT ASPIRE composite scores and the ACT composite scores, or if the relationship is weak, then the likelihood that the ACT ASPIRE composite scores predict ACT composite scores is also weakened.

To answer research question one, a bivariate correlation (r) was conducted using the ninth grade ACT ASPIRE composite scores, tenth grade ACT ASPIRE composite scores, and eleventh grade ACT composite scores as the variables. The bivariate correlation measures the direction and strength of a relationship between two variables (Knapp, 2017). The bivariate correlation's value ranges from -1 to +1 (Knapp, 2017). Positive ($r = 0$ to +1) correlation coefficients indicate that scores on the two variables are moving in the same direction (e.g., as one score increases the other score also increases), while negative ($r = 0$ to -1) correlation coefficients indicate the two variables are moving in opposite directions (i.e., as one score increases the other decreases) (Knapp, 2017). If the (r) is close to 0, the indication is the strength of the relationship between the two variables is weak (Knapp, 2017). The closer the numeric value is to -1 or 1, it indicates a stronger positive or negative relationship between the two variables (Knapp, 2017).

Bivariate correlation analysis. The results of the bivariate correlation (see Table 12) indicated that there was a significant positive relationship between ninth grade ACT

ASPIRE composite scores and tenth grade ACT ASPIRE composite scores [$r(94) = .914$, $p < .01$]. Additionally, there was a significant positive relationship between ninth grade ACT ASPIRE composite scores and ACT composite scores [$r(94) = .879$, $p < .01$]. Finally, there was a significant positive relationship between tenth grade ACT ASPIRE scores and ACT composite scores [$r(94) = .865$, $p < .01$]. The data suggested that as ACT ASPIRE composite scores increased, ACT composite scores also improved.

Table 12

ACT ASPIRE and ACT Correlations

	1	2	3
1. ACTASPIRE 9	-		
2. ACTASPIRE 10	.914**	-	
3. ACTCOMPOSITE	.879**	.865**	-

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

Research Question 2

The second research question was: *Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?* The purpose of this question was to determine if students were increasing their composite scores on the ACT ASPIRE during their tenth-grade year. The paired sample t-test is designed to indicate if there is a statistically significant difference between two tests for continuous variables, where each data point in one dataset is uniquely paired to a data point in the second data set (Knapp, 2017). Since the two sets of scores for this analysis came from the same students (first in ninth grade and then in tenth grade), the paired sample t-test was appropriate.

Paired t-test results. A paired-samples t-test was conducted to compare ninth and tenth grade ACT ASPIRE composite scores. There was a significant difference [$t(93) = -8.721, p < .01$] in the ninth grade ACT ASPIRE composite scores ($M = 424.34, SD = 6.75$) and tenth grade ACT ASPIRE composite scores ($M = 427.32, SD = 8.02$) conditions. These results indicated that students in this study scored higher on the ACT ASPIRE in the tenth grade than they did in the ninth grade. Effect size was not measured due to controversy with using paired t-test values in effect size calculations (Becker, 2000).

Research Question 3

The third research question was: *Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?* The purpose of this question was to determine if the ACT ASPIRE composite scores could accurately predict the ACT scores. The information in the literature review claimed that ACT ASPIRE could accurately predict the ACT scores. The researcher used a multiple regression to produce the data for this question.

A multiple regression (R^2) is a "...statistical process that determines the percentage that continuous and /or categorical predictor variables have in terms of predicting the value of a (single) continuous outcome variable" (Knapp, 2017, p. 278). Knapp (2017) suggested the predictors in a multiple regression model provide the most explanation for the outcome. The multiple regression model only includes those predictor variables that have a statistically significant correlation to the outcome variable (Knapp, 2017). The ACT ASPIRE assessments in the ninth and tenth grade provide a

continuous independent variable that can be measured for predictability using the ACT as the dependent outcome variable.

Multiple regression analysis. The researcher used a standard multiple regression to measure ninth and tenth grade ACT ASPIRE composite scores' ability to predict the eleventh grade ACT composite scores for students in the Star City School district. The ACT composite scores (criterion variable) was simultaneously regressed using two predictors; ninth and tenth grade ACT ASPIRE composite scores.

A multiple linear regression (Table 13) was calculated to predict students' eleventh grade ACT composite scores based on their ninth and tenth grade ACT ASPIRE composite scores. A significant regression equation was found [$F(2,91) = 176.841, p < .001$], with an R^2 of .795. This means that the two variables (ninth and tenth grade ACT ASPIRE scores) explained about 79.5% of the variance in the dataset. According to Cohen's conventions, this is a large percentage of the variance explained (as cited by Wuensch, 2015). Table 15 presents the standardized regression coefficients with their corresponding t-values. Both ninth [$t(93) = 4.613; p < .001$] and tenth [$t(93) = 3.202; p < .001$] grade composite scores were significant predictors of the eleventh grade ACT composite scores. ACT composite scores increased .328 points for each ninth grade ACT ASPIRE composite point, and .192 for each tenth grade ACT ASPIRE composite point.

Table 13

Multiple Regression Analysis for ACT ASPIRE Predictability for ACT

	B	SE(B)	β	T	p	part
ACT ASPIRE Ninth Grade	.328	.071	.538	4.613	.001	.219
ACT ASPIRE Tenth Grade	.192	.060	.373	3.202	.002	.152

Note. $R^2 = .795; F(2, 91) = 176.841, p < .001$

Research Question 4

The fourth research question was: *How often do students' ACT scores fall in the predicted range given by ACT ASPIRE?* The researcher used a hand-count method to calculate the frequency and percentage for the number of times students' composite scores fell within the predicted range provided by ACT ASPIRE on the ACT. The researcher used the ACT range from ACT ASPIRE (V1) and Actual ACT scores (V2) from the raw data to conduct this analysis. The researcher elected to calculate the frequency and percentage by hand rather than utilizing another statistical measurement due to the lack of consistency in the raw data for predicted ACT scores. Specifically, one student's range could be 18-23 and a different student might be 19-24, signaling an overlap in the ranges. The researcher counted how many times the students' actual score fell into the predicted range, which was a better analysis of the data, and provided a more meaningful picture of how well ASPIRE was doing what it was supposed to be doing (predicting ACT scores).

Frequency. Table 18 contains the grade level, number of participants, number of times the ACT composite scores fell within the predicted range provided by ACT ASPIRE, number of times ACT composite scores fell 1 point below predicted range provided by ASPIRE, and percentage for both categories. The ninth grade ($n = 94$) participants had 56 scores (60% of the students) fall within the predicted ACT ASPIRE range. The tenth grade ($n = 94$) participants had 51 scores (54% of the students) fall within the predicted ACT ASPIRE range. There were students who scored within the predictor range for only one year (ninth grade = 14 students) and (tenth grade = 7 students). They scored either in the ninth grade or tenth grade, but not both. There were

44 students who scored within the predicted range for the ninth grade ACT ASPIRE and tenth grade ACT ASPIRE. The data suggested that the ninth grade ACT ASPIRE predictor score was more accurate than the tenth grade ACT ASPIRE predictor score.

Finally, the analysis was expanded to examine how many students' scores were one point below the predicted range; this revealed that ($n = 15$) ninth grade students and ($n = 18$) tenth grade students had an ACT composite score that were one point less than the predicted score based on their ACT ASPIRE results. Thus, when these students who were one point outside the predicted range were included, the ninth ACT ASPIRE ($n = 94$) participants had 71 (75%) scores fall within 1 point, or within the range and the tenth ACT ASPIRE ($n = 94$) participants had 69 (73%) scores fall within 1 point or within the range.

Table 14

ACT ASPIRE Predictive Frequency and Percentage

Grade	Number	# of times ACT Composite scores landed within predicted ACT ASPIRE range	Percentage of times ACT Composite scores landed within predicted ACT ASPIRE range	# of times composite scores landed within 1pt. below ACT ASPIRE range	Percentage composite scores landed within 1 pt. below ACT ASPIRE range
Ninth Grade	94	56	60%	71	75%
Tenth Grade	94	51	54%	69	73%

Note. Researcher completed a probe measuring composite scores the landed within 1 point below predicted range for ninth and tenth grade that was outside the scope of the research but added to the overall outcome of the study.

Chapter Summary

This chapter introduced the findings in detail of the quantitative study. The researcher reviewed four questions and presented information about the data outcomes. The study included three statistical analyses (bivariate correlation, paired t-test, multiple regression), and two descriptive analyses (frequency and percentage).

The bivariate correlation results indicated a strong positive relationship between (a)ninth and tenth grade ACT ASPIRE composite scores, (b)ninth grade ACT ASPIRE composite scores and ACT composite scores, (c) tenth grade ACT ASPIRE composite scores, and ACT composite scores. These data results confirmed the hypothesis that as ACT ASPIRE composite scores increased, ACT composite scores also increased. The paired t-test results indicated there was a statistically significant difference between the ninth grade ACT ASPIRE composite scores and the tenth grade ACT ASPIRE scores, with tenth grade ACT ASPIRE composite scores being slightly higher. However, the difference in the mean scores were within ~3 points.

The multiple regression results indicated that both ninth and tenth grade ACT ASPIRE composite scores were significant predictors of the eleventh grade ACT composite scores. The data results from research question three revealed that increases on the ninth grade ACT ASPIRE composite score made a stronger impact on the ACT composite scores than the increases on the tenth-grade composite score. The frequency results indicated that most students scored within the predicted ACT range provided by their ninth (60%) and tenth (54%) grade ACT ASPIRE composite scores. Additionally, more ninth grade ACT ASPIRE scores fell within the predicted range for the ACT composite scores than tenth grade ACT ASPIRE scores. Moreover, 47% of this cohort scored within the predicted range in both ninth and tenth grades.

Chapter V: Discussion

The purpose of this study was to determine the relationship between students' scores on the ACT ASPIRE and the ACT for students in the Star City School District, as well as determining what best predicted eleventh grade students' scores on the ACT. The motivation for this study came from Governor Hutchinson's decision to follow the recommendation of the Common Core Review Council and create a partnership with ACT ASPIRE to deliver the state summative assessment (as required by NCLB legislation). Hutchinson highlighted ACT's national relevance and the importance of the ACT for student success as reasons to make the recommendation (Arkansas Governor's Office, 2015b). The researcher sought to explore the relationship between ASPIRE and ACT for students in the Star City School District, interpret the data, and provide data-based feedback for educational practitioners. This chapter provides a summary of the research findings, implications for practice, and recommendations for future research. The following questions guided this study:

1. Are ACT ASPIRE composite scores related to composite ACT scores for students in the Star City school district?
2. Are there differences in 9th and 10th grade ACT ASPIRE composite scores for students in the Star City School District?
3. Do 9th and 10th grade ACT ASPIRE composite scores predict ACT composite scores for students in the 11th grade in the Star City school district?
4. How often do students' ACT scores fall in the predicted range given by ACT ASPIRE?

Summary of Results

The intent of this study was to determine the relationship and predictability capacity of the ASPIRE for the ACT. The literature review revealed that the ACT was responsible for developing, generating, and distributing the ACT ASPIRE (Johnson, 2015); thus, establishing a strong relationship between the two assessments. Moreover, the researcher discovered through analyzing the data (RQ1), there was a strong significant relationship between ACT ASPIRE and ACT, which supported the assertion found in the literature. The paired t-test findings (RQ2) revealed a significant difference between the ninth grade and tenth grade ACT ASPIRE composite scores for students at Star City High School. Additionally, the data revealed that tenth grade students scored slightly higher on the ACT ASPIRE than ninth grade students.

The multiple regression results (RQ3) revealed for both ASPIRE assessments (ninth and tenth grades), each point of increase resulted in a direct increase on the ACT composite scores (ninth grade = .328 increase per ASPIRE point increase) and (tenth grade = .192 per ASPIRE point). These findings provided support for Edward's (2015) assertion that improved ACT ASPIRE scores directly related to improved ACT scores. The researcher utilized the predictive ACT score progress report provided by ASPIRE (Johnson, 2015) to conduct a hand-count frequency measure (RQ4), to explore if/how the ninth/tenth grade ACT ASPIRE predictive scores accurately predicted the ACT composite scores. The researcher found that the literature and data agreed. The ninth and tenth grade ACT ASPIRE scores did accurately predict the eleventh grade ACT scores frequently.

In summary, two very important findings from the data affirmed that there was a relationship between ACT ASPIRE and ACT scores, and ACT ASPIRE scores do predict ACT scores for the Star City cohort. However, further interpretation and discussion of the overall findings of this study were warranted.

Discussion

The overall findings of this study were discussed in the prior summary section. The researcher focused on two distinct findings for interpretation in this section: (a) The differences between ninth and tenth grade scores, and (b) The relationship between ACT and ACT ASPIRE. The findings for ACT ASPIRE and ACT relationships, ninth and tenth grade predictability, and frequency will be discussed.

Differences between ninth and tenth grade scores. The researcher hypothesized that there would not be a significant difference in students' ninth and tenth grade ACT ASPIRE scores. The findings of this study showed that there was a significant difference between the scores; however, the difference was small—less than three points (2.98). The ninth grade mean ACT ASPIRE score was $M = 424.34$, and the tenth grade ACT ASPIRE score was $M = 427.32$.

Relationship between ACT ASPIRE and ACT. The literature documents ASPIRE and ACT were related (ACT ASPIRE, 2016a; ACT ASPIRE, 2016b; Johnson, 2015); this study confirmed that relationship for Star City students. Upon reflection, the researcher offered ACT ASPIRE/ACT assessment content as an explanation for the strong relationship at Star City High School. Both assessments made measuring high school academic curriculum and content a central priority during the development process. Considering ACT connects their questions to high school and college

curriculum (ACT, 2017), while ACT ASPIRE boasts about developing content to measure high school ability and college readiness (ACT ASPIRE, 2016b), one might infer the students' familiarity with academic content covered on the ACT ASPIRE and ACT works as a foundation for the shared relationship between the two.

ACT ASPIRE predictability. ACT ASPIRE asserted their assessment could accurately predict student scores on the ACT (ACT ASPIRE, 2016a). Edwards (2015) believed that improved ACT ASPIRE scores directly creates improved ACT scores. In this study, the ACT ASPIRE ninth and tenth grade composite scores both predicted (RQ3/H3) with success and frequency (RQ4/H4) the eleventh grade ACT composite scores for the Star City cohort. However, the results of the regression should be interpreted with some caution. The high R^2 (79.5) in the regression analysis were expected with only two variables in the equation (ninth and tenth grade ASPIRE scores). Additionally, based on what the literature stated (i.e., that ACT ASPIRE and ACT scores were related) and what data analysis for the Star City cohort confirmed (RQ 1), these two variables were related. Further, though RQ2/H2 confirmed there was a significant difference between ninth and tenth grade scores, an examination of the mean scores by grade level revealed only ~3-point difference. Thus, we would expect that if one was a good predictor (e.g., ninth grade), then the other grade would also be a good predictor. This indicates possible overlap in variance; consequently, the R^2 may be inflated. Further, no other variables (such as demographics) were considered in this regression model. Bearing in mind that ACT ASPIRE and ACT both measure student college and career progress/readiness (ACT 2017; ACT ASPIRE, 2016b), it is reasonable to attribute some of the predictive achievement to the test developers and their continued

commitment to distinguish the individual students' college and career readiness for both exams. Researchers Allen and Liu (2016) reported that ASPIRE predictions anticipate students taking the ACT two years after the ninth grade and one year after the tenth grade. The extra year gives students an opportunity to increase their academic knowledge in all four content areas. Therefore, while the ASPIRE predicts ACT in this dataset, more detail is needed for the analysis (beyond the scope of this dissertation) to fully examine the predictive nature of this relationship.

Performance on ACT. The results of RQ4/H4 revealed that, for Star City students, the ACT ASPIRE did accurately predict student performance on the ACT. Analyses showed that ASPIRE correctly predicted composite scores within the predictive range (ninth - 60%, tenth - 54%) on the ACT for students at Star City High School. Additionally, 47% of the students in this cohort at Star City High school scored within the predicated range on the ACT for both ninth and tenth grade predictions. Collectively, the performance success rate for the ACT (ninth and tenth grade) indicated consistency throughout the assessment careers of the students in this cohort at Star City High school. Moreover, there was a substantial (15%) increase in both grades when students who scored within 1 point of the predicted range were included with those students who scored within the predicted range.

Implications for Practice

The findings from the analyses supported the idea that that scores from the ACT ASPIRE and ACT were related. There were several significant implications from this study that could impact scholarly practitioners in the immediate future and beyond, as the

field of education professionals continues to adhere to the ESSA requirements, and develops whole child college and career readiness academic programs.

ACT ASPIRE. ACT ASPIRE claimed their assessment is the lone exam directly linked to ACT with the ability to accurately predict student scores for the ACT (ACT ASPIRE, 2016a). Based on the newness of the assessment, early critics questioned the validity of this claim. For example, Edwards (2015) pointed out that ACT ASPIRE is a new assessment that lacks the time and data to provide an accurate predication for the ACT. This research study affirmed ACT ASPIRE's claims regarding the relationship between ASPIRE scores and ACT composite scores, by testing them on the inaugural class in Star City, Arkansas who took the ninth grade ASPIRE, tenth grade ASPIRE, and eleventh grade ACT. As referenced in Chapter I, this study was limited to students in the Star City School District and may only be generalizable to schools that share the same testing pattern. However, the results appeared to corroborate ACT ASPIRE's position about relationship and predictability for ACT. This could prove beneficial in ACT ASPIRE's quest to expand the number of states that currently use their assessment to satisfy NCLB and ESSA summative requirements.

For the state of Arkansas. Chapter I introduced the necessity to review and ultimately change assessments for the state of Arkansas. The need for standards and assessment change stemmed from 53% of graduating seniors in Arkansas going to college and needing remediation (Griffin, 2015a). Governor Hutchinson and the Common Core Council supported the adoption of the ACT ASPIRE as the state's assessment platform (Hart, 2015a) because of national recognition for ACT (Buck, 2015). Additionally, Governor Hutchinson and the Common Core Council highlighted ACT

ASPIRE's connection to ACT (ACT ASPIRE, 2016a). The state board voted 4-2 to adopt ACT ASPIRE and ACT (Brantley & Hardy, 2015). This decision was challenged politically, educationally, and caused a great deal of friction. The results from this study should provide preliminary confirmation for the decision to adopt ASPIRE for measuring students' general knowledge of English, mathematics, science, and writing. Most importantly, this study also provided literature and data-driven results from this state that could be used by the ADE to extend the partnership with ACT ASPIRE, as well as educate legislators, school districts, administrators, teachers, students, and parents on the relationship/predictability aptitude of ACT ASPIRE and the ACT.

Accountability. Accountability measures from the state and federal government provide school districts, administrators, teachers, and students with a rubric for identifying academic progress and growth. ACT ASPIRE is the state of Arkansas' accountability assessment. The researcher introduced accountability as the conceptual framework for this study in Chapter II. Madaus and Stufflebeam (1984) explained educational accountability as a system that holds individuals, students, teachers, and administrators responsible for their academic performance. The ADE is responsible for monitoring the state's academic accountability. ACT ASPIRE scores are the primary data mechanism used for school accountability by the Arkansas Department of Education (ADE, 2018). These results can strengthen the ADE's partnership with ACT ASPIRE, which can establish and encourage healthy relationships with educational stakeholders about ACT ASPIRE, and market the importance of having a summative assessment that satisfies accountability requirements, in addition to forecasting ACT composite scores for students.

Administrators and teachers. Administrators and teachers can use the findings from RQ1 about relationship, RQ3 about predictability, and RQ4 about frequency to develop an informational guide to assist in educating students, parents, and community members about the functionality of ACT ASPIRE. According to Clough and Montgomery (2015), ACT and ASPIRE provided evidence for students about their progress towards college readiness. Administrators and teachers in Star City can highlight the multipurpose function of the ACT ASPIRE as an instrument to measure academic progress and to predict college readiness.

Students. Student success is the primary reason for this study. The literature review for this study revealed that Arkansas mandates all public and charter school students in grades third through tenth to take the ACT ASPIRE summative assessment each spring (ADE, 2015b). The results of this study may provide data that can help students find personal, tangible value in the state mandated assessment. The realization that ACT ASPIRE can forecast the composite score on the ACT can make a positive impact on motivating students to work towards achieving the highest score possible on the ASPIRE assessment. The literature also referenced ASPIRE's propensity to measure each student's college readiness (Edwards, 2015), and the results from this study enhanced that narrative by confirming ASPIRE scores accurately predicted ACT scores. Further, Edwards (2015) declared and RQ1/H1 confirmed that improved ASPIRE composite scores translated into improved ACT composite scores for students at Star City High School.

Implications for Future Research

This research provided two important findings for this Star City cohort, (a) ACT ASPIRE and ACT were significantly positively correlated, and (b) ACT ASPIRE scores accurately predicted ACT scores. However, there are questions yet to be answered that were outside the scope of this research. This section will focus on research opportunities that could provide valuable insight into a variety of topics that affect students in Star City, as well as around the state (and even perhaps nationally).

Replicate study. ADE would benefit by replicating this study at the state level. This could provide every high school important information they can use to estimate how many students are on track to score a composite score of at least a 19 on the ACT. Students need a minimum score of 19 on the ACT to help secure admission status, course placement, and scholarship opportunities (ADHE, 2014). The researcher knows students in Star City are achieving low composite scores (~19) on the ACT exam (ADE, 2017b), and this could be a reality for high schools around the state. Information about student performance on the ACT could aid schools in hiring personnel to rework curriculum, and/or assist students who need to improve their scores. School districts would benefit by replicating this study to evaluate how well ACT ASPIRE student performance predicts ACT composite scores for their high school. Star City High School would benefit from replicating this study to observe how consistent these findings perform over time.

Extend scope. RQ4 investigated how often students' ACT scores fall in the predicted range given by ACT ASPIRE. The researcher wanted to maintain the structure of the study and limit the probe to scores that were within one point of the predicted range. However, the sizeable jump in percentage for both grades implied there was more

insight that could be gained from an extended study in this area. Those results could prove to be beneficial for members in the education field. Specifically, high school practitioners could create individualized ACT academic plans based on ASPIRE range prediction that would benefit all students. Further, future studies could also be expanded to explore if/how student demographic factors influence these findings.

Performance level descriptors (PLDs). Administrators and teachers use PLDs that are provided by ASPIRE to monitor student progress (ACT ASPIRE, 2016c). Every student receives documentation assigning them one of the four PLDs for each grade level: in need of support, close, proficient, and exceeding with “proficient” signaling grade level benchmark (ACT ASPIRE, 2016c). A future study that could be beneficial to educational practitioners investigating how the students’ PLDs matches up with ACT composite scores. More specifically, how do students that score proficient perform on the ACT? The literature tells us that both assessments are measuring college readiness. Will students that score proficient or exceeding to score at least a 19 on the ACT?

Chapter Summary

The researcher briefly summarized the findings that were discussed in Chapter IV. The findings included identifying the relationship between ACT ASPIRE and ACT, reviewing the predictive relationship of ACT ASPIRE for ACT, and observing the grade-level comparisons for ACT ASPIRE. The researcher continued by providing discussion and offering clarifications for what the findings meant to practitioners. Chapter V also included implications for ACT ASPIRE, the state of Arkansas, administrators and teachers, and students. Finally, the chapter concluded with possible future research

topics that included replicating the study, extending the study to include more variables, and investigating the best practices for utilizing PLDs.

References

- ACT. (2016). *The ACT test*. Retrieved from <http://www.act.org/content/act/en/products-and-services/the-act-educator/the-act-test.html>
- ACT. (2017). *The ACT technical manual*. Retrieved from http://www.act.org/content/dam/act/unsecured/documents/ACT_Technical_Manual.pdf
- ACT. (2018a). *WorkKeys assessments*. Retrieved from <http://www.act.org/content/act/en/products-and-services/workkeys-for-employers/assessments.html>
- ACT. (2018b). *The ACT test overview*. Retrieved from <http://www.act.org/content/act/en/products-and-services/the-act.html>
- ACT ASPIRE. (2016a). *ACT ASPIRE overview*. Retrieved from <https://www.discoveractaspire.org/assessments/>
- ACT ASPIRE. (2016b). *ACT ASPIRE technical manual*. Retrieved from <https://www.discoveractaspire.org/wp-content/uploads/2016/08/ACT-Aspire-Summative-Technical-Manual.pdf>
- ACT ASPIRE. (2016c). *Performance level descriptors*. Retrieved from <https://www.discoveractaspire.org/performance-level-descriptors/>
- ACT ASPIRE. (2016d). *Score scale*. Retrieved from <https://www.discoveractaspire.org/assessments/score-scale/>
- ACT ASPIRE. (2016e). *ACT Aspire score scale-math, grades 3-10*. Retrieved from https://www.discoveractaspire.org/pdf/ACT-Aspire_ScoreScale_Math.pdf

ACT ASPIRE. (2016f). *ACT ASPIRE score scale-composite, grades 8-10*. Retrieved from https://www.discoveractaspire.org/pdf/ACT-Aspire_ScoreScale_Composite.pdf

Ahn, T., & Vigdor, J. (2014). The impact of No Child Left Behind's accountability sanctions on school performance: Regression discontinuity evidence from North Carolina. *NBER Working Paper Series*, 20511. <http://dx.doi.org/2097/10.3386/w20511>

Allen, J., & Liu, R. (2016). *How do grade 10 ACT ASPIRE scores relate to grade 11 scores*. Retrieved from <https://www.discoveractaspire.org/wp-content/uploads/2016/10/How-do-Grade-10-ACT-Aspire-Scores-Relate-to-Grade-11-ACT-Scores-2016.pdf>

Arkansas Department of Education [ADE]. (2014a). *Vision for excellence in education*. Retrieved from <http://www.arkansased.gov/about-ade/vision-for-excellence-in-education>

Arkansas Department of Education [ADE]. (2014b). *Arkansas Department of Education rules governing the Arkansas Comprehensive Testing, Assessment and Accountability Program (ACTAAP) and the Academic Distress Program*. Retrieved from http://www.arkansased.gov/public/userfiles/rules/Current/ACTAAP-FINAL_-_September_2014.pdf

Arkansas Department of Education [ADE]. (2014c). *ACT ASPIRE*. Retrieved from <http://www.arkansased.gov/divisions/learning-services/assessment/act-aspire>

Arkansas Department of Education [ADE]. (2015a). *ACT ASPIRE contract*. Retrieved from http://www.arkansased.gov/public/userfiles/Learning_Services/Curriculum%20and%20Instruction/State_Standards_Review/ACT_Aspire_contract.pdf

Arkansas Department of Education [ADE]. (2015b). *Assessment for 2015-2016 and testing calendar*. Retrieved from <http://adecm.arkansas.gov/ViewApprovedMemo.aspx?Id=1602>

Arkansas Department of Education [ADE]. (2017a). *The ACT*. Retrieved from <http://www.arkansased.gov/divisions/learning-services/assessment/the-act>

Arkansas Department of Education [ADE]. (2017b). *Test scores by year*. Retrieved from <http://www.arkansased.gov/divisions/learning-services/student-assessment/test-scores/year?y=2017>

Arkansas Department of Education [ADE]. (2017c). *Every Student Succeeds Act Plan*. Retrieved from http://www.arkansased.gov/public/userfiles/ESEA/Arkansas_ESSA_Plan_Final_rv_January_30_2018.pdf

Arkansas Department of Education [ADE]. (2018). *Final business rule for calculating the 2018 ESSA school index scores*. Retrieved from https://myschoolinfo.arkansas.gov/Content/ESSA/2018/ADE_ESSA_Decision_Rules_2017_18_rvd_062118.pdf

Arkansas Department of Higher Education [ADHE]. (2014). *Academic challenge scholarship*. Retrieved from <https://scholarships.adhe.edu/scholarships/detail/academic-challenge-scholarships>

Arkansas Department of Higher Education [ADHE]. (2018). Arkansas Department of Higher Education. Retrieved from <https://portal.arkansas.gov/agency/departments-of-higher-education/>

Arkansas Governor's Office. (2015a, February 11). *Gov. Hutchinson announces Governor's Council on Common Core Review; Lt. Governor Griffin to chair* [Press release]. Retrieved from <https://governor.arkansas.gov/news-media/press-releases/gov-hutchinson-announces-governors-council-on-common-core-review-lt-governor>

Arkansas Governor's Office. (2015b, June 8). *Governor's Council on Common Core Review makes testing recommendation* [Press release]. Retrieved from <https://governor.arkansas.gov/news-media/press-releases/governors-council-on-common-core-review-makes-testing-recommendation>

Arkansas Hometown Locator. (2018). *Star City, Arkansas—Basic facts*. Retrieved from <https://arkansas.hometownlocator.com/ar/lincoln/star-city.cfm#demographic>

Aske, D. R., Connolly, L. S., & Corman, R. R. (2012). Accessibility or accountability? The rhetoric and reality of No Child Left Behind. *Allied Academies International Conference Academy for Economics and Economic Education Proceedings*, 15(2), 1-3. Retrieved from <https://libcatalog.atu.edu:2409/docview/1272095418?accountid=8364>

- Aske, D. R., Connolly, L. S., & Rhonda, R. (2013). Accessibility or accountability? The rhetoric and reality of No Child Left Behind. *Journal of Economics and Economic Education Research*, 14(3), 107-118. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/1465393230?accountid=8364>
- Atkinson, R. C., & Geiser, S. (2009). Reflections on a century of college admissions tests. *Educational Researcher*, 38(9), 665-676. doi: 10.3102/0013189X09351981
- Au, W., & Gourd, K. (2013). Asinine assessment: Why high-stakes testing is bad for everyone, including English teachers. *English Journal*, 103(1), 14-19. Retrieved from https://www.jstor.org/stable/24484054?seq=1#metadata_info_tab_contents
- Becker, L.A. (2000). *Effect size calculators*. Retrieved from <https://www.uccs.edu/lbecker/>
- Benjamin, L. T. (2009). Time capsule: The birth of American intelligence testing. *Monitor on Psychology*, 40(1). <http://dx.doi.org/> doi:10.1037/e515452010-016
- Beauvais, C. (2016). Californian genius: Lewis Terman's gifted child in regional perspective. *Paedagogica Historica*, 52(6), 748-765. <http://dx.doi.org/10.1080/00309230.2016.1243138>
- Bidwell, A. (2014). The politics of common core. Retrieved from <https://www.usnews.com/news/special-reports/a-guide-to-common-core/articles/2014/03/06/the-politics-of-common-core>
- Boake, C. (2002). From Binet-Simon to the Wechsler-Bellevue: Tracing the history of intelligence testing. *Journal of Clinical & Experimental Neuropsychology*, 24(3), 383. Retrieved from <https://doi.org/10.1076/jcen.24.3.383.981>

- Brantley, M., & Hardy, B. (2015, July 9). *State Board of Education votes to change school test from PARCC to ACT* [Blog post]. Retrieved from <https://www.arktimes.com/ArkansasBlog/archives/2015/07/09/governor-gets-his-way-state-board-of-education-votes-to-change-school-test>
- Buck, M. (2015). *Arkansas approves ACT ASPIRE testing*. Retrieved from <https://mypulsenews.com/arkansas-approves-act-aspire-testing/>
- Clough, S., & Montgomery, S. (2015). *How ACT assessments align with state college and career readiness standards*. Retrieved from <http://www.act.org/content/dam/act/unsecured/documents/Alignment-White-Paper.pdf>
- Common Core State Standards Initiative. (2018). *Development process*. Retrieved from <http://www.corestandards.org/about-the-standards/development-process/>
- Edwards, H. (2015, March 21). *Is ACT Aspire an accurate predictor of your real ACT score* [Blog post]. Retrieved from <https://blog.prepscholar.com/is-act-aspire-an-accurate-predictor-of-your-real-act-score>
- Ellison, S. (2012). Intelligent accountability: Re-thinking the concept of accountability in the popular discourse of education policy. *Journal of Thought*, 47(2), 19-41, 108. Retrieved from <https://libcatalog.atu.edu:2409/central/docview/1243092753/8EE4F29A7BB242B7PQ/10?accountid=8364#>
- Fleming, N. (2011). *Common Core stacks up well vs other respected standards*. Retrieved from <https://www.edweek.org/ew/articles/2011/11/02/10standards-2.h31.html>

- Franklin, V. (2007). The tests are written for the dogs: The journal of negro education, African American children, and the intelligence testing movement in historical perspective. *The Journal of Negro Education*, 76(3), 216-229. Retrieved from <https://libcatalog.atu.edu:2409/docview/222071289?accountid=8364>
- Gardner, D., Larsen, Y., Baker, W., Campbell, A., Crosby, E., Foster, Jr, C. A., & Wallace, R. (1983). *A nation at risk*. Retrieved from <https://files.eric.ed.gov/fulltext/ED226006.pdf>
- Griffin, T. (2015a, April 23). *Little Rock hearing, Panel 1* [Video file]. Retrieved from https://www.youtube.com/watch?v=24UUFHTqdt0&list=PL8k5NQleY_pKnDbu01r8qS2jzgUCJyZ21&index=2
- Griffin, T. (2015b, May 13). *Little Rock hearing, Panel 3* [Video file]. Retrieved from https://www.youtube.com/watch?v=LcRw7EMUmcs&index=14&list=PL8k5NQleY_pKnDbu01r8qS2jzgUCJyZ21
- Groen, M. (2012). NCLB-The educational accountability paradigm in historical perspective. *American Educational History Journal*, 39(1), 1-14. Retrieved from <https://libcatalog.atu.edu:2409/docview/1288735212?accountid=8364>
- Guthrie, J. W., & Springer, M. G. (2004). A Nation at Risk revisited: Did "wrong" reasoning result in "right" results? At what cost? *Peabody Journal of Education*, 79(1), 7-35. http://dx.doi.org/10.1207/s15327930pje7901_2
- Hardy, B. (2015, June 11). *State Board of Ed rejects governor's plans to switch to ACT ASPIRE test* [Blog post]. Retrieved from <https://www.arktimes.com/ArkansasBlog/archives/2015/06/11/state-board-of-ed-rejects-governors-plans-to-switch-to-act-aspire-test>

- Hart, S. (2015a). *Arkansas shuts door on PARCC*. Retrieved from <https://truthinamericaneducation.com/common-core-assessments/arkansas-shuts-door-on-parcc/>
- Hart, S. (2015b, June 23). *Arkansas Gov. Asa Hutchinson directs withdraw from PARCC* [Blog post]. Retrieved from <https://truthinamericaneducation.com/common-core-assessments/arkansas-gov-asa-hutchinson-directs-withdraw-from-parcc/>
- Heale, R., & Twycross, A. (2015, July). Validity and reliability in quantitative studies. *Evidence-Based Nursing*, 18(3), 66-67. Retrieved from <https://ebn.bmj.com/content/ebnurs/18/3/66.full.pdf>
- Hollingworth, L. (2008). Five ways to prepare for standardized tests without sacrificing best practice. *The Reading Teacher*, 61(4), 339-342. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/203281600?accountid=8364>
- Holmgren, D. (2009). *Lindquist, Everet Franklin*. Retrieved from <http://uipress.lib.uiowa.edu/bdi/DetailsPage.aspx?id=233>
- Horne, C. S. (2018). *A quick, free, somewhat easy-to-read introduction to empirical social science research methods*. Retrieved from <https://scholar.utc.edu/cgi/viewcontent.cgi?article=1003&context=oer>
- Husband, T., & Hunt, C. (2015). A review of the empirical literature on no child left behind from 2001 to 2010. *Planning and Changing*, 46(1), 212-254. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/1719448939?accountid=8364>

- Imenda, S. (2014). Is there a conceptual difference between theoretical and conceptual frameworks? *Journal of Social Sciences*, 38(2), 185-195.
<http://dx.doi.org/10.1080/09718923.2014.11893249>
- Johnson, M. (2015, December 29). *Can the ACT ASPIRE predict your ACT score* [Blog post]. Retrieved from <https://www.latutors123.com/2015/12/29/can-the-act-aspire-predict-your-act-score/>
- Kamenetz, A. (2018). *What 'a nation at risk' got wrong, and right, about U.S. schools*. Retrieved from <https://www.npr.org/sections/ed/2018/04/29/604986823/what-a-nation-at-risk-got-wrong-and-right-about-u-s-schools>
- Knapp, H. (2017). *Introductory statistics using SPSS* (2 ed.). Los Angeles, CA: SAGE.
- Kelly, E. (2014). *History of the ACT and test changes*. Retrieved from <https://ink.niche.com/the-act-a-history/>
- Kibble, J. D. (2017). Best practices in summative assessment. *Advances in Physiology Education*, 41(1), 110-119. <http://dx.doi.org/10.1152/advan.00116.2016>
- Killam, L. (Producer). (2013, Nov 12). *Quantitative research designs: Descriptive non-experimental, quasi-experimental or experimental?* [Video file]. Retrieved from <https://youtu.be/10nMNh3RMp0>
- Kuehl, R. A. (2012). The rhetorical presidency and accountability in education reform: Comparing the presidential rhetoric of Ronald Reagan and George W. Bush. *Southern Communication Journal*, 77(4), 329-348. Retrieved from <https://libcatalog.atu.edu:443/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cms&AN=78450712&site=ehost-live&scope=site>

Lindsay, S. (2015, June 30). The history of the ACT test [Blog post]. Retrieved from
<https://blog.prepscholar.com/the-history-of-the-act-test>

Madaus, G. F., & Stufflebeam, D. L. (1984). Educational evaluation and accountability: A review of quality assurance efforts. *The American Behavioral Scientist*, 27(5), 649. Retrieved from
<https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/194674552?accountid=8364>

Meredith, T. (2016, September 19). What makes public schools great. *Indianapolis Business Journal*, 37(30), 11. Retrieved from
<http://libcatalog.atu.edu:2189/apps/doc/A465436954/ITOF?u=aktechuniv&sid=ITOF&xid=4aed8935>

Michigan Farmer. (1899, Sep 09). The teacher's responsibility farmer (1843-1908), 36, 182. Retrieved from
<https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/136186518?accountid=8364>

Minton, H.L. (1998). *Commentary on "New methods for the diagnosis of the intellectual level of subnormals" by Alfred Binet & Theodore Simon (1905) and "The uses of intelligence tests" by Lewis M. Terman (1916)*. Retrieved from <https://psychclassics.yorku.ca/Binet/commentary.htm>

- National Governors Association [NGA], Council of Chief State School Officers [CCSSO], & Achieve, Inc. (2008). *Benchmarking for success: Ensuring U.S. students receive a world-class education*. Retrieved from www.citethisforme.com/cite/ebook?searchTitle=http%3A%2F%2Fwww.corestandards.org%2Fassets%2F0812BENCHMARKING.pdf&from=guide
- Neill, M. (2016). The testing resistance and reform movement. *Monthly Review*, 67(10), 8-28. Retrieved from <https://libcatalog.atu.edu:2409/docview/1768932454?accountid=8364>
- Office for Education Policy. (2017). *Arkansas school data – ACT and AP achievement*. Retrieved from <http://www.officeducationpolicy.org/act-ap/>
- O'Neill, O. (2013). Intelligent accountability in education. *Oxford Review of Education*, 39(1), 4-16. <http://dx.doi.org/10.1080/03054985.2013.764761>
- Partnership for Assessment of Readiness for College and Careers (PARCC). (2018a). *About*. Retrieved from <https://parcc-assessment.org/about/>
- Partnership for Assessment of Readiness for College and Careers (PARCC). (2018b). *Assessments*. Retrieved from <https://parcc-assessment.org/assessments/>
- Payne-Tsoupros, C. (2010). No child left behind: Disincentives to focus instruction on students above the passing threshold. *Journal of Law and Education*, 39(4), 471-501. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/807486142?accountid=8364>

- Paul, D. G. (2004). The train has left: The no child left behind act leaves black and latino literacy learners waiting at the station. *Journal of Adolescent & Adult Literacy*, 47(8), 648-656. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/216913842?accountid=8364>
- Peterson, P. E., & Kaplan, P. (2013). Despite Common Core, states still lack common standards. *Education Next*, 13(4). Retrieved from <https://www.educationnext.org/despite-common-core-states-still-lack-common-standards/>
- Radhakrishnan, G. (2013). Non-experimental research designs: Amenable to nursing contexts. *Asian Journal of Nursing Education and Research*, 3(1), 25-28. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/1774513159?accountid=8364>
- Rawls, A. S. (2001). Eliminating options through choice: Another look at private school vouchers. *Emory Law Journal*, 50(1), 363-395. Retrieved from <https://libcatalog.atu.edu:443/login?url=https://libcatalog.atu.edu:2409/docview/215712068?accountid=8364>
- Rocco, T. S., & Plakhotnik, M. S. (2009). Literature reviews, conceptual frameworks, and theoretical frameworks: Terms, functions, and distinctions. *Human Resource Development Review*, 8(1), 120-130. <http://dx.doi.org/10.1177/1534484309332617>

- Teo, T. W., & Osborne, M. (2014). Understanding accountability from a microanalysis of power dynamics in a specialized STEM school. *Critical Studies in Education*, 55(2), 229-245. <http://dx.doi.org/10.1080/17508487.2014.900097>
- The Understood Team. (2018). *The difference between the every student succeeds act and no child left behind*. Retrieved from <https://www.understood.org/en/school-learning/your-childs-rights/basics-about-childs-rights/the-difference-between-the-every-student-succeeds-act-and-no-child-left-behind>
- U.S. Department of Education. (2004a). *The history of no child left behind*. Retrieved from https://www2.ed.gov/nclb/overview/intro/guide/guide_pg12.html#history
- U.S. Department of Education. (2004b). *Making the education system accountable*. Retrieved from https://www2.ed.gov/nclb/overview/intro/guide/guide_pg17.html#account
- U.S. Department of Education. (2004c). A guide to education and No Child Left Behind. Retrieved from https://www2.ed.gov/nclb/overview/intro/guide/guide_pg17.html
- U.S. Department of Education. (2009a). *NCLB school choices for parents*. Retrieved from <https://www2.ed.gov/parents/schools/choice/definitions.html>
- U.S. Department of Education. (2009b). *Adequate yearly progress*. Retrieved from https://www2.ed.gov/policy/elsec/guid/standardsassessment/guidance_pg5.html
- U.S. Department of Education. (2018). *A new education law*. Retrieved from <https://www.ed.gov/essa?src=policy>

WD&S Publishing. (2017). Every student succeeds act (ESSA): Where to learn more.

Curriculum Review, 57(2). Retrieved from

https://libcatalog.atu.edu:2409/docview/1946213233?rfr_id=info%3Axi%2Fsid%3Aprim

Werts, A. B., Sala, M. D., Lindle, J., Horace, J. M., Brewer, C., & Knoeppel, R. (2013).

Education stakeholders' translation and sense-making of accountability policies.

Leadership & Policy in Schools, 12(4), 397-419.

<http://dx.doi.org/10.1080/15700763.2013.860464>

Wiener, R., & Hall, D. (2004). Accountability under no child left behind. *Clearing*

House, 78(1), 17–21. <https://libcatalog.atu.edu:2217/10.3200/TCHS.78.1.17-21>

William, D. (2010). Standardized testing and school accountability. *Educational*

Psychologist, 45(2), 107-122. doi:10.1080/00461521003703060

Wilson, J. H., & Joye, S. W. (2017). *Research methods and statistics: An integrated*

approach. Los Angeles: Sage.

Wuensch, K. (2015). *Cohen's conventions for small, medium, and large effects*.

Retrieved from

<http://core.ecu.edu/psyc/wuenschk/docs30/EffectSizeConventions.pdf>



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November 21, 2018

To Whom It May Concern:

The Arkansas Tech University Institutional Review Board has approved Jason Williamson's IRB application, "A Study Measuring the Predictive Ability of ACT ASPIRE for ACT at Star City High School," through November 20, 2021. The approval code is Williamson_112018.

Thank you,

A handwritten signature in black ink, appearing to read "M. Kuroki".

Masanori Kuroki, Ph.D.
Institutional Review Board Chair

APPLICATION FOR REVIEW OF HUMAN PARTICIPANTS RESEARCH

Submit to Masanori, Assistant Professor of Economics, Rothwell 444, or email
(preferred) as an attachment to mkuroki@atu.edu.

Principal Investigator(s): I acknowledge that this represents an accurate and complete
description of my research.

Jason L. Williamson jwilliamson11@atu.edu 11-16-18 Name of Primary PI

Email Date

Additional Researchers' Names

Star City High School 870-628-4111 Department and Office Number Telephone

The Collaborative Institutional Training Initiative (CITI) is an online training module
teaching research methods. Researchers must complete the CITI training course prior to
beginning their project. Please print the confirmation page at the end of the training and
include it with IRB application. The CITI training course can be found here:

www.citiprogram.org

Adviser (complete if PI is a student): I agree to provide the proper surveillance of this project to ensure that the rights and welfare of the human participants are properly protected.

Dr. Sarah Gordon Sgordon6@atu.edu 11-16-18 Name of Adviser Email Date

Center for Leadership and Learning

208 CLL Annex 479-964-0583 ext. 3208 Adviser's Department

Adviser's Office Number Telephone

A study measuring the predictive ability of ACT ASPIRE for ACT at Star City High School

PLEASE NOTE: All applications should be typewritten and edited prior to submission for review. If sufficient space is not provided below for a complete description of the proposed project, please use additional pages as necessary.

IRB Approval Number: _____Williamson_112018_____11/20/2018_____

Date

Summary of Purpose and Objectives ("See attached protocol" is not acceptable)

Item 1 Describe the purpose of the research. (Research Question/Hypothesis)

Provide summary in space below.

The purpose of this quantitative study is to determine the relationship between students' scores on the ACT ASPIRE and the ACT for students in the Star City School District, as

well as to determine which variables best predicts 11th grade students' scores on the ACT.

Item 2 Describe the participants of this study, including:

1) Population to be sampled

The study will include all 11th grade students in Star City High School that took the ACT ASPIRE in the 9th grade (April 2016), 10th grade (April 2017), and the state administered ACT (February, 2018). Any student that did not take the exams at the times mentioned above will not be included in this study.

2) Sampling procedures This study will use de-identified archived data from the school district.

3) Projected date of data collection: Data will be gathered from the school district by December 2018.

4) Number of participants expected to participate

There are currently 118 students in the 11th grade cohort for this study. Not all students will have taken all three exams, so the researcher will not know exactly how many of the 118 meet the criteria until the data is delivered by the district.

5) Relationship to agency/school

I (Jason Williamson) am the Star City High School Principal.

6) How long the participants will be involved. This study is using deidentified archived data.

7) Any follow-up procedures planned. There will not be any follow up procedures.

8) Include a copy of the script or other mechanisms to be used to solicit participants.

There will be no script needed for this study.

Attached is a letter from the Star City district superintendent indicating his permission for the use of the data.

Summary of Methodology and Procedures (“See attached protocol” is not acceptable)

Item 3 There will not be any interventions included in this study.

Risks, Costs and Benefits

Item 4 What risks to participants are most likely to be encountered (physical or psychological, etc.)?

There are no risks to the participants.

Item 5 Will the participants encounter the possibility of stress or psychological, social, physical, or legal risks that are greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests? []

Yes [x] No If Yes, please explain below.

Data will be deidentified before it is given to the researcher.

Item 6 Will medical clearance be necessary for participants to participate because of tissue or blood sampling, administration of substances such as food or drugs, or physical exercise conditioning? [] Yes [x] No If Yes, please explain how the clearance will be obtained.

Item 7 Will the participants be deceived or misled in any way? ☐ Yes ☒ No

If Yes, please explain below.

Item 8 Will information be requested that participants might consider to be personal or sensitive? ☐ Yes ☒ No If Yes, please explain below.

Data will be deidentified before it is given to the researcher.

Item 9 Will the participants be presented with materials that might be considered to be offensive, threatening, or degrading? ☐ Yes ☒ No If Yes, please explain below, including measures planned for intervention if problems occur.

Item 10 What approach will you use to minimize risks?

There are no anticipated risks since this study will use deidentified archived data.

Item 11 What are the costs to the participants (monetary, time, etc.)? There will be no cost.

Item 12 Will any inducements be offered to the participants for their participation?

☐ Yes ☒ No If Yes, please explain below.

Item 13 Describe the benefits that might accrue to either the participants or society. Note that 45 CFR 46, Section 46.111(a)(2) requires that the risks to participants be reasonable in relation to the anticipated benefits. The investigator should specifically state the importance of the knowledge that reasonably may be expected to result from this research.

1) Participants: The results from this study will not directly affect the participants used for the archived data, but it could help Star City High School identify patterns that aid in the increase of students that score 19 or above on the ACT.

2) Society (community) now or future. The results of this study could help public and charter schools in Arkansas because the entire state 11th grade cohort shares the same testing pattern used in this study. Results could help identify patterns that aid in helping increase students' ACT score.

Consenting Process Item 14 Where will the research study be conducted (school, hospital, etc.)?

This study will include archived data from Star City High School. The researcher was granted permission from the superintendent of schools (see attachment) to use the data with the understanding no identifying marks could be present.

Item 15 How will the research study be explained to the participants?

This study will use de-identified archived data from the school district.

Item 16 In what manner will you present the information for informed consent?

☐ Oral ☐ Written Please include the consent/assent forms or format for oral consent.

This study will use de-identified archived data from the school district. There is no consent form for participants. Attached is a letter from the superintendent giving permission for the researcher to obtain the data.

Elements of informed consent can be found on the IRB website and in 45 CFR 46, Section 116.

Item 17 How will the consent form be explained to the participants? (Consider all barriers including culture and language.)

This study will use de-identified archived data from the school district.

Item 18 How will you make it clear to the participants that their participation is voluntary and they may withdraw from the study at any time they wish to discontinue participation?

This study will use de-identified archived data from the school district.

Data Collection

Item 19 Who will have access to the raw/gathered data? (Investigator, staff, sponsor, IRB, FDA, etc.)?

The Star City District testing coordinator and Star City High School Counselor will provide the researcher with the data in an excel sheet without any identifying marks for the participants. The file will be delivered to the researcher (Jason Williamson) and he will provide access to the study's chair (Dr. Sarah Gordon). The data that will be gathered are:

☐ Students' ACT ASPIRE composite scores for 9th grade ☐ Students' ACT ASPIRE composite scores for 10th grade ☐ Students' predicted ACT composite scores for 9th grade ☐ Students' predicted ACT composite scores for 9th grade ☐ Students' 11th grade ACT composite scores ☐ Students' gender ☐ Students' race/ethnicity ☐ Students' free/reduced lunch status ☐ Students' GPA

Item 20 Will the data be a part of a record that can be identified with the participant? []

Yes [x] No If Yes, please explain how you will protect the confidentiality of participants.

Item 21 What are the plans for retention of raw data? (Note: includes hard copy and raw data computer files)

This study will use de-identified archived data from the school district. The raw data will be kept until the analysis process is complete (no later than Fall 2019).

Item 22 What are the plans for dissemination of results? (check all that apply)

☒ Possible publication/conference presentation

☐ Other (please explain)

Item 23 If tissue samples or specimens are collected, when will they be destroyed? Will they be used for research other than what is described in the consent?

There will be no tissue samples or specimens collected.

Item 24 Will the participant's participation in a specific experiment or study be made a part of any record available to his or her supervisor, teacher, or employer? ☐ Yes ☒ No
If Yes, please describe below.

THE IRB MUST APPROVE THE RESEARCH PROJECT BEFORE THE RESEARCHER(S) MAKE(S) ANY CONTACT WITH PARTICIPANTS.