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The Impact of College and Career Ready Initiatives on High School Preparedness for Post-Secondary Options

April N. Miller

The Impact of College and Career Ready Initiatives on High School Preparedness for
Post-Secondary Options

A Field Study

Presented to

The College of Graduate Studies

Austin Peay State University

In Partial Fulfillment

Of

The Requirement for the Degree

Education Specialist

April Miller

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By

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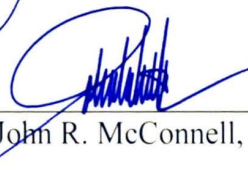
To the College of Graduate Studies:

We are submitting a Field Study Report written by April Miller entitled “The Impact of College and Career Ready Initiatives on High Preparedness for Post-Secondary Options.”

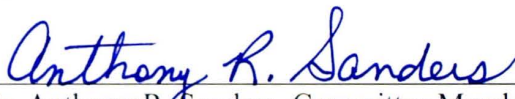
We have examined the final copy of this Field Study Report for form and content. We recommend that it be accepted in partial fulfillment of the requirements for the degree of Educational Specialist Degree in School Administration and Leadership.



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Accepted for the Graduate and Research Council:



Dean, College of Graduate Studies

DEDICATION

There are several people who have played an important role throughout my program. My successful completion has a lot to do with their encouragement and knowledge.

First of all, I would like to thank my husband Scottkey T. Miller for his unconditional love and support throughout our 12 years of marriage. You have never stood in the way of my education or any dream of mine. To my children, Sidney, Terrell, and Malia, thank you for understanding when mommy had class and could not be at every event. You continued to let mommy have countless hours of quiet time to do homework; I love you.

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ABSTRACT

APRIL N. MILLER. The Impact of College and Career Ready Initiatives on High School Preparedness for Post-Secondary Options (under the direction of DR. J. GARY STEWART).

The American College Test (ACT) is a college admissions test used widely by post-secondary institutions to predict the academic success of first year college students. Additionally, the ^CACT is used to determine academic preparedness during high school. College and career ready terminology is used interchangeably throughout research but does not have definite definitions as to how to implement. A lot of trust is placed in the ACT test by secondary and post-secondary institutions; however, there is not much college and career ready initiatives being implemented in the high school classroom instruction. This study seeks to determine the impact of college and career ready initiatives at Northwest High School with 2016-2017 third year students' classroom instruction and school wide culture on ACT scores. This information may eventually be utilized to target high school students starting the ninth grade with proactive college and career ready initiatives to impact post-secondary preparedness. Rather than merely asking students to take the ACT without adequate preparation or make decisions about their future without appropriate information, this study endeavored to identify college and career ready initiatives that were effective for all students and post-secondary decisions.

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CHAPTER I

INTRODUCTION

Statement of the Problem

A high percentage of juniors and seniors at Northwest High School, Clarksville, TN were not successfully meeting the American College Test (ACT) college and career readiness benchmarks, which is one predictor of first-year academic success in post-secondary education according to Noble, Roberts, and Sawyer (2006). The Tennessee Department of Education (2014-2015) reports the state average for ACT is 19.4. Northwest High School averaged an 18.1 ACT mean score for the 2013-2014 school year.

The ACT average also affects students receiving a state scholarship in the form of the HOPE scholarship totaling \$14,000.00 over four years according to the Tennessee Student Assistance Corporation's (TSAC) (2016) website, <http://www.tn.gov/collegepays/>. Additionally, TSAC defines the Tennessee HOPE Scholarship as providing financial assistance for Tennessee residents who are entering college as freshmen with a high school GPA of 3.0 or a 21 Composite on the ACT. The percentage of students at Northwest High School who meet the 21 Composite on the ACT is 23.4 percent.

The ACT is a national college admissions exam that includes subject-level tests in English, Mathematics, Reading and Science. Students receive scores that range from 1 to 36 on each subject and an overall composite score (www.act.org). All Tennessee students are required to take the ACT during their eleventh grade academic year.

It is commonly said that the goal of high school is to ensure all students graduate “college and career ready.” But what does it really mean to be “college and career ready?” Simply put, “college and career readiness” refers to the content knowledge and skills high school graduates must have in literacy and Mathematics – including, but not limited to, Reading, writing communications, teamwork, critical thinking and problem solving – to be successful in future endeavors. Twenty-first century students must not only be ready academically but prepared for life as well as the workforce. Gaertner, Kim, DesJardins, and McClarty (2013) reported that states are adopting more rigorous curriculum requirements in order to increase students’ preparedness for life after high school.

College and Career Ready Standards Q & A (2016) state that “college and career readiness” is the umbrella under which many education and workforce policies, programs and initiatives thrive. Thus, the importance of tested academic content areas collaborating with non-tested career technical education in order to provide a comprehensive education for students. College and Career Ready Standards Q & A (2016) explains the career ready curriculum as a practical and flexible standards-based curriculum integrated framework components into classroom instruction.

Purpose of the Study

The purpose of this study was to determine the impact of college and career ready initiatives in high schools and its effects on juniors and seniors meeting the ACT college and career readiness benchmarks. Noble, Roberts, and Sawyer (2006) reported that students are capable of increasing their academic achievement despite any non-academic

factors if encouraged within the academic setting, thus the rationale for planning interventions to increase college and career ready instructional strategies.

College and career readiness are multifaceted comprising of numerous variables inside and outside of the classroom. Conley (2016) identified the facets of college readiness as contextual skills and awareness, academic behaviors, key content, and key cognitive strategies. Thus, an additional purpose of this study is to define college and career ready and identify other key factors that play a role in post-secondary education success and/or career/workforce options. Conley (2016) identified that one of the major reasons for unsuccessful completion of post-secondary education is the gap between high school curriculum and college expectations. Maruyama (2012) discussed his findings and suggests that only using thresholds based on a single assessment presents problems in terms of generalization, ineffectively categorizing, and overall rates of readiness indicators. It is suggested that multiple measures be considered to determine readiness, which will increase the accuracy of judgment about readiness. Camara (2013) stated that there is “direct evidence between high school test scores and performance in post-secondary education that may provide the strongest form of evidence” for success in college or career-training program (p.17).

Significance of the Study

The perspectives of juniors and seniors of Northwest High School were very negative and weak concerning the connection between the ACT test and college scholarships, preparation, and course work as evidenced by low test scores and lack of interest. There was a very weak attitude towards going to college and the ACT as a

whole. Also, only nine percent of the graduating class of 2016 met the college and career readiness benchmarks proving they were not ready for their first year of college (Tennessee Department of Education, 2014-2015 a). Therefore, there is a need to address low benchmark scores and level of competency in the four areas of English, Mathematics, Science, and Reading.

Low ACT scores in the state of Tennessee really do cost students money concerning their educational endeavors. Thus, the urgency to intervene to improve ACT scores is relevant if the percentage of students attending post-secondary institutions is to increase. Conley (2016) proposed that students who are college and career ready have more options open to them in college so that they may explore careers. Suggestions are provided to high schools to assist them in preparing students with four guidelines; creating a culture focused on intellectual development, specifying core knowledge, providing resources to students, and providing resources to teachers (Conley, 2016). Suggestions are also provided to students to ensure their own academic preparation through their involvement. In particular, students must understand what it really means to be college and career ready as well as what the system requires or expects of them. First and foremost, the realization of college admission as a reasonable and realistic goal that can be attained through planning and diligent attention to necessary tasks has to be communicated to students.

Positive effects from implementation of college and career-ready curriculum will lead to teachers restructuring their instruction to be more relevant and meaningful, creation of college and career ready culture, students having a heightened sense of

awareness concerning post-secondary and/or career/workforce options, and increased probability of being awarded scholarship monies, and success after high school.

Research Questions

1. Do college and career ready initiatives in (CTE) and core academic high school courses at Northwest High School result in a higher percentage of high school juniors and seniors meeting the ACT benchmarks?
2. Are there other key factors to be considered in predicting student's success beyond high school and preparedness for education/career/workforce?
3. Does the implementation of college and career-ready initiatives increase positive attitudes of students concerning a college-going culture as well as increase the confidence in preparedness for life after high school?

Research Hypotheses

1. ACT Readiness Benchmark scores will be directly and positively impacted by college and career-ready instruction, curriculum, initiatives in high school.
2. Null Hypothesis: There is no change in the ACT college readiness benchmarks scores for juniors and seniors before the implementation of college and career-ready initiatives and after the implementation of college and career-ready initiatives.

Limitations

The limitations of this study include concerns about the internal validity of the pretests and posttest administration of the ACT. Students were given a pretests and

posttest with the same booklet, therefore, students could have memorized answers or been given too much exposure to the same type of AC practice test. However, the test booklets used for the pretest and posttest were different versions of the ACT test.

Additionally, the study only reports data from one of six high schools in Montgomery County, Tennessee. It was reported that other high schools within Montgomery County implemented academic interventions after school but none did a school-wide implementation of the same magnitude of Northwest High School. It was reported that no other high school in the county administered a pretests and posttest for a comparative data analysis.

Qualitative data was collected via a survey created by the researcher that addressed attitudes about preparedness for life after college. This survey was administered to current seniors and current juniors. Current seniors did not receive college and career ready curriculum while current Juniors did receive college and career ready curriculum.

Assumptions

There are academic and non-academic factors that play a role in ACT scores, overall attitudes toward ACT, and post-secondary admission. Northwest High School students have possible non-academic factors and demographics that have a direct effect on ACT Scores. The demographics of the community are low-socioeconomic, lack of educational resources in the home, and a weak attitude towards ACT and its connection to post-secondary education and overall success.

CHAPTER 2

LITERATURE REVIEW

College and Career Readiness Initiatives

College and Career Ready Initiatives are interventions within the K-12 educational setting used to promote students being prepared for life after high school. This section of the literature review covers historical contributions, its implications, and attempts to define college and career ready. Historical contributions date back to 1957 with the launch of Sputnik to today's K-12 classroom and its technology. The implications of college and career ready discuss how the terminology is used today's classroom and how it translates into the classroom. Additionally, the research in this section attempts to define college ready, career ready, and if the two interchangeable, the same, or different.

Historical Contributions

Administrators, legislators, and community advocates have sought to improve student achievement at all levels. They have attempted to increase high school graduation rates, college readiness rates, and higher education degree attainment. Stake-holders at all political and educational levels have pushed to increase academic rigor and to set high expectations for all students. According to Barnes and Slate (2013), national legislation and federal policies have been mandated for public school systems since the 1950s and have appeared to be in the best interest of student learning. Most of the decisions to increase academic rigor were predicated on fear, which allowed the federal government a

stronghold in public education, whether intended or not. This predicated fear has created a stifling, effective one size fits all college readiness agenda (Barnes & Slate, 2013).

The first political maneuver in public education began in 1957 with the launch of Sputnik which was a small “inconsequential, artificial satellite, by the Soviet Union”, which directly challenged the eminence and powers of the scientific research and development community in the United States (Barnes & Slate, 2013, p. 2). As a result of the United States feeling threatened educationally by the Soviet Union, the National Defense Educational Act (NDEA) of 1958 was enacted and invested large sums of money into the American educational system to encourage students to study Mathematics, Science, Computer Technology, and Foreign Language. The 10-year journey following the enactment of the NDEA, the now one size fits all college readiness agenda began to change the nation’s academic landscape. The academic landscape was changed through standardized testing. Elementary and secondary students’ testing increased from 10 million to 45 million and standardized testing in high school increased from one-third of the student population to nearly 100 percent (Barnes & Slate, 2013).

The second major political maneuver came in 1983 when the National Commission on Excellence in Education presented to then President of the United States, President Ronald Regan with *A Nation at Risk: The Imperative for Educational Reform* (*A Nation at Risk*). According to Barnes and Slate (2013), *A Nation at Risk* reported that American prosperity, security, and civility were in serious jeopardy because the educational foundation on which the United States was founded rapidly eroding. Declining scores on nationally standardized achievement tests and poor performance on

international assessments were indicated throughout *A Nation at Risk*. President Ronald Reagan delineated the direction of America's education system more steadfastly toward the present one size fits all agenda as indicated by No Child Left Behind (NCLB) of 2001. According to Barnes and Slate (2013), the No Child Left Behind Act:

Requires that schools close the achievement gaps between middle and upper socioeconomic White students and their urban and rural lower-socioeconomic counterparts. The NCLB Act mandates that schools meet proficiency targets or face sanctions including restructuring and eventual closing. Although the NCLB Act was aimed at changing academic achievement in the K-12 educational arena, it may have longer-term implications, particularly for college readiness. (p. 2-3)

The No Child Left Behind (NCLB) Act has drastically changed the climate and culture of public education by utilizing high stakes standardized testing as the primary measure of student learning and school quality, disregarding most other positive attributes that contribute to students being college ready. High stakes standardized testing with harsh, punitive accountability measures has become the motivators for student learning rather than actual student learning and applicability to life. College readiness is more than just standardized testing rather equipping students with educational skills and tools for right now living that become everyday practice so that by the time they reach post-secondary options they can make an informed decision about their future. First college readiness must be defined for parents, students, community stakeholders, and educators so that all are working toward a common goal rather than several small unaligned goals.

College and Career Ready Initiatives

Barnes and Slate (2013) reported that graduating from high school and moving on to college to earn a bachelor's degree were seen as the primary means of increasing one's cultural capital and upward social mobility. Additionally, Barnes and Slate (2013) cited Symonds, Schwartz, and Ferguson (2011) stating that "Education beyond high school is the passport to the American dream" (p. 2). Tucker (2011) discussed that college and career readiness has become such a topic in the K-12 educational setting that every grade's standards are calibrated starting from the hypothetical knowledge of a student entering a post-secondary institution or career. According to Schultz and Stern (2013), college and career readiness are a concern in both businesses and education arenas. Employers are calling for entry-level employees with basic academic skills and educators are being held accountable for student achievement in similar academic areas. However, college and career readiness research show that students are graduating from high school unprepared for post-secondary education and/or the workforce. College and career readiness must be understood in order to realize what the end result will be and how it is to effect the K-12 educational classroom and its applicability to future endeavors beyond high school.

Education is defined by what it can accomplish in the remote future and not in the present. Therefore, the goal of the K-12 instruction and curriculum being college and career ready is not always meaningful and relevant to the student in their current, real situations but based on a dream or aspiration. These dreams and aspirations are not always aligned realistically with each individual student. Educators struggle with

instruction and curriculum and alignment with the school improvement plans because school districts and/or individual schools tend not to define college ready, career ready, or college and career ready with a clear strategic plan rather place the phrase “college and career ready” in their mission and/or vision statement. The educator then conceptualizes their own meaning without ever knowing how to address the student holistically to be prepared for post-secondary options. According to Tucker (2011):

College and career readiness are as amorphous as it sounds, and it overshadows the essential goal of the arts, humanities, and sciences. It dismisses the immediate relevance of learning and undermines the belief that success can be about current priorities and age appropriate goals. (p.115)

Barnes and Slate (2013) reported that “according to college-readiness researchers, the federal government’s one-size-fits-all college readiness agenda has resulted in students who do not graduate from high school or in students who graduate but are not academically prepared or college ready” (p. 1).

College readiness pushes students primarily to a four-year baccalaureate degree at the exclusion of other viable educational opportunities. Students who do not meet the curriculum expectation are told they are not good enough. Rather than students being college ready they are graduating high school not being ready thinking that college is their option. These students then enroll in college without academic preparation, no interest in the subject matter, and no knowledge of what success in college means to their life; thus forcing them to drop out and not pursue educational goals. College readiness has to move forward with relevant and meaningful instruction.

Arnold, Lu, and Armstrong (2012) suggested using a framework that centers on the complexity of interacting environmental influences as the focal concern of college readiness programs, policies, and research or an ecological approach. Arnold, Lu, and Armstrong (2012) believe that mapping the research onto an ecological framework serves several purposes. The approach highlights the comprehensive nature of college readiness and provides a way to conceptualize research, policy, and practice to account for the complexity of students and multiple environments. The ecological approach also supplies a coherent organizational scheme for the large literature on college readiness while highlighting the gaps in what is known about particular environment levels and interaction across levels. Thus the forming a bridge across developmental, organizational, and policy approaches. This ecological approach allows one to look at more than just standardized scores and begin to open up more options for not only college but being career ready.

Career Ready and College Ready the Same?

Camara (2013) posed the question, if college ready and career ready are the same or different. Most research combines the two interchangeably, while others choose to define them separately. Research shows that K-12 tends to focus more on the college ready and not as much on career ready. Barnes and Slate (2013) suggested that college and career ready may be the new buzz words or catch phrase of the twenty-first century, but with the political, economic, and educational focus along with society's bandwagon mentality, the emphasis is clearly on college-ready. Although college and career

readiness is the 21st-century mantra, the word college is used synonymously for bachelor's degree and the word career is too often deemphasized.

Camara (2013) refers to career readiness as not being defined as a measurable construct. Possessing the academic skills and knowledge required to be placed and succeed in a post-secondary vocational or career-training program has been suggested as an appropriate construct but the actual criterion has not been defined. Career training programs are not likely to make remediation or placement decisions. There is little research available on the selection. Camara (2013) reported that career training courses may seem like an appropriate criterion measure but no multi-institutional validity studies employing cognitive testing have been cited. The lack of criterion data from post-secondary training institutions complicates efforts to define and measure career readiness. Such a limitation has not deterred either consortia or many policy-makers from pronouncing that college and career readiness is the same thing (Camara, 2013). Barnes and Slate (2013) emphasized that college ready is not a one size fits all and that students who do not perform a high academic level may feel that there are no options for them if college is not an option. Additionally, high performing academic students may not want to attend a four-year university even though they would be deemed college ready with GPA and high school academic success. According to Barnes and Slate (2013) one vital step in answering the academic dilemma for students may be differentiation; offering a variety of well-developed, clearly-focused, career-path options linked to community college and four-year majors. Visible, viable, realistic options embedded in a rigorous academic curriculum related to those options would expose students to information in

order to make informed choices. Students could then make choices that piqued their interests and enhanced their talents for specific careers; especially those students who have career aspirations that are alternative to the traditional four-year baccalaureate degree. Efforts to encourage such preparation could occur through encouraging parent involvement, providing college and career planning information and assisting students in the planning for post-secondary education. Such planning should be for going to college or for planning for a career. This exposure to career planning and not only college planning has to embed into the core curriculum as well as career/technical education (CTE).

Effective Implementation of College and Career Ready Initiatives

Effective implementation is key for college and career ready initiatives. It takes all stakeholders being involved in order to reach the student where they are and assist them in making an informed decision about their future. Exposure to college and career ready initiatives plays a vital role in how long the student will have to develop versus waiting until the high school years to begin talking about the future. Students and parents must be guided and provided access to education and career navigation. Students, teachers, administration, and the community must see a need for an academic and social culture to promote preparedness. With this culture comes an infrastructure that has to be in place for students, teachers, and staff so that all involved know the expectation and to strive for preparedness. Additionally, all students have to be included in process and transition so that every student is prepared to make post-secondary decisions.

Early Exposure: Elementary & Middle Schools

Au and Boyd (2013) research was geared towards high school. There has not been very much research conducted concerning college and career readiness in elementary or middle schools. However, Mattern, Allen and Camara (2016) pointed out that the bulk of the research on college readiness has examined student's level of preparedness at the end of their high school career, typically at the end of the eleventh grade. Identifying students nearing the end of the high school career leaves little to no time for intervention has little utility for individual students. Therefore, it seems prudent to have early warning indicators of whether students are on-track for college readiness. Students are not introduced to college and career ready vocabulary, skills and knowledge early enough in their educational journey to make an impact on their future educational goals. Instruction in the classroom must be real, relevant, and meaningful so that students can use the information in the classroom to apply to real life situations. The more instruction is relevant the more students connect their skills to their future endeavors.

Early childhood programs play a significant role through the introduction of college and career ready conversation in the home and instruction within the classroom. It is important for the conversations of careers and college with children at a young age so that they even know that it exists. Children who grow up in homes where parents only had a high school diploma tend not to talk about the possibility of doing well on the ACT to get into college. Noble, Roberts, and Sawyer (2006) suggested that students from lower income, less educated families are less likely to succeed academically in high school. This finding is most attributed to differences among groups in their opportunities

to learn, the quality of the education to which they have access, and to their income academic achievement despite any nonacademic factors if encouraged within the academic setting, thus the rationale for planning interventions to increase college and career ready instructional strategies. This change must occur early in their educational career in order to begin the conversation and educational training. Once students are exposed in elementary school and followed throughout their years in school into middle school, students will have a familiarity with high schools. Once students reach high school many of them are underprepared for high school content much less the amount of testing that will take place in order to idealistically predict their futures after high school. Parents and students sometimes do not know what questions to ask or even begin the conversation with concerning college and career readiness.

Education and Career Navigation Assistance

Bobeck and Zhao (2015) reported that many students and job seekers do not have the knowledge, skills, and preparation needed to set personally relevant, informed goals and formulate strategies to achieve them. According to the US Department of Education (2006), “almost 90% of twelfth-grade students aspire to attend some form of college after high school, but only 67% of students will actually in enroll in college the fall after graduating” (Bobeck & Zhao, 2015, p. 39). This points out a major discrepancy between what students aspire to and what they actually achieve. Bobeck and Zhao (2015) contended that of the 2013 ACT-tested graduating high school students who responded to whether they need help with education or occupation plans, 80% reported needing help. From the 25-year-old young adults to graduating twelfth graders to eighth graders facing

the transition to high school, Bobeck and Zhao (2015) noted that individuals overwhelmingly express a desire and a need to have someone to talk to and a planning process they can participate in to help them navigate their education and career journey.

Education and career navigation is a complex process requiring different tasks across the Kindergarten-Career continuum. According to Bobeck and Zhao (2015), research on education and career navigation, provide insight as to how different skills, personal characteristics, and other factors relate to a variety of education outcomes. As individuals progress through their education and career pathways, navigation plays a key role in facilitating their opportunities and successful transitions. Bobeck and Zhao (2015) suggested that students should begin making plans during the middle school years in order to start the process of realistic career plans later and encourages post-secondary planning. High school students who have career goals are more likely to engage in meaningful planning related to those goals. Further, high school students who are intentional about planning for college are more likely to follow through with the application process required for college admission.

Informed decisions about college majors are also important. Bobeck and Zhao (2015) reported that college students who change their major multiple times spend more time in college earning their baccalaureate degrees; thus spending more money. Education and Career Navigation assistance are essential for students to reach a goal of being college and career ready when they graduate from high school, which has to start early. The authors have identified a framework with four dimensions: self-knowledge, environmental factors, integration, and managing career and education action. Self-

knowledge is the perception of one's own abilities, interests, skills, values, attitudes, and beliefs that contribute to understanding self. Environmental factors refer to information, conditions, and experiences related to education and work that are acquired primarily from external sources and surroundings. Integration is the ongoing process of combining self-knowledge and environmental factors to form personally relevant knowledge structures used to evaluate information and to plan courses of action pertaining to education and work. Managing Career Actions and Education Actions is the ongoing process of implementing plans and enacting purposive behaviors that facilitate education and occupation progress (Bobeck & Zhao, 2015). Education and career navigation is essential to providing a more holistic view of an individual while focusing on acquiring, combining, and using knowledge about oneself and environmental factors in order to purposefully and actively achieve goals. Educators, parents, community and students have to work together to begin, identify, and accomplish realistic goals. Knowledge is power and the more a student know how to navigate their educational career they will be more college and career ready. It takes everyone contributing to the culture of a school to create a college and career ready culture.

Creating a College and Career Ready Culture

The diversity that exists in today's classroom is an inevitable factor of the current k-12 classroom. College and career ready strategies can help to prepare students for goals beyond high school. It takes a comprehensive effort from everyone assessing data and constructing an instructional curriculum that addresses the identified areas of need. Au and Boyd (2013) reported that by high school, many students of diverse backgrounds are

reading and writing far below grade-level expectations. These students need the boost provided when all teachers emphasize college and career readiness. Educators cannot just go at it alone rather it must be a whole school effort to improve scores academically and prepare students for post-secondary education and/or careers.

Au and Boyd (2013) literacy educator and researcher, admitted that they would much rather work on issues of curriculum and instruction, and assessments to help prepare students; however, it is imperative to assess the infrastructure of a school to determine how to improve academic preparedness. It was reported by Au (Au & Boyd, 2013), that she and her colleagues have learned that it is a mistake to proceed directly to professional development without first attending to the school's infrastructure for sustaining a multiyear, schoolwide improvement effort. Au's research indicated that strong infrastructure is based on three pillars: a supportive principal, a key curriculum leader, and a liaison team (Au & Boyd, 2013). The principal continued to keep the improvement plan before the educators and students at any significant event possible and continue to endorse the goals of the plan as the direction of the school, for the good of the students. The principal also provided adequate funding for an increased effort over a period of three to five years to ensure that teachers had adequate time to work with the changes that would occur in the curriculum, instruction, and assessments. The key curriculum leader is the second pillar which serves as the principal's right hand by looking after all the details of the improvement plan. The curriculum leader will attend department meetings making sure departments are posting meeting notes and keep up with the pace of the school's improvement plan. The liaison team is the third pillar

consisting of teacher leaders representing every key constituency in the school. They ensure that each department is keeping up with the pace and assist the key curriculum leader in guiding the improvement effort. Au (2013) along with her colleagues, believed that having a strong infrastructure will help to roll out change to curriculum and instruction in order to implement interventions such as college and career ready strategies to better prepare students for college and career readiness (Au & Boyd, 2013).

The College and Career Ready Infrastructure

Styron and Petagna (2004) cited the Center for Educational Research at the University of Wisconsin-Madison findings that revealed that alignments between state tests and content covered in the classroom produced only a 46% return of the skills commonly found on standardized exams. Mandeville High School is located 40 miles north of the city of New Orleans in the Tammany Parish School District. According to Styron and Petagna (2004), “at Mandeville High School, while teachers were doing a great deal to prepare students during class time, they reported that they had a little time to spend on test-taking skills and reviewing specifically for the test” (p. 5). Mandeville high school indicated that so many times students are expected to show up and take a test yet they are not even aware of how to take the test. Styron & Petagna (2004) discussed how Mandeville high School implemented an after-school tutoring program to address the identified areas of need concerning test-taking skills and testing content. Eighty percent of students who participated in this tutoring scored proficient on the standardized tests and contributed significantly to the overall academic goals as a part of their school improvement plan.

Au and Boyd (2013) indicated that educators in high schools already have the understanding that their students need to reach higher levels of achievement under the Common Core than under the previous iteration of the standards. Teachers generally lack an effective approach for pulling together faculty to boost student performance. According to Au and Boyd (2013), the challenge for high schools is to honor the various content areas and departments while bringing faculty together as a school-wide professional learning community. College and career readiness requires hard-work and commitment on the part of all concerned; that includes the teachers, staff, parents, students, administrators, and the community. This learning community has to support diverse students on all academic learning levels so that all students can be successful. High schools tend to identify students by academic ability more so than elementary and middle schools. According to the Tennessee Department of Education (2014-2015, a), special education students are allowed to graduate high school without taking a foreign language or advancing beyond the science of Biology and/or Algebra II, which could make college a distant dream and not a reality when transcripts are sent to college admissions. College and career readiness are not a one –size fits all and all students have to be included in the process.

Including All: Special Education

Brand and Valent (2013) contended that as work is being done to increase the number of youth who are college and career ready, we must ensure that students with disabilities are not left behind. This can be accomplished by equipping them with the knowledge and skills to fulfill their individual potential, compete with other workers, and

lead full and independent lives. Brand and Valent (2013) provided suggestions about how to provide college and career-ready instruction for students with disabilities such as: focusing on other critical skills; independent, self-determination, social and emotional skills and attitudes (e.g. maturity, resiliency, self-management, self-advocacy, and interpersonal relations); college knowledge (e.g., finding the right post-secondary education match, understand the college application process, and applying for financial aid); critical thinking; lifelong learning; and employment skills. Students with disabilities should be held to high expectations while acknowledging the aspirations, interest, talents, and desires of each student as well as the necessary learning supports needed for each student to succeed. All adults in the school including principals, teachers, counselors, and aides need to embrace a culture and belief system that students with disabilities are capable of high-level work and can complete a high school diploma, succeed in post-secondary education, and establish meaningful careers and independent lives.

Furthermore, school staff and families must work to help students set goals based on their personal bests; goals that reflect the realities of students' disabilities without constraining them through the limitation of lowered expectations. Goals should be personalized to include strengths, abilities, and aspirations while pushing them to maximize achievement based on these abilities (Brand & Valent, 2013). Students with disabilities can set career goals that they can work on during high school with CTE courses or school-to-work programs, which are open to all students in high school.

Preparedness for Post-Secondary Options

The transition to high school can be a difficult one for the 14-year-old student who has no clue as to prepare themselves for the next four years of high school and years beyond. Additionally, parents are just as new to the process and do not know where to begin to help their children transition and prepare them for life after high school. High school is filled with decisions about what to study, what classes to take, and what will help students navigate life. Some of the choices include military, workforce, college, and certificate career programs. Some students choose what their friends choose to do while others do what their parents want them to do with no real answer as to why or if it interests them. This section of the literature review discusses the different high school pathways; the ACT WorkKeys assessments and the ACT. Also, researchers have sought out the effectiveness of the alignment of the ACT with classroom instruction and if it is an effective method of measuring preparedness. Factors that affect ACT scores as well as other factors determining preparedness for post-secondary options is discussed.

High School Pathways: School-to-Work Programs

School-to-work programs are an excellent pathways to college and career ready preparation. These programs allow students to earn credits toward a certificate or degree while still in high school so that they are ready for work upon graduation from high school. Donaldson, Hinton, and Nelson (2016) explained the school-to-work program, as an opportunity for linking students and school with the workplace. This is accomplished through school partnerships with employers, unions, civic groups, and other public and private sector organizations. Together, these organizations help students develop the

skills needed for the competitive job market while making their educational experience relevant to the world they will experience as adults. School-to-work reform, the emphasis is moved towards applied learning, and away from short-lived, rote memory exercise. Additionally, students gain actual work experience in school, while developing potential contacts that may broaden employment options. Ultimately, students experience a boost in self-confidence through success as both school and work. This will equip students with the means with which to obtain jobs in their community (Donaldson, Hinton, & Nelson, 2016). Students who do participate in the work-to-school program may take advantage of the CTE courses to help them focus on one career path which can be pursued at a technical college, two-year college or four-year university.

High School Pathways: CTE and Career Readiness

Schultz and Stern (2013) cited the U.S. Department of Labor's projections indicating that:

Nearly 50 percent of all new jobs created between 2008 and 2018 will require some form of post-secondary award or training, and for businesses to be globally competitive, entry-level workers must have appropriate reading skills to qualify for these new jobs. (p. 157)

At the same time, only 34 percent of the students who graduate from high school will have the skills necessary for college. This skill deficiency is particularly disconcerting to community colleges, where research has indicated that 38-68 percent of college freshman take at least one remedial course. In response, policy-makers at the local, state, and

national levels are seeking ways to better prepare all students for transitioning to college or careers and measure their college and career readiness.

CTE courses have become more and more popular in high schools through the use of career academies. Clarksville-Montgomery County Schools (CMCSS) (2016) is currently in fifth year of career academies. They have established at least one academy within each of the 6 high schools. The different academies are geared toward preparing students for college and career. CMCSS offers a wide range of Career Technical Education programs under its open admissions policy. Specifically, the school system may offer admissions based on selective criteria in programs like Health Science, Agriculture, Game Programming, Hospitality and Tourism, Information Technology, Leadership, Manufacturing, Marketing, and Education and Training. CMCSS (2016) reports that high school students involved in CTE are more engaged, perform better and graduate at higher rates with the following percentages: 1) Eighty-one percent of dropouts say relevant, real-world learning opportunities would have kept them in high school; 2) the average high school graduation rate for students concentrating in CTE programs is 90.18 percent compared to an average national freshman graduation rate of 74.9 percent; and 3) more than 70 percent of secondary CTE concentrators pursued post-secondary education shortly after high school. CTE courses provide a focus for students and enhance their abilities to pursue college and/or careers. Students who want to pursue careers are often offered certificate programs during high school via CTE classes and later pursue post-secondary education while working. Students who plan to pursue

college right after high school prepares academically for the ACT, which is the college admissions exam for all students.

ACT WorkKeys

All students in the state of Tennessee are required to take the ACT in the eleventh-grade year whether they plan to go to college or not (Tennessee Department of Education, 2014-2015, a). Students who do not plan to attend college do not always perceive the value of taking the ACT. It was suggested that CTE teachers, and schools as a whole, stress the importance of having content knowledge for the ACT and its products. The WorkKeys is an assessment system that helps employers select, hire, train, develop, and retain a quality workforce. The assessment measures foundational and soft skills such as self-confidence, time management, and flexibility (American College Test, 2017). The WorkKeys assessment measures skills that employers feel are essential in the workplace. Students, job seekers, and seasoned professionals can use WorkKeys to learn more about their strengths and weaknesses and gain a valid way to demonstrate their abilities to employers. The WorkKeys is also very important to educators as it can be used to help take the guesswork out of determining student, applicant, and employee qualifications. Successful completion of the WorkKeys assessments in Applied Mathematics, Locating Information, and Reading for Information can lead to earning the National Career Readiness Certificate (NCRC), a portable credential earned by more than three million people across the United States as reported by the American College Test (2017).

The WorkKeys readiness indicator provides a reliable estimate that helps identify individuals who are likely to achieve scores of Level 3 or above on WorkKeys assessments, including Reading for Information, Applied Mathematics, and Locating Information. The results also let the user know how much further training can be of benefit before taking the full-length standard WorkKeys assessments (American College Test, 2017). Schultz and Stern (2013) further explained that the WorkKeys assessments were intended to provide information indicating the relationship between an individual's education and the skills needed for employment. According to Schultz and Stern (2013):

State policy-makers in Illinois and Michigan passed regulations that led to the state-wide testing of high school students on WorkKeys Reading for Information and Applied Mathematics assessments. In Alaska, high school juniors are tested on these two WorkKeys assessments as well as Locating Information assessments. (p. 158)

According to Schultz and Stern (2013), the results of the WorkKeys assessments are also being used in Alaska and North Dakota as criteria for obtaining state-sponsored post-secondary education scholarship awards.

High School Pathways: ACT and College Access

ACT is a national college admissions exam that includes subject-level tests in English, Mathematics, Reading, and Science. Students receive scores that range from 1-36 on each subject and an overall composite score (American College Test, 2016). The Tennessee Department of Education (2014-2015, a) reports that all Tennessee students are required to take the ACT during the 11th grade academic school year. ACT

established benchmark scores that the American College Test (ACT) research has identified that represents the level of achievement required for students to have a 50 percent chance of obtaining a B or higher or approximately a 75 percent chance of obtaining a C or higher in corresponding credit-bearing first-year courses (American College Test, 2016). American College Test (2016) reported that the ACT College Readiness Benchmarks are the minimum scores required on each subject test on the ACT (English, Mathematics, Reading, and Science) for students to have a high probability of success in credit-bearing, entry-level college courses in each subject area. ACT scores are widely used by post-secondary institutions to determine academic preparedness and competency for admission and scholarship eligibility. Colleges, universities, school districts, and educators place a great deal of trust and value in the reliability and academic prediction of this one ACT test score. Maruyama (2012) reported that attention has gravitated to identifying college readiness from widely used assessments that measure core content areas skills acquired prior to or during high school, defining threshold scores (benchmarks) that signify readiness. Even though a case could be made for several assessments, attention has focused most visibly on ACT tests.

ACT alignment with classroom instruction

According to Clough and Montgomery (2015):

The ACT assessments align not only with the expectations of post-secondary education including recruitment, admissions, and placement but also to the college and career readiness expectation of states and their students, ACT Assessments are an ideal way for states that have adopted college and career

readiness standards to measure the progress of their students toward meeting those standards. (p. 4)

Alignment refers to the content alignments between the education standards a state has adopted and the annual assessments administered to measure and evaluate students' progress (Clough & Montgomery, 2015). Clough and Montgomery (2015) reported that a majority of states have adopted the Common Core Standards and will be using new assessments currently being created by one of the two state consortia to assess progress toward those standards. Other states have adopted the Common Core as well as states that chose not to adopt those standards or reversed course on their previous adoptions-are developing their own assessment systems or have selected assessments created by one of a variety of testing companies. ACT solutions are explicitly designed and have been empirically validated to assess student progress toward college and career readiness, and therefore are a good match with many state college and career readiness standards (Clough & Montgomery, 2015).

According to Clough and Montgomery (2015), significant overlap exists between the Common Core Standards and college readiness constructs of ACT assessments since ACT data, empirical research and subject matter expertise was instrumental in the development of the Common Core standards that identified what constituted college and career readiness. ACT relies on research to ensure that its assessments and the ACT College and Career Readiness standards constitute sufficient and up-to-date preparation for post-secondary education and work-force training. Clough and Montgomery (2015) identified the two research-based component that ACT uses to develop college and career

readiness standards: 1) Standards describing what students should know and be able to do
 a various ACT score ranges are based on analyses of thousands of accrued student
 responses across multiple test forms developed from the test blueprints; and
 2) Progression across ACT score ranges provides an empirical indicator of whether
 students are performing well enough in relation to those standards to be considered ready
 for post-secondary opportunities. These components and longitudinal data extending into
 post-secondary education allow the ACT to empirically validate the ACT College and
 Career Readiness standards as describing requisite and prerequisite skills as well as
 performance levels for post-secondary readiness (Clough & Montgomery, 2015).

Factors affecting ACT scores

Noble, Roberts, and Sawyer (2006) noted that students from lower income, less
 educated families are less likely to succeed academically in high school. This finding is
 most often attributed to differences among groups and their opportunities to learn, the
 quality of the education to which they have access, and to their home environment. It was
 also found that across schools, high school GPA was strongly and positively related to
 ACT Composite score for both Caucasian-American and African-American students.
 Noble, Roberts, and Sawyer (2006) further suggested that parents' education across
 schools was also strongly related to ACT Composite score for Caucasian-American
 students, but not for African-American students. In comparison, the relationship between
 parents' education and high school GPA was not statistically significant. The
 relationships among ACT Composite, academic accomplishments and activities, coping
 skills, positive attributions, and the three background characteristics were also similar for

African-American and Caucasian-American students. Performance on the ACT Assessment did not appear to be differentially influenced by any of the factors or covariates studied, relative to group membership. Thus, those factors that benefit student achievement, as measured by the ACT Composite, do so for all students, irrespective of ethnic group membership.

Noble, Roberts, and Sawyer (2006) reported that students are capable of increasing their academic achievement and ACT scores despite any non-academic factors if encouraged within the academic setting; thus the rationale for planning interventions to increase ACT scores. It takes addressing the student holistically in order to change overall attitudes toward the ACT and its connection to post-secondary education. Nobles, Roberts, and Sawyer (2006) stressed that regardless of race/ethnicity, students can increase their chances of doing well on the ACT Assessment, and thus increase their chances of enrolling in and succeeding in college, by focusing on academic achievement in high school (e.g., taking rigorous coursework and obtaining good grades). To some extent, their educational achievement can benefit from time spent out of school on educationally related activities and accomplishments. Moreover, action on the part of parents, counselors, teachers, and schools can help students develop positive coping skills and realistic expectations of themselves, thereby helping them overcome background conditions that might otherwise affect their chances of being successful in school.

According to Maruyama (2012), the American College Test company has regularly released a report telling the U.S. public about the proportion of students taking ACTS who are and are not “college ready”; the pronouncements of ACT are dismal.

How should readiness pronouncements based on ACT thresholds be interpreted? Can it really be as ACT maintains that no more than one in four test-takers should expect to get grades of C or better in four core subject areas in college? Such projections are not borne out in college performance where, according to Maruyama (2012), over 56 percent of students at four-year institutions graduate within six years and up to 70 percent graduate eventually. Maruyama (2012) argued in his research that threshold scores used by ACT and others do not adequately assess college readiness, and Maruyama suggests alternative approaches for determining readiness.

Other Factors predicting college readiness and success

Mattern, Allen, and Camara (2016) reported that college readiness encompasses much more than academic preparation. Taking additional factors into account provides a richer and more holistic view of one's preparedness for future success in school and the workplace. For instance, employers want to know if an employee will be dependable, on-time, an effective communicator, and a quick learner. One test does not always reveal personal characteristics and the probability of success. There are many complexities that arise when defining college readiness. Mattern, Allen, and Camara (2016) stated that:

In the college and readiness literature, there seems to be an abundance of attention to the identification of at-risk students. But that is just the first step. Development of interventions and evaluating the efficacy of those interventions is equally, if not more, important. If the interventions do not change behavior and performance, then the value of identification is diminished. Evaluations of early warning systems can go hand-in-hand with evaluation of interventions: is the

early warning system able to identify students who need the intervention and can benefit from it? (p. 32)

Gaertner and McClarty (2015) identified six factors that effect college readiness: academic achievement, motivation, behavior, social engagement, family circumstances, and school characteristics. A review of theoretical models of college readiness illustrates that the number of ways these factors can be organized is likely to equal the number of the framework that can be proposed. For example, Conley's (2011) model specified four keys to college readiness: key cognitive strategies, key content knowledge, key learning skills and techniques, and key transition knowledge and skills. The research of Mattern, Allen, and Camara (2016) led to the development of a holistic framework of college and career readiness that is also divided into four broad domains: core academic skills, cross-cutting capabilities, behavioral skills, and education and career navigation skills. The two frameworks appear similar; however, the constructs and related knowledge, skills, and abilities within each of the broad domains reveals differences in the constructs included in the two models as well as how they are classified within domains. Factors that are most important for college readiness and how those factors should be categorized or grouped together remains an open question. Using the predictors of high school grade point average (GPA) and ACT is convenient because the measures are more universally available than college outcomes which are only observed for students who go to college. While GPA is not the only outcome of college readiness, it is often used for research purposes because of its availability to researchers, its relationship to high school academic achievement, and its strong statistical relationships with other college outcomes

such as degree attainment, retention, and final college GPA. Maruyama (2012) reported that literature on college attainment finds that assessments and high school grades are important predictors of first-year college performance but that they diminish in their relationships across the college years. Additionally, Maruyama (2012) argued that choosing thresholds based on a single assessment such as ACT is problematic in terms of both the amount of miscategorization and the overall rates of readiness identified. Incorporating multiple measures to determine readiness should increase the accuracy of judgments about readiness.

Gaps in Research

College and career readiness is the goal of many k-12 education systems. It is the priority of businesses as well as educators. However, the term college and career ready are defined in the research separately being college ready or career ready. There was much research on college ready and assessments such as ACT being established as a college admission test. On the other hand, career ready research does not show it has having a defined assessment rather the opinion of those deciding. There was very little research on how to define career ready and if it should be coupled in with college ready. There was not much research on whether K-12 settings should be college and career ready or just creating a college-going culture. ACT also has WorkKeys as a career ready tool and there are states that use this to determine if students are college and career ready rather than just knowing the content on state tests and/or ACT. Research should show the impacts of the two assessments and how to incorporate them together for best determinants of realistic established goals set and how they are accomplished.

While researchers idealistically proposed that early exposure to college and career goals were beneficial, there was little research showing the impact of the early interventions in middle or elementary school and its effect on preparation for high school and post-secondary education. Early exposure seems to remain be in the formative stages and does not reflect its long-term impact at this time. There was insufficient research to support that early exposure to college and career ready initiatives are more effective than waiting until high school to begin college and career ready in the ninth grade. Research only showed in theory and idealistically that early exposure is more of a benefit to students that waiting. In theory, the early exposure to college and career readiness would give students an advantage because they are able to set goals early in life and take the necessary steps to get there. For instance, a student who is exposed in elementary school learn at an early place in their educational experience what careers are possible for them to achieve. This allows them to enter their middle school experience with the background of exploring career interests and skill level. A middle school student then enters high school with the ability to make an educational plan that outlines their high school classes and the rigor needed in order to meet their set goals. Their high school career can then be tailored to fit those interest and how plan for post-secondary options. Those high school seniors are able to make informed decisions about their future and determine their own success which is no longer measured by just one test.

ACT reports being aligned with the states Common Core for all fifty states and being the best predictor of college readiness for high school graduate. However, researchers have discovered that determining college readiness as determined by the

threshold of one assessment was too narrow and conflicted in the dependability of the ACT when used specifically for predicting college readiness. Many students determine their potential academic success with one ACT score but research shows that there are numerous factors that determine a student's post-secondary success. High school GPA, curriculum rigor, exposure to college and career ready initiatives, and extracurricular activities. Students, teachers, and the learning community tend to have a very narrow focus but in actuality it takes a well-rounded student to be successful during high school post-secondary ventures. The ACT is one tool to help guide students in their areas of strength and weakness. However, research showed that using a singular predictor cannot decide the potential of a student especially when there are other tests such as the Scholastic Assessment Test (SAT) that is also widely used by post-secondary institutions. It is important for students to do their best on the ACT but not to solely depend upon it as their only means of being successful.

CHAPTER 3

METHODOLOGY

Participants

This study included approximately 308 eleventh grade students, from a rural high school (Northwest High School) in Clarksville, TN, located in a low-socioeconomic area of Montgomery County. The students' average age was 16 years old. Fifty-one percent of the students were female and forty-nine percent of the students were male. Fifty-six percent of the students were Caucasian, thirty-one percent of the students were African-American, and less than one percent of the students were of Hispanic ethnicity. Seventeen percent of the students were at an advanced level of achievement in Mathematics, seventy-five percent of the students were at a middle level of achievement in Mathematics, and eight percent of the students were at a low level of achievement in Mathematics. All eleventh grade or third-year students are required to take the ACT. In preparation for the ACT, all eleventh grade or third-year students took the ACT plan as tenth grade students during the practice test the fall and in the spring with specific, targeted interventions to address areas of need in between the two practice tests and before the scored ACT given in the month of April. The students were not compensated for their participation.

Materials

The independent variable examined in this study was the American College Test (ACT). ACT (2016) is a national college admissions exam that includes subject-level tests in English, Mathematics, Reading and Science. Students receive scores that range

from 1 to 36 on each subject and an overall composite score. ACT establishes benchmark scores that ACT's (2016) research has identified to represent the level of achievement required for students to have a fifty percent chance of obtaining a B or higher or about a seventy-five percent chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. Benchmark scores are as follow: English: 18; Mathematics: 22; Reading: 22; and Science: 23.

Other tests used in this study to gather data was the ACT PLAN and the ACT practice tests. ACT (2016) provided the following description for the ACT Plan:

Includes four multiple-choice tests: English, Mathematics, Reading, and Science. Students' skills in these subjects will make a big difference—in school and, eventually, in their careers. ACT Plan score reports will help identify strengths and areas where improvement is needed. (p. 1)

The dependent variable was the student's official ACT scores and benchmarks scores published at the end of 2016-2017 academic school year.

Procedure

The study was conducted using an experimental study method that used a pretest and posttest mixed method design in using test data from the 2015-2016 and 2016-2017 academic calendar school year at a rural high school in Clarksville, Tennessee. The study lasted from September 2015, when the ACT PLAN was administered to May 1, 2017, after the March 21st ACT scores were reported.

The eleventh-grade students participated in the PLAN during the 2015-2016 academic school year as tenth graders. Data from the PLAN scores reflected a need for an

intervention plan in order to help increase ACT scores for the future spring 2017 state ACT test. ACT PLAN scores showed approximately ten percent of juniors meeting the ACT Benchmarks. Since the school year had already begun, there was not much classroom instruction other than the instruction students received from the ACT Prep class. The counseling and administration teams began to strategize ways to help these eleventh-grade students be successful for the upcoming test.

Students in Northwest High School were not making the connection between the ACT test and college scholarships, preparation, and course work as evidenced by low test scores and lack of interest. There was a very nonchalant attitude towards concerning college attendance as well as the ACT in general. To address the lackadaisical attitude and help students make the connection between ACT scores and college readiness, all counselors went to Junior English classes over the course of two days and met with each student independently to review each student's test scores on the ACT Plan. Discussions occurred with each student concerning their score interpretation, identified areas of weakness and strength, and assistance was provided to help them understand the importance of the test to their future educational endeavors.

The ACT prep class consisted of understanding the test dynamics such as the amount of questions per subject and timing for each section. Students were exposed to resources such as ACT practice test, ACT website, and other websites that provided help concerning Mathematics, English, Reading, and Science. Students were timed during the administration of each practice test in order to get in the practice of close reading and being able to finish the entire test. Students were also able to print out their results and

with an explanation concerning the incorrect problems and why. The students would then take their practice test results to their teachers of the subject in which they had struggled.

An ACT Team consisting of teacher leaders, administration, counselors, and students was formed in August of 2017 to address the concerns of low ACT scores. The ACT team developed the following intense interventions for the current juniors to prepare for ACT in March of 2017. The intervention plan involved the following: 1) Academic counseling with school counselors involving PLAN scores from the 2015-2016 academic school year; 2) Every Junior would take the ACT Prep class during the 2016-2017 academic year; 3) Increased number of sections of ACT prep offered each semester; 4) ACT practice test given in the fall and in the spring; 5) Planned classroom instruction during advisory time for all juniors, approximately 20 minutes per day per week for the spring semester; 6) More intense after-school ACT prep offered during the spring semester; and 7) Outside resources would be provided such as the ACT practice test along with Kaplan ACT prep books for students.

Research Questions

1. Do college and career ready initiatives in career technical education and core academic high school courses at Northwest High School result in a higher percentage of high school juniors and seniors meeting the ACT benchmarks?
2. Are there other key factors to be considered in predicting student's success beyond high school and preparedness for education/career/workforce?

3. Does the implementation of college and career-ready initiatives increase positive attitudes of students concerning a college-going culture as well as increase the confidence in preparedness for life after high school?

Research Hypotheses

1. ACT Readiness Benchmark scores will be directly and positively impacted by college and career-ready instruction, curriculum, initiatives in high school.
2. Null Hypothesis: There is no change in the ACT college readiness benchmarks scores for juniors and seniors before the implementation of college and career-ready initiatives and after the implementation of college and career-ready initiatives.

This research is derived from conclusions based on the ACT Practice Tests given to all eleventh-grade students in September 2016 and January 2017. At the beginning of the study, students completed the ACT PLAN and interpreted their scores very briefly with their teachers and counselor with no mention of the ACT test again until the spring semester of the 2016-2017 academic school year. During the fall semester of 2017, students were provided individual academic counseling and conferencing with a school counselor. Data was collected from the school data system, PowerSchool. All Plan scores used at the beginning were from the 2015-2016 academic school year. All ACT practice tests were provided by ACT and scored by the PathDriver electronically for reporting purposes. PathDriver is an electronic testing scanning system used for reporting test

scores at Northwest High school and the Clarksville-Montgomery County Schools (CMCSS).

CHAPTER 4

RESULTS

The scores from the graduating class of 2016 appeared to be representative of students who even planned to attend college or had any direction for post-secondary options. As a result of this low percentage of students meeting the benchmarks as well as the school average ACT score of 17.4 which is below the state of Tennessee average of 18.4. There was nothing that could be done about the ACT scores for the graduating class of 2016 but the focus would be on the graduating class of 2017. The question was, if there were college and career ready initiatives within the instructional program via career and technical education (CTE) as well as the traditional core classes, would there be a significant difference between their scores on practice tests taken in the fall of 2016 and the ACT Test scores administered in the spring of 2017, after the college and career ready strategies were used? The null hypothesis for this analysis stated that there will be no significant difference between the practice ACT scores in the fall and the practice ACT scores in the spring after college and career ready initiatives. Alternatively, the research hypothesis is that students will increase their overall ACT scores after the implementation of college and career ready initiatives for at least 100 minutes per week for 9 weeks between the two practice tests (Ho: Fall Scores=Spring Scores; Ha: Fall scores <Spring Scores).

Descriptive Statistics

Table 1, below, shows the pertinent statistics for the graduating class of 2017 on the Practice ACT.

Table 1

Descriptive Statistics of class of 2017 practice ACT Score-Mean, Median, Mode, Standard Deviation, ACT practice Score for Fall 2016 and Spring 2017

N	ACT practice: fall		ACT practice: spring	
	Valid	275	275	
	Missing	17	17	
Mean		16.7713	18.3918	
Median		16.3333	17.7500	
Mode		15.00	15.25	
Std. Deviation		4.26957	4.84414	

With raw scores, there is a difference between the ACT Practice Test for the fall of 2016 and ACT Practice test administered during the spring of 2017 indicated by the difference in the Mean scores between the two categories suggesting that students performed better after having 148 hours of college and career ready initiatives.

Assumptions

The data for this question consisted of two variables: the independent variable - college and career ready initiatives - is quantitative while the dependent variable - ACT test score - is continuous. A linear Regression was used to determine the impact of

college and career ready initiatives on ACT scores. The first two assumptions relate to the study design and the measurements while the other five assumptions relate to how the data fits the linear regression model.

Assumption one states that there is one dependent variable that is measured at the continuous level. In this field study the ACT Test scores were measured on a continuous level. Assumption two states that there is one independent variable that is measured at the continuous level. The quantitative, independent variable of college and career ready initiatives was a measure in the amount of hours (148 maximum) in classroom instruction. Assumption three states that there is a linear relationship between the independent and dependent variables. The scatterplot graph, figure 1, suggests that there is a liner regression. Assumption four states that the errors are independent. In linear regression, errors are known as residuals, thus residuals must be independent.

To test assumption four, I used the Durbin-Watson test. The Durbin-Watson test is a test for a particular type of (lack of) independence; namely, 1st-order autocorrelation, which means that adjacent observations (specifically, their errors) are correlated (i.e., not independent). As indicated below in the model summary (Table 2), there was independence of residuals, as assessed by Durbin-Watson statistic of 1.747.

Assumption five is there are no significant outliers. Casewise diagnostics was used to determine if there are outliers as indicated below in Table 3. Case 123 and 275 have standardized residuals that are greater than +/- 3 standard deviations. The outliers are neither the result of a data entry error or measurement error, rather unusual data points; thus the outlier will be kept in the data.

Table 2

Model Summary: Durbin-Watson Statistical Test determining independence of residuals

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.785 ^a	.616	.615	3.00704	1.747

- a. Predictors: (Constant), ACT practice: fall;
- b. Dependent Variable: ACT practice: spring

Table 3

Casewise Diagnostic test determining outliers

Case Number	Std. Residual	ACT practice: spring	Predicted Value	Residual
123	-3.712	13.00	24.1612	-11.16124
275	3.091	12.75	3.4566	9.29344

Dependent Variable: ACT practice: spring

Assumption six is the assumption of homoscedasticity, which is an important assumption of linear regression and indicates that the variance of the errors (residuals) is constant across all the values of the independent variable. There was homoscedasticity, as assessed by visual inspection of a plot of standardized residuals versus standardized predicted values, in Figure 1.

In linear regression there are two methods to ascertain if the residuals are normally distributed. A histogram graph is shown below (Figure 2) that the standardized residuals appear to be approximately normally distributed.

Figure 1

Homoscedasticity: Linear Regression across values of independent variable

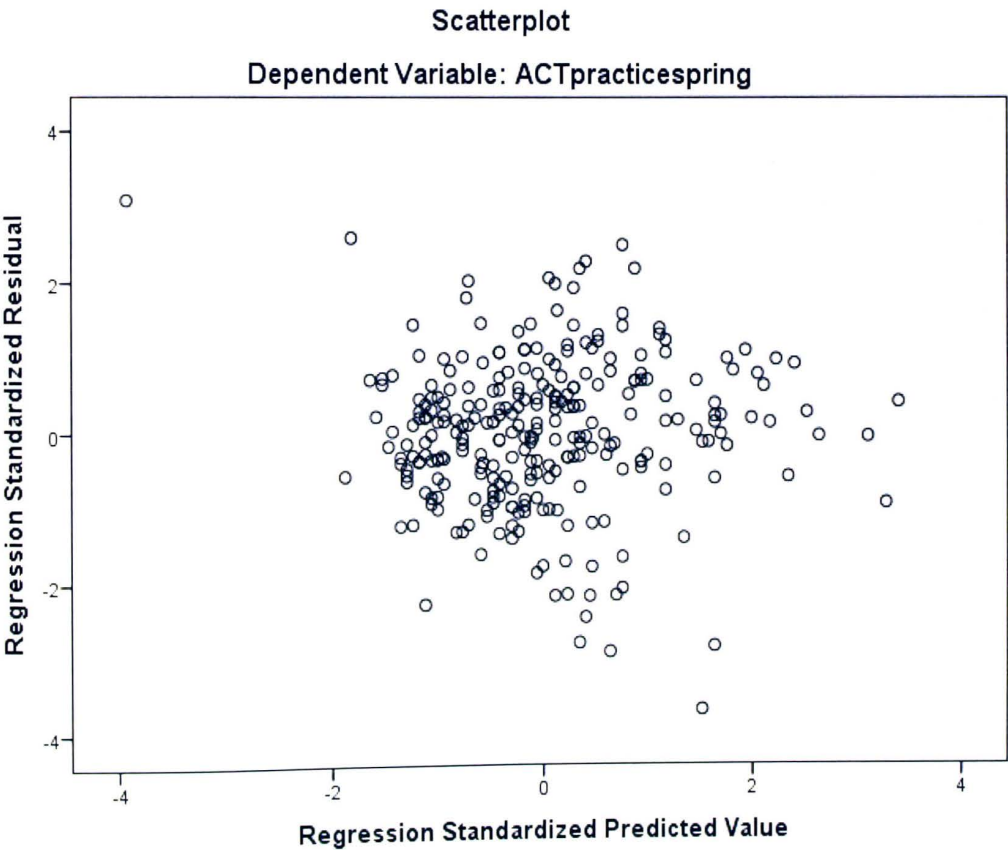


Figure 2

Histogram determining if residuals are normally distributed

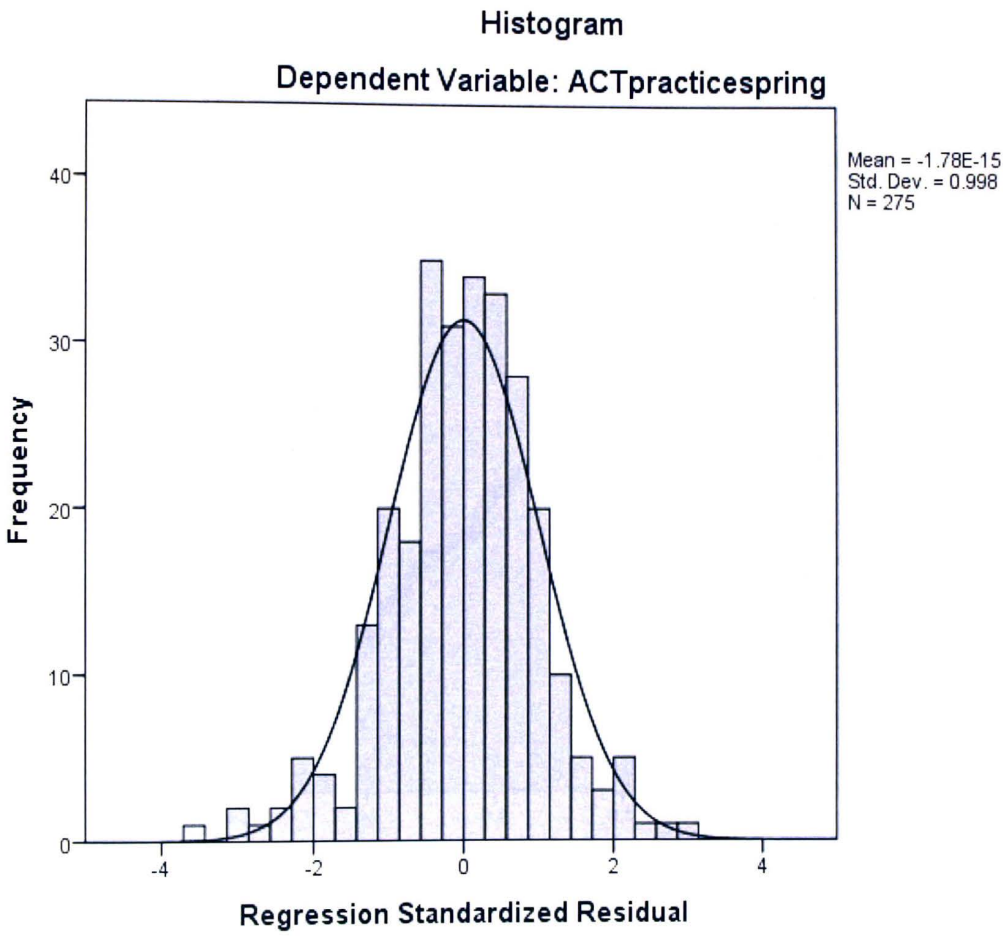
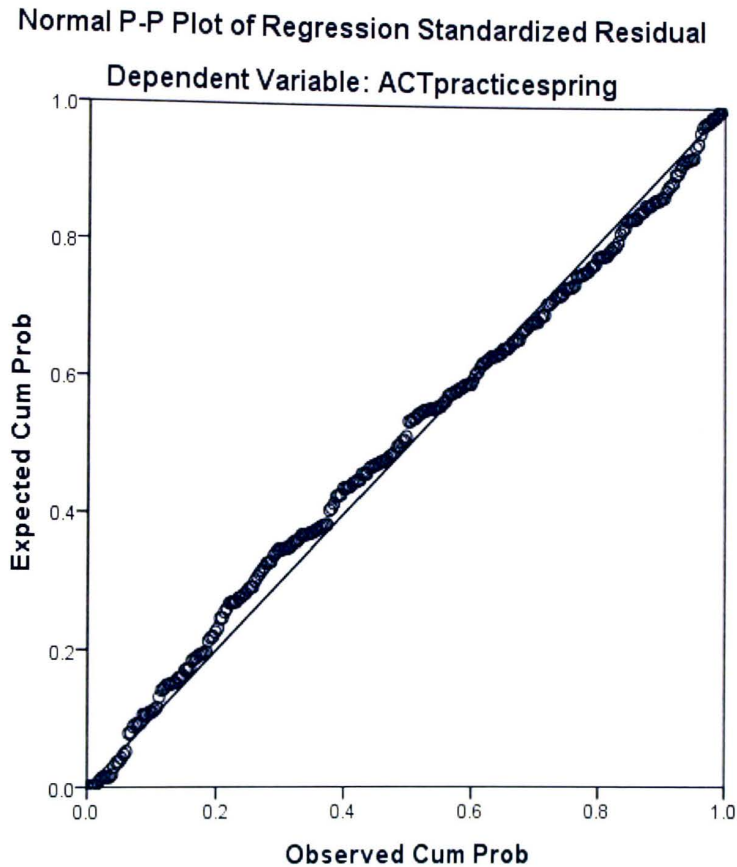


Figure 3

Normal P-Plot showing the regression of standardized residual



Observationally, it is readily concluded from the above Normal P-P Plot (Figure 3) that although the points are not aligned perfectly along the diagonal line, they are close enough in proximity to indicate that the residuals are approximately normally distributed. As linear regression analysis is fairly robust against deviations from normality, we can accept this result as meaning that no transformations or otherwise need to take place; you have not violated the assumption of normality. Residuals were normally distributed as assessed by visual inspection of a normal probability plot.

Results

The original research questions and Hypothesis for this study are as follows, which will explain whether the null hypothesis is retained or rejected:

Research Questions

1. Do college and career ready initiatives in (CTE) and core academic high school courses at Northwest High School result in a higher percentage of high school juniors and seniors meeting the ACT benchmarks?
2. Are there other key factors to be considered in predicting student's success beyond high school and preparedness for education/career/workforce?
3. Does the implementation of college and career-ready initiatives increase positive attitudes of students concerning a college-going culture as well as increase the confidence in preparedness for life after high school?

Research Hypotheses

1. ACT Readiness Benchmark scores will be directly and positively impacted by college and career-ready instruction, curriculum, initiatives in high school.
2. Null Hypothesis: There is no change in the ACT college readiness benchmarks scores for juniors and seniors before the implementation of college and career-ready initiatives and after the implementation of college and career-ready initiatives.

As indicated in Table 2, $R^2 = 0.616$, which as a percentage is 61.6% (i.e., $0.616 \times 100 = 61.6\%$). The R^2 value of 61.6 represents the proportion of variance in the dependent variable (ACT scores) that can be explained by the independent variable (hours of initiatives). Technically, it is the percentage (or proportion) of variation accounted for by the regression model above and beyond the mean model. In this example, $R^2 = 61.6\%$, which means that the independent variable, time, explains 61.6% of the variability of the dependent variable. 148 hours of college and career ready instruction accounted for 61.6% of the variation in ACT scores with adjusted $R^2 = 61.5\%$, a medium size effect according to Cohen (1988).

Table 4

ANOVA to determine statistical significance

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3961.055	1	3961.055	438.060	.000 ^b
	Residual	2468.539	273	9.042		
	Total	6429.594	274			

a. Dependent Variable: ACT practice: spring

b. Predictors: (Constant), ACT practice: fall

The regression model is statistically significant, $F(1, 273) = 438.060, p < .0005$. It is statistically significant because $p < .05$. A statistically significant result also indicates that there is a statistically significant linear relationship. This is reported from the Table 7 above as: $F(1, 273) = 438.060, p < .0005$. Thus, there was a significant difference in

practice ACT scores in fall of 2016 without any college and career initiatives and ACT practice scores in spring of 2017 with 148 hours of college and career ready initiatives. Thus, the Null Hypothesis, there is no change in the ACT college readiness benchmarks scores for juniors and seniors before the implementation of college and career-ready initiatives and after the implementation of college and career-ready initiatives, must be rejected.

CHAPTER 5

CONCLUSION

College and career readiness is a point of discussion in school, businesses, the classroom, and student's homes. Employers want employees to have basic academic skills and educators are being held accountable for achievement in academic areas. Research shows that students are graduating from high school unprepared for post-secondary education and/or the workforce. Thus proving that there is a gap between high school academics and college level course content. College and career readiness is multifaceted with many variables academic and nonacademic that play a role in being prepared for post-secondary education and/or the workforce.

Importance of ACT to college and career planning

There are many decisions that must be made by students when they are considering post-secondary options. It is imperative that students are well prepared academically in order to be college and career ready. The ACT is used by many higher education institutions as a determinant of admissions. In the state of Tennessee, low ACT scores can be missed opportunities for money and college admission. It is imperative to improve these scores in order to increase student's opportunity for post-secondary education. The ACT establishes benchmark scores that the ACT's (2016) research has identified to represent the level of achievement required for students to have a 50 percent chance of obtaining a B or higher or about a 75 percent chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. The ACT Benchmark scores are as follow: English: 18; Mathematics: 22; Reading: 22; and

Science: 23. The ACT benchmark scores and composite scores should be addressed within the learning environment during a student's high school career. Exposure to the ACT as a whole is key to a student's success on the ACT. It is the belief of this research that the dependent variable of ACT Readiness benchmark scores are directly and positively impacted by the independent, qualitative variable of college and career ready instruction, curriculum and initiatives in all high school learning environments.

Historically college and career readiness has been sought by administrators, legislators and community advocates to improve student achievement at all levels. The academic trajectory was changed through standardized testing as a result of the National Defense Education Act. Standardized testing in high schools increased from one-third of the student population to nearly 100 percent. The educational system steadfastly moved toward the present one size fits all agenda as indicated by No Child Left Behind of 2001. Although the NCLB was focused on changing academic achievement in the K-12 educational arena, it has long term implications for college readiness. College readiness is more than just standardized testing rather equipping students with educational skills and tools for everyday practice and informed decision making. Implementation of college and career-ready curriculum leads to a school culture of college and career ready beliefs and attitudes, development of relevant and meaningful instruction, and a heightened sense of awareness of being college and career/workforce ready.

In order to create a college and career ready environment there must be collective and individual student goals set with the intent of accountability and expectation of excellence. The ACT is the measuring stick to which we want students to achieve at least

a score of 21 or above. A score of 21 is the goal because in the state of Tennessee, it opens doors for post-secondary financial support. Additionally, the higher the ACT score, the higher the probability of college admission and successful academic achievement during the first year of college. Visible, viable, and realistic preparation must be embedded in a rigorous curriculum related to the ACT and career ready initiatives order to expose students to information necessary for well informed decisions. We must involve everyone that plays a part in preparing students for life after high school such as parents, teachers, and community stakeholders. The exposure to career planning and not only college planning has to be embedded into the core curriculum as well as CTE courses.

Implications for Exposure to College and Career Readiness

Effective implementation is key and the timing of exposure is vital to how long students and parents have to plan for post-secondary options. In the state of Tennessee, all students take the ACT during the spring of their junior year. Identifying students nearing the end of their high school year leaves little to no time for intervention and has little utility for individual students. Therefore, it is expedient to have early indicators and exposure to college and career ready initiatives as early as elementary and middle schools. Early exposure helps to prepare students for high school because most students are underprepared for high school content much less the amount of testing that will take place to idealistically predict their futures. Parents and students need help to make well informed decisions. Education and career navigation is a complex process requiring different navigation skills throughout a student's academic career. Research suggests that

navigation plays a key role in facilitating opportunities and successful transitions. High school students who have career goals are more likely to be prepared for the future because their actions are intentional and they have the necessary information to make well informed decisions.

These well informed decisions come from a comprehensive approach of assessing data and constructing an instructional curriculum that addresses identified areas of need. Every school is different. The classroom is filled with diversity and educators cannot go at it alone rather a whole school effort. The infrastructure of a school is imperative to improving academic preparedness. As aforementioned, Au's (2013) research shows that a strong infrastructure has a supportive principal, a key curriculum leader, and a liaison team. Educators already have the understanding that students need to reach for higher levels of achievement. However, teachers can sometimes lack an effective approach for pulling together faculty to boost student performance. The research of this field study shows that a holistic approach from parents, students, teachers, and administration is effective in implementation of a college and career ready culture.

Transition of High School student to College Student

Once a college and career ready structure has been created it is important for students to know all possible pathways. The transition from high school to post-secondary can be difficult but it will be much smoother if they know the possible options. A high school could have the following as their pathways: school-to-work programs, CTE and career readiness, and ACT and college access. Once a student has chosen their pathway, they can begin to set goals according to their pathway, which gives a clear

pathway. A student who chooses ACT and college access must begin to increase their rigor in what high school courses they take in order to be academically prepared. There are also other factors that affect ACT scores such as motivation, behavior, social engagement, family circumstances and school characteristic. As you can see college readiness encompasses much more than academic preparation. For this reason, we much approach a student's college and career readiness holistically.

Implications of this Research for High Schools

Do college and career ready initiatives in (CTE) and core academic high school courses at Northwest High school result in a higher percentage of high school juniors and seniors meeting the ACT benchmarks as well as increasing positivity in the attitudes of students concerning the ACT? The answer must be a resounding yes; student scores were impacted significantly from the fall of 2016 to the spring of 2017 after the implementation of 148 hours of college and career ready initiatives. It is the belief of this research that exposure to the ACT within the classroom rigor and instruction, career planning, and a school wide/community approach yielded the positive results which in turn help to academically and mentally prepare students for post-secondary options.

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APPENDICES

APPENDIX A:

Institutional Review Board Letter of Approval to Conduct Research

AP State University
INSTITUTIONAL REVIEW BOARD

Date: 10/24/2017

RE: 17-067: The Impact of College and Career Ready Initiatives on High School Preparedness for Post- Secondary Options

Dear Ms. Miller and Dr. Stewart,

We appreciate your cooperation with the human research review process. This letter is to inform you that study 17-067 has been reviewed on an expedited level. It is my pleasure to inform you that your study has been approved.

This approval is subject to APSU Policies and Procedures governing human subject research. The IRB reserves the right to withdraw approval if unresolved issues are raised during the review period. Any changes or deviations from the approved protocol must be submitted in writing to the IRB for further review and approval before continuing.

This approval is for one calendar year and a closed study report or request for continuing review is required on or before the expiration date, 10/24/2018. If you have any questions or require further information, you can contact me by phone (931-221-7506) or email butterfieldj@apsu.edu).

Sincerely,

A handwritten signature in black ink, appearing to be 'J. Butterfield', written over a horizontal line.

Jonniann Butterfield, Ph. D. Chair, APIRB

APPENDIX B

Permission to Conduct Research Clarksville Montgomery County Schools

Approval Letter



From: Dr. Kimi Sucharski
CMCSS Accountability
612 Gracey Ave
Clarksville, TN 37040

January 31, 2017

To: April Miller

Subject: Request to Conduct Research in CMCSS

The Clarksville Montgomery County School System Research Committee has met and approved your request to conduct research in the District at Northwest HS evaluating the correlation between the utilization of college and career readiness instructional strategies and the percent of participating students meeting the college readiness benchmarks on the ACT. This includes the collection of ACT student data.

Sincerely,



Dr. Kimi Sucharski
CMCSS Accountability and
Assessment
Kimi.sucharski@cmcss.net
(931) 920-7813 office