THE EFFECT OF ADVANCED PLACEMENT COURSES ON STUDENTS’ COLLEGE AND CAREER READINESS

A DISSERTATION

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Carrie Rudder Bailey
March 28, 2018
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Abstract

This quantitative study analyzed the effect of Advanced Placement courses on students’ college and career-readiness. The study was established to conclude if Advanced Placement courses have any effect on students’ college and career-readiness. The study included 34 Tennessee high schools. The schools were divided into two groups, schools with more successful Advanced Placement programs and schools with less successful Advanced Placement programs.

Distinctions were formulated utilizing *U.S. News and World Report’s* 2017 Best High Schools ranking. Schools’ ACT composite scores and graduation rates were utilized as proxies for college and career-readiness. A t-test: two-sample assuming unequal variance was performed to assess if there were any significances between the data. Schools were matched based on the percentage of economically-disadvantaged students at each school. ACT composite scores from the more successful Advanced Placement program schools were compared to the ACT composite scores of the schools with less successful Advanced Placement programs. In addition, graduation rates from the schools with more successful Advanced Placement programs were compared to the graduation rates of the schools with less successful Advanced Placement programs. Results indicate a slight increase in ACT scores for schools with more successful Advanced Placement programs, indicating a statistically significant difference. Therefore I argue students at the more successful schools are more college-ready and are more internally motivated at the Self-Determination Theory indicates. However, there was not a significant correlation of Advanced Placement success and graduation rates. The findings of this study support the demanding curriculum presented in Advanced Placement courses as students prepare for college and their careers.
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Dedication

This dissertation is dedicated to my children.
Cooper Bailey, my son- thank you for always being ‘mommy’s boy’ and providing unconditional love when I needed it the most.
Baby Bailey, my 18 week-old baby that I will meet in August- I love you and I have not even met you.
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CHAPTER 1: PURPOSE AND ORGANIZATION

Introduction and Background of Study

The need to prepare students for the 21st century must not be underestimated. Students are likely to face challenges without the knowledge and skills necessary to compete in a global marketplace. A high school diploma no longer ensures a middle-class income. Without a postsecondary degree, it may be difficult to survive in our changing world (James, Lefkowits, and Hoffman, n.d; Cronin, B., 2014). Tennessee found that the 2014 graduates who enter the workforce directly from high school earned an average annual salary of $10,800, which is below the poverty line (Tennessee Department of Education, 2017c).

To ensure prosperity, preparation for the future of the students must begin in high school. According to a 2005 policy report issued by the ACT, the U.S. Department of Education indicated that students in American high schools are leaving less prepared. According to the National Center for Education Statistics (2017a), 20.4 million students in the United States are expected to attend colleges and universities in the fall of 2017, which is a 5.1 million increase since 2005. Considering that there is a dramatic increase in the number of students entering post-secondary schools, it is imperative that high schools provide their students with a rigorous curriculum and the skills needed to succeed.

As more students are applying to college and admissions are becoming more competitive, students are attempting to enhance their academic profiles. High schools offer students additional early post-secondary opportunities, such as Advanced Placement and the International Baccalaureate Diploma Programme. Advanced Placement’s yearly growth rate of 9.3% during the last two decades exceeds the 1% yearly increase in high school graduates (Sadler, Sonnert, Tai, & Klophfenstein, 2010) in addition to the International Baccalaureate program’s growth of
39.9% between 2012 and 2017 (International Baccalaureate, 2017). These programs allow students to enroll in post-secondary courses and earn high school and college credit, therefore aiding in their college readiness and success.

Advanced Placement courses present high school students the opportunity to take coursework aligned with introductory college-level courses, as well as the opportunity to earn college credit. Aldeman (1999) found enrollment in Advanced Placement courses is more likely to facilitate degree completion at the collegiate level. Students study content in a more rigorous manner, learn essential study skills and develop critical thinking and writing skills. While students are motivated to take Advanced Placement courses for various reasons, such as extrinsic factors in the form of good grades and high-test scores, Bowman (2011) stated that exceptional educators instill intrinsic factors, such as autonomy, mastery, and purpose, in students.

While Advanced Placement offers students exposure to the rigor found in post-secondary courses, other organizations have also researched alternative ways to prepare students for college and/or their careers. In A Nation at Risk (The National Commission on Excellence in Education, 1983), the importance of preparing high school graduates for the work force and college was noted. To best prepare students, A Nation at Risk proposed that every high school in the United States have a core curriculum with a minimum number of courses to create a foundation of success (ACT, 2007). The Tennessee Department of Education (n.d.d) requires students to earn a minimum of 22 core credits, complete end of course exams, and take either the ACT or SAT to receive a diploma. While required high school courses are tiered based on ability (ex. skills, college preparation, and honors), many schools are also offering students college-level courses that can provide these students with a high school and college credits by passing necessary coursework and/or exams.
Also, the American College Testing (ACT) has established readiness benchmarks to assess students’ ability to be college ready. Meeting these thresholds means that students will have approximately a 50% chance making a B or better and a 75% chance of earning a C or better in the corresponding college course or courses of English, mathematics, or science. While the ACT has created benchmarks to establish college readiness, state departments, districts, schools, and educators are challenged to find the best ways to ensure students are prepared for the admissions/achievement tests and are prepared to meet the 21st century demands of higher education and/or the work force. With many universities utilizing the ACT as an admissions factor, more students have begun taking the test. The percentage of graduates taking the ACT has grown from 37.5% in 2000 to 55.3% in 2015 (National Center for Education Statistics, 2017b). Similarly, the number of 12th graders taking Advanced Placement has grown from 387,904 students in 2000 (College Board, 2000), to 545,785 students in 2005 (College Board, 2005a), and reaching 905,495 students in 2015 (College Board, 2015b). With college admissions becoming more competitive than previous years, students recognize the need to take advantage of the advanced courses for numerous reasons, including strengthening resumes’, saving money, and better preparation for college and the 21st century workforce. While many states, like Tennessee, are offering more post-secondary opportunities, like Advanced Placement, it is worth investigating if the program’s rigor provides students with the skills needed to be 21st century ready (Warne, 2017). While Advanced Placement is a nationally recognized program with acclaimed benefits, it is also worth a more in-depth study of Advanced Placement student success.

I will define the problem investigated in this study. The purpose and the significance will be explained to provide readers with an understanding of why this study is vital to education. I
will provide a theoretical framework to structure the study. The chapter concludes with the research questions investigated, limitations and delimitations, and terms relevant to the study.

**Statement of Problem**

The problem I am investigating is if the rigor of general education courses in high school is equitable to the rigor of Advanced Placement courses. Therefore, do schools that do not have Advanced Placement programs fail to demonstrate equitable rigor in preparation of college and career readiness? In this study, I will determine if the schools with successful Advanced Placement programs in Tennessee had higher ACT composite scores and graduation rates, therefore better preparing students for college. Heitin (2016) stated that as the Advanced Placement program began to grow, the accelerated progression prompted skeptics to question if the academic caliber and rigor of the program may have diminished. In addition, critics contend the rapid expansion of Advanced Placement may be cause for uneasiness due to a lack of rigor within the program. Some Advanced Placement teachers are concerned that the districts are relaxing requirements for students to take the Advanced Placement courses. While more students took Advanced Placement courses, thousands failed Advanced Placement exams; Edwards (2015) stated they gained the experience of taking an Advanced Placement course. Tugend (2017) reported that while some students scored a 2, which is a failing grade, on the Advanced Placement Literature exam, these students still understood the text. For some of these students, they were exposed to studying novels or plays for first time.

The Advanced Placement program continues to grow, and there is also an increase in the number of ACT test takers. In 2016, there was 8.6% increase in the number of students taking the ACT from 2015. Overall achievement levels, average ACT composite scores, and percentages of students meeting the ACT College Readiness Benchmarks dropped compared to
those taking the test in 2015. The increase could be due to seven more states now requiring the ACT, which means student scores from a broader academic preparation were measured (ACT, 2016). The lack of preparation and rigor displayed in high school classes could prompt the slight decline of scores. With the expansion of the Advanced Placement program and requirement of taking the ACT for graduation, states, schools, and educators must evaluate how to prepare their students to succeed in the 21st century.

**Purpose of Study/Significance of study**

Tennessee’s initiative of Drive to 55, aims to ensure that 55% of Tennesseans will have college degrees by 2025. Therefore, it is critical to ascertain if the implementation of Advanced Placement programs is benefitting the school and students, as Tennessee is emphasizing additional early post-secondary opportunities (Tennessee Department of Education, 2017b). The purpose of this study was to determine if schools with successful Advanced Placement programs in Tennessee contributed to college readiness for the students that attended these schools. ACT scores and graduation rates were utilized as proxies to determine students’ potential post-secondary success. This study utilized *U.S. News and World Report*’s college readiness calculations to examine success rates of Advanced Placement courses in Tennessee schools. This research should be applicable to other schools and states because it will allow them to analyze the impact of Advanced Placement programs in Tennessee.

The significance of this study is three-fold:

1. College and career readiness is a fundamental goal of education on national, state, and local levels.
2. The Advanced Placement program is a primary pathway by which schools and school districts attempt to improve college readiness by introducing students to rigorous coursework.

3. In recent years, Tennessee has emphasized college readiness through the increased access to Advanced Placement courses and other early post-secondary opportunities.

This study examined different aspects of college readiness that could aid schools considering the implementation of early post-secondary opportunities to enhance college readiness. According to Every Student Succeeds Act, ESSA, (Tennessee Department of Education, 2017b), during the 2014-2015 school year, 92% of Tennessee high schools offered at least one post-secondary opportunity, though only 41% of the 2015 high school graduates participated in any of the following early post-secondary opportunities (EPSO): Advanced Placement (AP), Cambridge International Examinations (CIE), College Level Examination Program (CLEP), Dual Enrollment (DE), International Baccalaureate (IB), Local Dual Credit (LDC), Statewide Dual Credit (SDC), and Industry Certification (IC) (Tennessee Department of Education, n.d.c). In 2014, 231 high schools in Tennessee offered students the opportunity to take Advanced Placement courses.

Studies have shown that students, typically pre-selected talented students, who participate in post-secondary opportunities, are more likely to both enroll and continue in secondary education (Scott, Tolson, & Lee, 2010). Though not all students will continue into secondary education, Tennessee stipulates all students should have high-quality opportunities (Tennessee Department of Education, 2017b). Since the 1950s, Advanced Placement has been one of the most widely accepted post-secondary options on a national and international scale. In addition,
institutions such as *U.S. News and World Report* utilize schools that implement Advanced Placement as a way to rank to the best high schools in the United States.

Advanced Placement provides challenging courses for students, which enhances student transcripts. Accordingly, 85% of selective institutions report that a student’s Advanced Placement experience favorably impacts admission decisions. Additionally, Advanced Placement allows students to save money if they earn a passing score on the exam (College Board, 2017e). For the 2016-2017 school year, the average cost of tuition was $9,650 for in-state residents, (College Data, 2017) compared to a $94 fee for taking an Advanced Placement exam (College Board, 2017c). By offering access to Advanced Placement courses, schools can provide students with opportunities to challenge themselves with rigorous coursework that is intended to teach them critical thinking skills, allow them to develop better writing techniques, and gain a deeper understanding of the content they are studying. As students strive for success, various motivating factors contribute to these students’ achievements.

**Theoretical Foundation**

In order to understand the actions of students who take Advanced Placement courses, it is helpful to examine the self-determination theory. The self-determination theory is a theory of motivation that is concerned with supporting natural or intrinsic behaviors in effective and beneficial ways (Self-Determination Theory, 2017).

Studies have found that students who are participants in establishing their own educational goals are more likely to reach these goals. While students should be agents of their own education, there are also uncontrollable factors impeding the internalization of their education. According to Deci, Ryan, and Koestner (1999), the effects of external rewards tend to have a negative impact on intrinsic motivation. Due to the increase of high-stakes testing such as
ACT, SAT, and the ever-growing list of state end-of-course tests, teachers are reported as “teaching to the test.” These tests mandate that students must earn a particular grade to advance in school. While some may believe testing is an adequate measure for students, it undermines the enhancement of student interest, inner motivation, and long-term persistence (La Guardia, 2009). Advanced Placement students subject themselves to a test, but these students can ostensibly choose the classes of interest to them in hopes of passing the test and earning college credit. Self-determination is primarily concerned with promoting an interest in learning for students, as well as a valuing of education and confidence in their own capacities and attributes (Deci, Vallerand, Pelletier and Ryan, 1991).

Ryan and Deci (2000) stated that motivation concerns energy, direction, persistence, and equifinality. People are motivated for many different reasons: they may value an activity, there may be a strong external coercion, or they may be bribed or feel a sense of commitment. Intrinsic motivation is the inherent ability for individuals to seek out novelty and challenges. Thus, this study emphasizes the Advanced Placement experience as opposed to the Advanced Placement exam. From the time of birth, individuals begin developing interests, mastery, and exploration, even if the reward is internal. When others are extrinsically motivated, they seek an outcome from performance, which contrasts intrinsic motivations, whereas participation in an activity inherently satisfies individuals. In addition, “threats, deadlines, directives, pressured evaluations, and imposed goals diminish intrinsic motivations because, like tangible rewards, they conduce toward an external perceived locus of causality” (pg.70). While students take Advanced Placement for a plethora of reasons, successful students are concerned with their grades (external), which lead them to being college ready, successful in college, and successful in the 21st century workplace (extrinsic/intrinsic).
While the self-determination theory regards individual factors of motivation, the organization can also be influenced by the individuals’ attitudes about the course. The energy created by a group of students eager to learn is contagious. If one student wants to learn for intrinsic rewards, it is likely others will be ignited to view their education in the same light. Though students should be advocates and agents of their educations, promoting intrinsic motivational factors to their students is also an imperative part of the organization’s/ teacher’s responsibility. A school/ teacher who promotes intrinsic factors of motivation produces life skills that could facilitate student success in careers and future educational endeavors. The culture provided in Advanced Placement programs grants students the opportunities to “dig deeper into subjects that interest them, and learn to tap their creativity and their problem solving skills,” (College Board, 2017) which could lead to college and career success.

**Research Questions**

This study was designed to determine if there is a relationship between successful schools’ Advanced Placement programs and the schools’ respective ACT scores and graduation rates. Two essential questions that will guide the statistical analysis:

1. Is there a difference in composite ACT scores for schools that have successful Advanced Placement Programs compared to schools that do not have successful Advanced Placement Programs?
2. Is there a difference in graduation rates for schools that have successful Advanced Placement Programs compared to schools that do not have successful Advanced Placement Programs?
Null Hypothesis and Hypothesis

The null hypothesis is there will be no significant difference in ACT scores and graduation rates of schools that have successful Advanced Placement programs compared to schools that do not have successful Advanced Placement programs. The hypothesis is that schools with successful Advanced Placement programs will have a higher ACT composite scores and higher graduation rates.

Limitations and Delimitations

Convenience sampling was utilized for this study, which scrutinized public data published by *U.S News and World Report* and the Tennessee State Report Card. In addition, *U.S. News and World* indicated that data for some schools was not available. Furthermore, *U.S. News and World Reports* convey findings on public schools, magnet schools, and charter schools. However, only data relative to public schools were used for this study because data for private schools and magnet schools were not available on the Tennessee State Report Card. It is also important to note school demographics vary. For this study, I will select matching schools based upon demographics to ensure a valid comparison of schools. Students in some schools do not have the ability and/or opportunity to participate in the Advanced Placement program.

Instructional rigor among individual Advanced Placement classroom teachers is also a noteworthy limitation. While the College Board audits teachers’ syllabi, there is no safeguard in place to ensure the teachers are qualified to teach the course. It is expected that Advanced Placement courses offer intensity, depth, and formal evaluation protocol, but not all courses will be equally challenging. Though there are no prerequisites to teach Advanced Placement courses, the College Board encourages all Advanced Placement teachers to attend professional development workshops. Most Advanced Placement teachers are more experienced and able to
provide a rigorous course; however, variances of experiences and performances can highly depend on the teacher (Challenge Success, 2013).

The delimitations of this study include the division of the schools based on rankings and availability. The research sample used the rankings *U.S. News and World Report* had assigned to each school: gold, silver or bronze, as 2017’s best high schools, as well as schools that did not receive a ranking. These rankings were chosen due to convenience. ACT composite scores and high school graduation rates were variables in this study. I decided to investigate Tennessee schools due to their “Drive to 55” initiative, which comprises components of graduation rates, ACT scores, and other college readiness factors. While there are many EPSOs as an Advanced Placement teacher, I have seen the increased rigor and expectations for Advanced Placement students in comparison to students in traditional education classes.

**Assumptions**

I assumed that students performed to their best ability while enrolled in the Advanced Placement courses, as well as when these students took the Advanced Placement exam and the ACT. Additionally, it was assumed that all Advanced Placement teachers provided students with a college-level course rigor. Moreover, it was expected that *U.S. News and World Report* and the Tennessee Department of Education reported all findings accurately and without bias. It was understood that the ACT and graduation rates are good proxies for college readiness.

**Scope**

The scope of this study was limited to Tennessee. Although the findings were limited to one state, they may be pertinent to other states, districts and schools as these other districts and states consider offering Advanced Placement courses. Limiting the research to Tennessee was practical due to the researcher’s teaching assignment within the state and the time allotted for
this study. However, findings from this study may be applicable and relevant in other school
districts and states that offer Advanced Placement.

Definition of Terms

**Advanced Placement Courses** are rigorous, college-level classes in a variety of subjects
that give students an opportunity to gain the skills and experiences colleges recognize (College
Board, 2017b). The College Board Advanced Placement Program offers 38 courses in the areas
of art, English, history and social studies, math and computer science, sciences, world languages,
and cultures. This allows students to distinguish themselves for the purpose of college
admissions, earn college credit, and build college skills.

**Advanced Placement Exams** are administered in May at the conclusion of Advanced
Placement courses. The standardized exams claim to measure how well students mastered the
content and skills in the respective courses. A passing score can help students earn college credit
(College Board, 2017e). The exams are composed of a multiple-choice section and free response
section, which are graded each June. The multiple-choice portion is scored by computers and the
writing portion is scored by college professors and experienced AP teachers. The total scores
from each section are combined to form a composite score, which is then translated to a five-
point scale. Qualified is defined as being able to complete introductory college work in that
subject area (College Board, 2017c). Furthermore, students passing an Advanced Placement
exam indicate the likelihood that they would pass the equivalent introductory college course.

The **American College Testing** (ACT) is an achievement test that claims to measure
knowledge students have acquired in high school in order to determine their academic readiness
for college (ACT, 2017a). The test is divided into four subparts: English, math reading, and
science with the opportunity to take the ACT Plus Writing (Test Masters, 2017). In 1988, ACT
conducted the study, Academic Skills Study, involving more than 100,000 high school students to provide nationally-representative norms. The study was updated in 1995, involving 24,000 students to examine score scale and to update national norms with given the use of calculators. In addition to nationally represented norms, ACT provides user norms annually on score reports. User norms summarize test scores and subscores for 10th, 11th, and 12 graders (ACT, 2014a). Results are calculated by determining raw scores for the individual subparts, which is equal to the number of questions answered correctly on that test. Then the raw score is converted to a scale between 1 and 36.

Tennessee measures Graduation Rates as the percentage of students who graduated from high school within four years and a summer out of those students that entered the 9th grade four years earlier (Tennessee Department of Education, 2017b).

*U.S. News and World Report* produces an annual publication that ranks the Best High Schools in the nation. *U.S. News and World Report* teamed with North Carolina-based RTI International, a global non-profit social science research firm, to compile data and rank high schools in the United States with a gold, silver, or bronze ranking. Four steps are utilized to determine awards: Students must perform better than expected in their respective states. Disadvantaged students must perform better than the state average. Student graduation rates must meet or exceed a national standard, and students must be prepared for college-level coursework. (U.S. News and World Report, 2017).

Utilizing U.S. News and World Report’s ranking of the Best High Schools in the nation, this study categorized successful Advanced Placement programs as the schools that received the gold and silver ranking. The less successful Advanced Placement programs were schools that received the bronze ranking.
**Self-Determination** theory scrutinizes human motivation and personality. Humans can be motivated by external factors, such as rewards and grades, or internal factors, like interest or values (Self-Determination Theory, 2017)

**Organization of the Document**

This proposal was organized into three chapters. The first chapter included an introduction, a brief background, and a statement of the problem. The purpose of the study and the significance of the study were explained, and the theoretical foundations and research questions for the study were defined. Limitations and delimitations of the study were noted, and a definition of terms relevant to the study was provided. The second chapter was devoted to a review of relevant literature, specifically studies that pertain to the research questions. The third chapter detailed the methodology that was utilized in the study. The fourth chapter defined the findings. The fifth chapter provided conclusions, implications, and recommendations.
CHAPTER 2: REVIEW OF RELATED MATERIAL

The first chapter introduced readers to the problem to be investigated in this study of whether schools with successful Advanced Placement programs better prepare students for college than schools with less successful Advanced Placement programs. In this study, college preparation is measured by two proxies: schools’ ACT composite scores and graduation rates. This chapter includes relevant literature to the study, which provides readers with a greater understanding of college and career readiness, the Advanced Placement program, ACT, and graduation rates with a specific emphasis on Tennessee schools. Case studies were investigated to access similar studies, as well as gaps in the current literature.

The Search for Literature

This review of literature prompted a comprehensive search of articles that investigated the Advanced Placement program and the subsequent areas in education the program may affect. The purpose was to search pertinent topics that would provide readers a thorough scope of understanding. Though the Advanced Placement program was established in the 1950’s, studies were limited to the 21st century, as those would be the most relevant considering redesigns of the Advanced Placement program and the restructuring of curriculum standards that have occurred in many states.

In initial searches, the following databases were utilized: Google Scholar, Education Source, ERIC, ProQuest, and JSTOR. Within Education Source, searches were conducted using keywords (Advanced Placement, ACT, college-readiness, graduation rates) to find relevant studies. After reading abstracts and reference lists, Education Source was reassessed to search key authors (Klopfenstein, Ryan, Deci, Warne).
The search efforts provided an array of information defining the Advanced Placement program and various benefits and critiques. In completing this review, over 75 studies, dissertations, articles, and books were utilized. Much of the research lends itself to the discussion of the quantitative factors of the college readiness scores, Advanced Placement Program, ACT, and graduation rates. Although studies have been conducted analyzing the Advanced Placement Program (Mo, Yang, Hu, Callaway, & Nickey, 2011; Wang & Pennington, n.d.; Cline, 2017), research is still needed to further analyze the performance of schools and students in the Advanced Placement program relative to the college or career readiness of these students.

The literature is organized by subject (college and career readiness, Advanced Placement, ACT, and graduation rates) beginning with a description and/or history of each concept, followed by relevant studies, and concluding with Tennessee’s educational relationship with each concept. Tennessee is providing students with the opportunity to enroll in more post-secondary courses, which ideally aids in college and career readiness. Tennessee has also established a goal for students to earn higher ACT scores. This study aims to fill in the gaps of research regarding the relationship between the Advanced Placement program and college ready factors.

**College and Career-Readiness**

According to the Office of the State Superintendent of Education (n.d.), high school students need to be prepared for higher education or a skilled profession in the workplace. College-ready students are academically prepared and ready for post-secondary work without remediation. Students that are college-ready will have reading, writing, mathematics, social, and cognitive skills to qualify for admission and be successful in their school of choice. Conley (2012) stated that students who are college and career-ready could be eligible for and succeed in
entry-level college courses or career path-oriented training programs without remedial coursework. He defined four keys to college and career readiness. These keys address cognitive ability, content-knowledge, transition knowledge and skills, and learning skills and techniques. After reviewing the 2003-04 graduates, The United States Department of Education (2017b) established benchmarks for American students to be college and career-ready after discovering that 40% of college students take remedial courses. Under the Elementary and Secondary Education Act (EESA) reauthorization, college and career-ready students achieve higher English and mathematics standards, participate in assessments that are better aligned with college and career-ready standards, and encounter a complete education with improved professional development and evidence-based instruction (United States Department of Education, 2010).

Mishkind (2014) stated that in addition to the United States Department of Education’s definition of college and career-ready, 36 states and the District of Columbia created their own definitions. Of the 36 states, 21 mention knowledge, skills, and dispositions that students must master to be considered college and career-ready. Most of the states’ definitions include a discussion of academic knowledge, critical thinking and problem solving, social and emotional learning, collaboration and/or communication, grit/resilience/perseverance, and citizenship. Academic knowledge, critical thinking, and social and emotional learning occur most frequently. As various factors lead to college and career-readiness, research suggests that Advanced Placement courses can also be a factor.

Studies (Tiemann, 2011; Bumpous, 2015) indicated that students who take Advanced Placement courses in high school would be college-ready and perform to high standards. Tiemann (2011) found that students who had more semesters of Advanced Placement courses had a significantly higher GPA after their first year of college as opposed to those with fewer
semesters of Advanced Placement. The Advanced Placement culture implies that more courses taken equate to a more significant performance at the college level, thus insinuating the Advanced Placement program is an asset to college readiness. Bumpous (2015) concluded that students who take Advanced Placement courses graduate from college within six years at a higher rate than those who did not take Advanced Placement. While studies indicate the successes of the Advanced Placement program, *U.S. News and World Report* utilizes the program to define ‘best high schools’ in America.

*U.S. News and World Report* established an index utilizing Advanced Placement to assess college readiness. *U.S. News and World Report* developed the College Readiness Index to evaluate best high schools and practices in the United States. It uses the following criteria for measurement: Advanced Placement participation rate (number of 12th graders who took at least one Advanced Placement exam in high school divided by the number of 12th graders in the school) weighed at 25% plus the quality-adjusted Advanced Placement participation rate (number of 12th graders who passed at least one Advanced Placement examination in high school divided by the number of 12th graders in the school) weighed at 75% equals the college readiness index. The index measures the breadth and depth of college-level curriculum in high schools, which creates an incentive for high schools to improve their rankings by offering more Advanced Placement courses and examinations, regardless if students are prepared to succeed in them (RTI International, 2017).

*U.S. News and World Report* allows high schools to see how they rank among one another, using recognition as an incentive to better prepare their students. Therefore, students can benefit as more rigorous courses are offered. Furthermore, students’ motivation for enrolling in the more rigorous courses should be studied.
While Advanced Placement may aid in college-readiness, additional college-readiness proxies have been established. According to the National College and Career Readiness Indicators (n.d.), students are college-ready when they meet the following benchmark scores on the ACT Exam - English (18), reading (22), science (23), and mathematics (22). In addition, the College and Career Readiness and Success Center (2015) reported that some states, including Utah, Tennessee, Kentucky, Georgia, and Indiana, utilize graduation rates as college and career ready reporting metrics.

Tennessee’s Department of Education (n.d.b) aims to prepare all students to be successful by integrating quality learning aligned with workforce needs and post-secondary opportunities. Tennessee’s key initiatives include access, enrollment, and success in early post-secondary opportunities; support for higher ACT scores; coordination of school counseling programs; ensuring students have goals in learning; and supporting Response to Instruction and Intervention (RTI2) programs

**College Readiness Indicators**

There is a multitude of college readiness factors, including competency-based assessments, course rigor, grade point average, class rank, assessments, and index scores (Anderson & Fulton, 2015). As this study scrutinized the Advanced Placement program and how well it prepares students for college, this section provides the rationale for utilizing ACT scores and graduation rates as proxies for college-readiness because Tennessee’s State Report Card includes ACT and graduation rates under the college and career-readiness tab.

**American College Testing.** The ACT is an achievement test that many high schools utilize to determine college readiness (Education Commission of the States, 2014) and colleges and universities employ as part of the admissions process (Study Point, 2017). The ACT is
created according to student’s high school curriculum and can be personalized to suggest educational and career paths, by allowing students to develop a ‘profile’ answering questions that aid in pinpointing interests and populate career and major maps (ACT, 2017b). The ACT has a rich history that has led to it being the most popular test to predict college performance since 2012 (Adams, 2017).

The ACT began in 1959 at the University of Iowa with Professor E.F. Lindquist and registrar Ted McCarrel, focusing on academic achievement and mastery of skills students were taught in high schools. These individuals were the first to define college readiness, which has prompted extended debate. The ACT, a test that would assess students in the four subject areas – English, mathematics, reading, and science, in addition to asking questions about student interests, emerged. The ACT is the only college entrance exam to include a science portion. The ACT has flourished and now offers 20 programs and services, serving all 50 states and more than 130 countries (ACT, 2017d). The ACT is considered a test of accumulated knowledge, whereas its counterpart, the SAT, is focused more on logic (Fletcher, 2009).

In November 1959, the first ACT test was issued to approximately 75,000 students at a fee of $3 (about $23 in 2012). The test was comprised of four sections: English, mathematics, social studies, and natural sciences. The number of students taking the ACT grew to 950,000 in the 1967-68 school year. In 1989, ACT made substantial changes in the content tested: natural science was replaced with science reasoning, and the social studies subtest was replaced with reading. The math section was amended to include trigonometry and pre-algebra, and the English section placed less emphasis on the grammar and more emphasis on writing skills. The tested time also increased from 160 minutes to 175 minutes. Before 2012, seniors taking the SAT outnumbered those taking the ACT. In 2007, 1,494,531 students took the SAT and 1,300,599
took the ACT. As the number of test takers continued to grow, the ACT overtook the SAT in 2012, with 1,666,017 test takers to SAT’s 1,664,479 (Jacobsen, 2017). Though the ACT has more test takers than the SAT, Kaplan stated all schools nationwide accept both tests, while some regions prefer one test over the other. For example, the ACT is preferred in the Midwest whereas the SAT is preferred in the East (Daugherty, 2015)

According to a 2016 report issued by the ACT, the number of ACT-tested graduates increased 8.6% compared to the previous year. The report also stated that 64% of graduates took the ACT in 2016, compared to 59% during the 2015 school year and 40% during the 2006 school year. With the increase of students taking the ACT, Tennessee now requires all students who receive a regular diploma to take the ACT or the SAT (Tennessee Department of Education, n.d.d).

The ACT is divided into five subparts: English, math, reading, science and writing. The English subtest is designed to assess students’ knowledge of the production of writing and language skills. The math subtest measures mathematical skills that students may learn prior to beginning their 12th grade year. The reading subtest evaluates students’ reading comprehension by utilizing texts they may encounter in their first year of college. The science subtest evaluates students’ ability to interpret, analyze, evaluate, reason, and problem-solve issues that may be required in science courses. The writing subtest assesses what students have learned in high school English classes and may learn in introductory college courses (ACT, 2017c).

ACT has established benchmarks to indicate scores students should attempt to earn in order to be college-ready. For a student to have a 50% chance of achieving a B or higher or 75% chance of obtaining a C or higher in a comparable college course, students must meet the following ACT score benchmarks: English (18), Reading (22), Math (22) and Science (23)
(ACT, 2016). The benchmarks are established to determine students’ probability of success in college. The four subject areas (English, mathematics, reading, and science) were chosen as those which are typically the first credit-bearing courses taken in college by first-year students. Furthermore, the benchmarks were derived based on the performance of college students. The benchmarks represent a summary among many colleges, although college rigor may vary widely with material covered and grading practices.

In 2016, 61% of ACT-tested high school graduates met the English benchmark, 44% met the reading benchmark, 41% met the mathematics benchmark, and 36% met the science benchmark, culminating with 26% of the tested graduates meeting all four of the ACT benchmarks, suggesting they are college ready. Overall achievement, benchmarks, and composite scores declined in 2016 from 2015 possibly due to the historic increase in the number of test takers. In addition, the number of minority students, mainly Hispanic and African American students taking the ACT, has increased dramatically since 2012 (ACT, 2016).

While many high school students and parents believe that meeting a certain number of credit requirements will provide an adequate education, ACT has identified a specific sequence of courses that will contribute to students’ college readiness (ACT, 2005). ACT (2007) suggested that states should require students to take specific core classes in mathematics and science to graduate. ACT proposed four years of English, at least three years of mathematics (Algebra I, Geometry, and Algebra II), three years of science (Biology, Chemistry, and Physics), and three years of social studies.

With benchmarks being established, states aligning courses with ACT suggestions, and workshops being provided, educators should be equipped to provide students rigorous courses. With rigorous coursework, students will be able to prepare themselves for college. Improving the
rigor in core high school courses will benefit all students and aid them in a more successful future (ACT, 2007).

**Rigorous coursework and the ACT.** In 2012, North Carolina adopted an accountability program that included the ACT as a measure of college-readiness. As part of this program, the state incorporated an early college model to provide traditionally underrepresented students (low-income and minority) access to a rigorous education because these groups are not usually represented in early post-secondary courses. North Carolina determined there is a difference between the students attending the early college high schools and traditional high schools. Students attending the early college schools, with the access to rigorous educational opportunities, are estimated to have a 9% to 16% mean ACT score boost (Kaniuka, 2014). Tiemann (2011) studied 61 students who completed one year at University of Nebraska-Omaha and concluded that students who participated in more Advanced Placement courses had higher ACT scores than students who completed fewer Advanced Placement courses, suggesting these students were more prepared for college. Therefore, students who are motivated to endure rigorous coursework in early college schools and Advanced Placement courses are more likely to attain higher ACT scores

**Tennessee and the ACT.** By implementing ACT’s suggested coursework, Tennessee’s Diploma Project in 2009 stated that students must earn 22 credits and take end-of-course exams in order to graduate. To merit a diploma in Tennessee, students are required to earn: four math credits (Algebra I, Geometry, Algebra II, and an additional higher-level math course), four English credits, three science credits (Biology, Chemistry, or Physics, and a third lab course), three social studies credits (United States History and Geography, World History and Geography, United States Government and Civics, and Economics), 1.5 credits in physical
education and wellness, .5 credit in personal finance, two foreign language credits, one fine art credit and three elective focus credits. As Tennessee works to align state standards with ACT-suggested requirements, students, educators, and administrators should be able to discern higher marks from students’ benchmark and composite scores (Tennessee Department of Education, n.d.a).

Tennessee utilizes the ACT for various reasons, including determining eligibility for the HOPE scholarship, identification for postsecondary coursework, and potential employment. As part of the Every Student Succeeds Act (ESSA), the Tennessee Department of Education has included improving ACT scores over a five-year period as one of its goals. Tennessee has established a goal that the average ACT composite score will be a 21 by 2020. Between 2011 and 2016, average ACT scores in Tennessee have increased from 19.0 to 19.7. Earning an ACT score of a 21 would indicate students have a 50% chance of maintaining a B average or a 75% chance of maintaining a C average in their first year of college, therefore being college ready. Tennessee offers the test to all students their junior year at no cost and recently has incorporated a senior retake day. Earning the composite score of 21 allows students to receive the HOPE scholarship, which provides students $16,000 for college fees (Tennessee Department of Education, 2017b). The incentive of earning an ACT score of 21 encourages schools to develop a rigorous curriculum that will aid students in college success.

According to a 2016 report issued by the ACT, 100% of Tennessee’s 2016 graduating class took the ACT and earned a composite score of 19.9. Additionally, 58% of those students met the English benchmark, 38% met the reading benchmark, 30% met the math benchmark, and 30% met the science benchmark. With the state providing funding for the test, offering test prep
classes, and reduced rates for postsecondary opportunity exams, the goal of a state composite score of 21 by 2020 should be attainable (Tennessee Department of Education, 2017b).

In accordance with T.C.A. § 49-6-6001, all students enrolled in Tennessee public high schools during their 11th grade year must complete the ACT or SAT as a graduation requirement, beginning with the graduating class of 2018 (Tennessee Department of Education, n.d.d). With the new requirement of ACT completion, Tennessee has created the ACT Preparation Pilot with goals of aligning courses specific to Tennessee Academic Standards, providing students with the information of why they are taking the ACT, and providing districts and schools with the opportunity to give feedback, make revisions, and offer input regarding standards, courses and training (Tennessee Department of Education, 2017a). High ACT scores will not only aid students in college, but schools may view higher graduation rates as an indicator that students are more college-ready.

**Graduation Rates.** Numerous studies have reported that national graduation rates have been steadily increasing recently (Gomperts & Nagaoka, 2017; Kamentz & Turner, 2016), which suggests students are adequately prepared for college (E. Bohanan, personal communication, October 6, 2017). In 2016, President Barack Obama announced that national high school graduation rates had reached an all-time high of 83% for the 2014-2015 school year, which was the 5th consecutive year of record setting rates (Kamentz & Turner, 2016). The 2010-2011 school year’s graduation rate was 70% and increased to 80% in the 2011-2012 school year. An 81.4% graduation rate was reported for the 2012-2013 school year and an 82.4% graduation rate was reported for the 2013-2014 school year.

According to Bryant (2007), reporting graduation rates may be problematic for some schools and districts. Many districts base graduation rates upon the number of students entering
12th grade in the fall. However, these districts should be tracking the students electronically to
accurately trace students during all four years of high school to account for students that may
have left school for various reasons and/or transferred to other schools. Hence, more schools are
moving to the adjusted cohort graduation rate (ACGR), to provide a more accurate measure of
graduation rates.

According to the United States Department of Education (2017), graduation rates are
calculated according to the ACGR, which views the number of students who graduate from high
school in four years with a regular diploma, plus students with cognitive disabilities who are
assessed with alternate standards and graduate with an alternate state-defined diploma. The
ACGR was first collected for the 2010-2011 cohort, distinguished as first-time 9th graders in a
school by adding any students who transfer in or subtracting for any students who transferred
out, emigrated, or died. The ACGR formula for 2012-13 was:

Number of cohort members who earned a regular high school diploma by the end
of the 2012-2013 school year

---------------------------------------------------------------

Number of first times ninth graders in the fall 2009 plus students who transferred in, minus
students who transferred out, emigrated or died during the 2009-10, 2010-11, 2012-13

According to the White House (2016), key signs have led to an increase in graduation
rates: investing in early education, providing school improvement grants, allowing for innovative
education, developing and supporting great teachers, making college more affordable, and
promoting college success. President Barack Obama announced the use of The College
Scoreboard, which provides findings on cost, graduation rates, debt, and post-college earnings.
The College Board is one organization that is utilized when reporting findings. Hanover
Research (2014) also concluded the following factors aid in effective practices to support high
schools’ efforts in increasing graduation rates: provided rigorous and challenging instruction,
demonstrated a connection between current education and future endeavors, identified at-risk students early, and create personal support for students. Though states may vary on graduation requirements, a high school diploma should signify students have college-ready knowledge and skills (Weber, 2011), thus higher graduation rates indicate that more students are college-ready. While states are implementing practices for attaining higher graduation rates, Tennessee reached a record-high graduation rate in the 2016-2017 school year (Tennessee Department of Education, 2017).

**Tennessee graduation rates.** Tennessee’s state report card indicates graduation rate as a college and career-readiness factor. According to the Tennessee Department of Education (2017e), the state graduation rate for 2016-2017 was 89.1%, a record-high. While Tennessee has transitioned to a more rigorous calculation for graduation rate, beginning in 2011, this rate has continued to rise. In the 2016-2017 school year, 13 districts improved by five percentage points and 43 districts have graduation rates at or above 95%. As graduation rates continue to climb, so do the number of students going directly to college after high school. Furthermore, two reports from the Tennessee Higher Education Commission indicated that students are more prepared as they enter college, signifying high schools are equipping students with college-level skills (Tennessee Department of Education, 2017d). In addition, the Tennessee Higher Education Fact Book reported that fewer students require learning support courses (Tennessee Department of Education, 2017f). Overall remediation dropped from 76.8% of first-time freshmen in 2011 to 62.4% of first time freshmen in 2016. While remediation of first-time freshman has declined, a continuing trend of decreasing remediation rates would suggest high schools are better preparing students for college.
The increase in Tennessee’s graduation rates has contributed to the graduation rate increase nationwide. Tennessee’s graduation rate has surpassed the nationwide graduation rate. Tennessee’s graduation rate increase began in the 2012-2013 school year with an 86% rate, followed by an 87.2% rate in 2013-2014, an 87.2% rate in 2014-2015, an 88.5% rate in 2015-2016, and an 89.1% rate in 2016-2017 (Tennessee Department of Education, 2017e).

Somers (2016) stated that Tennessee was one of the ten states with highest high school graduation rates in the 2014-2015 school year. Aldrich (2015) reported that while Tennessee has an achievement goal of a 90% graduation rate by 2020, the state only has to produce 2,595 more graduates than the Class of 2013. Factors that will aid Tennessee in reaching that goal include eradicating zero-tolerance discipline policies. This is necessary because students who are expelled or suspended are less likely to graduate on time. Some students have been suspended or expelled for non-violent crimes such as truancy, dress code, or misbehaving in class. State funding of low-income families could aid in graduation rates because 51% of students in public schools come from low-income families. Interventions for students with disabilities are also recommended, as Tennessee’s graduation gap between disabled and non-disabled students is almost 22% (Aldrich, 2015). Schools work to attain higher graduation rates, which suggests that they are preparing their students to be college and career ready. As schools work to prepare students for college, it is necessary to examine early post-secondary opportunities that may benefit students as they pursue college admissions.

The Advanced Placement Program

The Advanced Placement program has been offering students the ability to take college-level courses since the 1950s. The Advanced Placement program claims to provide students with the opportunity to work toward college success by helping these students distinguish themselves
for college admission purposes, allowing these students to earn college credits, and assisting these students in developing college-level skills. (College Board, 2017h).

Advanced Placement courses are college-level courses that are available to students while still in high school. According to the College Board (2014c), Advanced Placement courses offer students a new approach to learning, a difference in classmates’ attitudes, and a new way of thinking. The College Board advocates that the Advanced Placement program is a community of students and educators who are passionate, curious, and committed to academic excellence, which are all intrinsic motivating factors. Coursework encourages students to examine texts, data and evidence; analyze source material; develop and test hypotheses; and create effective arguments, which ideally will prepare them for the Advanced Placement exam.

In the early part of the 20th century, the United States identified a gap between secondary education and higher education. Shortly after the conclusion of World War II, the Ford Foundation created a Fund for the Advancement of Education (College Board, 2003). One of the fund’s early initiatives was “preinduction scholarships,” where talented high school sophomores were sent to the University of Chicago, Columbia University, University of Wisconsin, or Yale University, to allow those students two years of college before their 18th birthdays. High schools were generally opposed to this program because they were losing top students, which led to a meeting of educators from Andover College, University of Exeter, Lawrenceville University, Harvard University, Yale University and Princeton University, who formed a committee to devise a plan, thus creating Advanced Placement (Rothschild, 1999). As the Fund for Advancement of Education determined that a select group of students needed an additional challenge, they devised a plan requesting the aid of esteemed schools to ensure students would be challenged while remaining in high school. The College Board created its first exams at the
request of elite preparatory schools because it wanted to convince colleges that students could proceed directly into advanced work. Even at the beginning of the program, the exams were based on what was being taught in college introductory courses, allowing for students to be college-ready (Drew, 2011).

The Advanced Placement pilot program was launched in 1955 with 11 initial subjects. During the 1955-56 school year, the College Board was asked to intervene and take over the administration of the program, thus creating the College Board Advanced Placement Program. In the 1960’s, the College Board began a commitment to educating teachers. During the 1970s and 1980s, many schools started adding Advanced Placement to their curriculum. Throughout the 1980s and 1990s, outreach was extended to minority and low-income students (College Board, 2003). By 1988, minority participation had increased by 140% from 1983 (Rothschild, 1999). Outreach to minority and lower-income students is still a debatable issue of Advanced Placement, though many schools and states are making great efforts to extend the opportunity to all students. The College Board (2014c) highlighted the equity gaps for minority students. In the 2013 graduating class, 55% of Advanced Placement exam takers were Caucasian, 18% were Hispanic, 9% were African-American, and 10% were Asian. Furthermore, 275,864 students from low-income public schools took at least one Advanced Placement exam.

The purported focus of Advanced Placement is not to memorize facts, but to engage in discussion, solve challenging problems, and become a skilled writer (Minnesota Department of Education, 2012). In order for schools to offer Advanced Placement courses, these schools must have an Advanced Placement coordinator to coordinate the logistics (Gagnon & Mattingly, 2016). The College Board does not require specific training to teach Advanced Placement; only approval of the educator’s syllabus is necessary (Challenge Success, 2013). The College Board
engages 5,283 college faculty members to review course syllabi of Advanced Placement teachers, develop curricula, or score exams yearly (College Board, 2014c). Therefore, college faculty members offer support in curriculum development of each Advanced Placement course.

In 2014, 14,729 public schools offered Advanced Placement courses (Matthews, 2016). The College Board provides schools over 38 courses in the following subjects: art, English, history and social science, math and computer science, sciences, world language, and culture (College Board, 2017b). Initially Advanced Placement offered 11 courses, which has since expanded to courses in nine academic fields (College Board, 2003).

Within the Advanced Placement program, each course culminates in a national end-of-course exam. Extensive research, test development, and psychometric work have been executed to prepare annual Advanced Placement exams (Sadler et al., 2010). Among the 38 course exams, most exams take two to three hours to complete and consist of a multiple-choice section and a free response question (FRQ) section (College Board, 2017a). For the multiple-choice section, students choose from one of five possibilities and are scored on the number of questions they answer correctly. The free response section may be formatted in the form of an essay, solution to a problem, or a spoken response. College faculty members and expert AP teachers generate the exams. These educators define the scope of expectations in a course curriculum guide.

According to the College Board (2017g), data from colleges, universities, and professional organizations validate that Advanced Placement courses imitate current scholarship and advances in each discipline. Additionally, Advanced Placement exams reflect and evaluate college-level expectations.

The Advanced Placement exams are graded each June. A computer scores the multiple-choice portion and college professors and experienced Advanced Placement teachers score the
writing section. The total scores from each section are combined to form a composite score, which is then translated to a 5-point scale (1 - no recommendation, 2 - possibly qualified, 3 - qualified, 4 - well qualified, 5 - extremely qualified). The College Board (2017c) defines ‘qualified’ as being able to complete introductory college work in that subject area. Several studies have investigated the validity of Advanced Placement exam scores and indicated positive results for students who were exempt from an introductory college course as a result of a passing Advanced Placement exams (Sadler et al., 2010; Klopfenstein & Thomas, 2009).

In 2013, 11,497 Advanced Placement teachers and college professors spent 643,832 hours reading and scoring exams of over 17.8 million student responses. Therefore, 3.9 million Advanced Placement exams were graded in only three weeks. With college faculty involved in Advanced Placement reading (scoring of the FRQ), it ensures that college-level standards for achievement are maintained. While at Advanced Placement reading, Advanced Placement teachers are able to view how exams are scored and can utilize those strategies when teaching their students how to prepare for the FRQ. The reading/grading of Advanced Placement exams (FRQs) provides a unique opportunity for professional development for secondary and post-secondary teachers (College Board, 2014c). When Advanced Placement teachers are able to read and score Advanced Placement exams, these teachers learn strategies on how to provide a rigorous course and that aids students on the exams.

**Passing Advanced Placement exams.** While taking Advanced Placement courses offers students a rigorous curriculum, their ability to pass the exam appears to be a precursor to success. According to Warne, Larsen, Anderson, and Odasso (2015), “It matters greatly whether students take and pass AP exams. There is little evidence that simply increasing the number of students taking AP courses will have an impact…if the students do not demonstrate mastery on the
exams.” In their study of Utah public schools for the 2010 cohort and the 2011 cohort, it was determined that students who took Advanced Placement English scored 2.8 - 4.1 points higher on the ACT. In addition, students who took Advanced Placement Calculus scored 1 - 2.7 points higher on the ACT, therefore indicating the Advanced Placement program is beneficial for students, especially those obtaining a 3, 4, or 5 (Hargrove, Godin, & Dodd, 2008; Geiser & Santelices, 2004; Hansen, Reeve, Gonzalez, Sudweeks, Hatch, Esplin, & Shaw, 2006) on the Advanced Placement exam. In addition, those earning the higher Advanced Placement exam scores consistently have higher college grade point averages (Hargrove et al., 2008).

Similarly, researchers found those who took two or three Advanced Placement exams had greater odds of enrolling in a 4-year institution (Chajewski, Mattern, & Shaw, 2011). With schools and students identifying the benefits of a passing score on Advanced Placement exams, the Advanced Placement program has grown in recent decades.

**Advanced Placement increase.** The number of students enrolling in Advanced Placement over the last few decades has increased drastically. From 1992 to 2010, the number of schools offering Advanced Placement almost doubled (Judson & Hobson, 2015). Schools can also benefit from offering Advanced Placement, as they may receive national ranking from *U.S. News and World Report* as one of the “Best High Schools.”

Enrollment in Advanced Placement has increased dramatically since its inception. During the 40-year period of 1977-2016, there has been a dramatic increase in the number of students taking Advanced Placement courses and completing Advanced Placement exams (Rothschild, 1999; College Board, 2016). Figure 2.1, shown below, depicts the increase of course enrollment and exam completion. This increase has been encouraged by the number of courses that the
Advanced Placement program offers, which allows schools to provide more challenging courses for their students, thus claiming to aid in student’s college readiness.

![Graph showing the increase of Advanced Placement participation and exam completion from 1976 to 2016.]

Figure 2.1. Increase of Advanced placement participation and exam completion. (College Board, 2005b, College Board 2014a, College Board 2014b, College Board 2015a, & College Board 2015c)

Many states have passed legislation and policies to promote the rapid growth in Advanced Placement. For example, Texas has implemented an Advanced Placement Incentive Program that has included providing a reduced examination fee for students of financial need; paying for the examination for the students that completed the Advanced Placement course; paying for teacher training; providing one-time equipment grants to schools; and awarding monetary incentives to schools for students earning an exam grade of 3 or higher (Hargrove, Godin, & Dodd, 2008). Due to schools’ encouragement of the Advanced Placement program, more students are enrolling and taking the examinations.
There were 514,163 Advanced Placement examinees in the Class of 2003 and just over one million Advanced Placement examinees in the class of 2013. Students identified as low-income increased by 217,375 during that 10-year period. Of the students taking the test in 2003, 35% had a score of a 3 or higher compared to 29% in 2013. This data suggests that the Advanced Placement program has nearly doubled in 10 years, with quadruple the number of low-income students taking the test (College Board, 2014c).

The growth in Advanced Placement courses subsequently has fostered an increase in Advanced Placement exams. In 2006, there were slightly over 2.3 million tests administered to students in the United States, and in 2016, slightly over 4.7 million exams were administered (College Board, 2016). The exponential growth in the Advanced Placement program could be attributed to the multitude of benefits the program claims to offer.

**Benefits of Advanced Placement.** While in high school, students have many options to aid them in being successful and college-ready. Taking Advanced Placement courses offers students the ability to build skills needed for college, perfect study skills, discuss challenging issues, and study content more in-depth. Research suggests that students who participate in an Advanced Placement course may benefit by having higher GPAs, credit hours earned, and graduation rates (Matthews, 2007). Advanced Placement offers students many benefits, but also requires considerable commitment and dedication.

Students are required to dedicate themselves to a rigorous workload of analyzing college-level text, participate in academic discussions, and prepare for challenging tests when they enroll in Advanced Placement courses. Studies (Mo et al., 2011; Klopfenstien & Thomas, 2009) indicated that taking Advanced Placement has a positive impact on performance and retention of college students. Additional benefits to Advanced Placement include allowing students to enroll
and take other courses in college and possibly pursue a double major, as many introductory
courses are offered with Advanced Placement (United States Department of Defense Education
Activity, n.d.). Researchers (Warne, 2017; Wojonowski, 2011) stated that students who
participate in Advanced Placement courses benefit by outperforming non-Advanced Placement
students in academic achievement, which includes college admissions tests. Warne (2017) also
concluded that much of the research in the area of the Advanced Placement program had been
reported by the College Board (Heitin, 2016) and little independent research has been done. This
study attempts to minimize the research gap in this area.

Khazem and Khazem (2014) concluded from their study of two model public high
schools in Florida that accelerated learning programs (Advanced Placement Dual Enrollment,
International Baccalaureate, and Advanced International Certificate of Education) have a more
positive impact on traditional public schools than charter or voucher programs. The learning
focus emphasizes enriching the student’s study, thus implying that the Advanced Placement
program positively impacts schools.

**Advanced Placement and ACT.** During the 2006-2007 school year, a study was
conducted in the Memphis City Schools in order to assess the connection between Advanced
Placement and ACT; the researchers noted that though taking Advanced Placement English did
not help increase the possibility of passing the ACT English subtest, it did factor into having an
ACT composite score of 19 or higher. The same findings were concluded for social studies,
reading and science, though Advanced Placement math substantially increased the likelihood of
passing all subject benchmarks and earning a composite ACT score of 19 or higher. Advanced
Placement mathematics classes help students develop higher-order thinking skills, which
enhances student performance on the ACT (Mo et al., 2011).
Cline (2017) found statistically significant positive effects between students in Advanced Placement courses and ACT composite scores. Cline sampled 489 students in a rural East Tennessee high school. One component of Cline’s study sought to assess the correlation between Advanced Placement courses and a students’ Tennessee Value-Added Assessment growth on the ACT compared to students in college preparatory courses. Cline’s finding indicated that though a slightly positive correlation was found when comparing the number of Advanced Placement courses to ACT composite scores, leaders should question what instructional methods are best for students if the ACT is utilized, as it is by many, as an indicator of college and career-readiness. As Cline suggested, this study and the one conducted in Memphis City Schools viewed specific populations in Tennessee. A more substantial population would provide more information as to a relationship between the Advanced Placement program and college-readiness in Tennessee.

Wang and Pennington (n.d.) scrutinized students in Iowa and determined that high-level mathematics (Pre-Calculus, Calculus, Advanced Placement Calculus, Trigonometry, and Advanced Placement Statistics) courses facilitate improvement on students’ ACT mathematics scores. During the 2007-2008 school year, over 19,000 Iowa public school seniors were included in Wang and Pennington’s study that examined student math courses and student results on the ACT, which was completed during the students’ junior or senior years. After scrutinizing higher-level math courses in which students were enrolled, these courses were compared to the ACT mathematics scores. Subsequently, the researchers concluded that enrolling in the higher-level mathematics courses positively impacted the ACT mathematics scores.

With the growth of the ACT and Advanced Placement programs, Trevor Packer, senior vice president for Advanced Placement and Instruction at the College Board, stated that
Advanced Placement student performance has remained consistent during significant growth. Nat Malkus linked 12th grade math scores on the National Assessment for Education Progress to high school graduates’ transcripts, and found for the years 2000, 2005, and 2009, years where Advanced Placement growth was 35%, course takers’ NAEP scores remained the same, which suggests that the Advanced Placement program has continued the program’s integrity (Heitin, 2016). While Advanced Placement has grown and proven to benefit high schools and high school students, the program also aims to prepare students for success in college.

**College Benefits of Advanced Placement.** As students contemplate which college to apply for and attend, they may take note that certain colleges will give special consideration to students who have taken Advanced Placement courses (Geiser & Santelices, 2004). Klopfenstein’s (2004) research supported that the rigorous Advanced Placement courses have a positive impact on college success and suggested that most universities look favorably on students with Advanced Placement experience. Advanced Placement allows students to build college-level study skills and prepare for college-level rigor (Warne, 2017). In addition to schools favoring Advanced Placement students, 31% of colleges and universities will consider a student’s Advanced Placement work when making decisions about which scholarships a student may receive. Whether a scholarship is granted or not, students still have the ability to save money (Hopkins, 2012) with a passing Advanced Placement exam, because these students would not have to take the introductory course, nor pay for it (United States Department of Defense Education, n.d.). To ensure rigor, relevance, and college fairness, faculty and Advanced Placement teachers collaborate to develop, deliver, and evaluate Advanced Placement (College Board, 2014c).
Beyond the skills learned, credits earned, and money saved, students discussed additional benefits to taking an Advanced Placement course. Research stated that students found a better class atmosphere in an Advanced Placement course in comparison to regular education classes. Additionally, students formed special bonds with their classmates and the pride and self-confidence they found in taking the course and exam were all benefits of taking Advanced Placement (Foust, Hertberg-Davis & Callahan, 2009). Circumstances could be motivating factors to take Advanced Placement, and further research also could highlight the programs’ successes.

**Critiques of Advanced Placement.**

While there are proponents of the Advanced Placement program, there are also critics who find components of the program to be problematic. Although the Advanced Placement program has grown tremendously in past decades, the availability and limited access to underrepresented minorities and other disadvantaged students have been documented (Geiser & Santelices, 2004). Black and Hispanic students enroll in Advanced Placement courses at nearly half the rate of their white counterparts. Moore and Slate (2008) studied public school districts in Texas for the school years 2004-2005 and 2005-2006, assessing the percentage of the students taking Advanced Placement by scrutinizing ethnicity, gender, and school design nation. Findings indicated that 20% of Caucasian students were enrolled in Advanced Placement, while approximately 10% of Hispanic students, African-American students, and other students who identified as economically-disadvantaged were enrolled in Advanced Placement courses. Though minorities are continuing to enroll in the Advanced Placement program, exam scores continue to drop.

According to Judson and Hobson’s (2015) study of the College Board’s data, while the Advanced Placement program has been growing, the pass rate on the exams has been dropping.
In 1992, the pass rate was 65.5% and fell to 59.2% by 2012. The drop in scores could be due to the increase in the number of 9th and 10th graders and Hispanics taking the test.

According to Edwards (2015), Advanced Placement is growing too fast, especially in low-income schools; therefore some students could be wasting the $92 test fee. Because funding varies by school and by district, the problem of unequal access occurs. Due to lack of funding, not all school districts have access to the same resources. Further, the Advanced Placement program can be quite costly; therefore, the College Board (2017d) established estimates of general costs required to launch Advanced Placement programs. Professional development costs can range from $400-$1,400 per teacher. While some courses do not require a textbook, other courses do require textbooks that could cost as much as $3,000. Additionally, some courses require supplemental reading materials and equipment, which could cost up to $6,000.

While Advanced Placement offers many benefits, opponents are concerned that the rigor presented in the Advanced Placement courses may be inadequate. Although the College Board does audit individual teacher’s syllabi, no prerequisites exist to teach the Advanced Placement courses, which can lead to varied experiences and performance in Advanced Placement courses (Challenge Success, 2013). Advanced Placement teachers are encouraged to register for professional development on the College Board’s website, but schools and Advanced Placement teachers are not mandated to do so (Donald, 2013). Frequently, teachers do not major or minor in the Advanced Placement subject they teach. The College Board suggests teachers have experience and an advanced degree in the subject they teach (Klopfenstein, 2003). In addition to the rigor presented by the teacher, some critics worry that the College Board has lowered its standards for passing Advanced Placement exams (Sadler et al., 2010).
As educators will have varied backgrounds in the Advanced Placement subject they teach, teachers of Advanced Placement courses often are overwhelmed with covering a broad range of material (Edwards, 2015; Sadler et al., 2010). College professors are able to choose the topics they teach and to what depth because they do not have a national test, whereas Advanced Placement teachers must address almost every topic within a subject because these teachers cannot be certain of which components of the material will be used for exam questions (Drew, 2011).

While some believe Advanced Placement covers a plethora of material, others do not believe the same level of rigor is present in Advanced Placement courses when compared to college introductory courses. Additionally, colleges do not always grant credit for Advanced Placement courses. Some public universities will grant general education credits for Advanced Placement, whereas many private colleges are refraining from granting Advanced Placement credit (Edwards, 2015). While many view the ability to earn the college credit as a game, students score well for the mere sake of the credit instead of being focused on the rigor presented and critical thinking skills being taught to them (Sadler et al., 2010).

In a like manner, Klopfenstien and Thomas’ (2009) research found no conclusive evidence that the Advanced Placement experience impacts college success. Taking Advanced Placement is an indicator of high-ability, motivated students that want to distinguish themselves from other students in high school and college. After reviewing other rigorous high school courses, demographics, and school characteristics, students typically still do well in college. Thus, it is debatable whether high schools should mandate Advanced Placement courses or whether colleges should give special preference to students who take Advanced Placement courses.
While some schools offer students more opportunities to earn college credits, scheduling can become problematic (K. Kelley, personal communication, September 21, 2017). Often, schools reserve their best teachers to instruct the Advanced Placement courses, therefore limiting when certain courses can be offered (College Success, 2013; Klopfenstein & Thomas, 2009). With students having to take certain courses to meet graduation requirements, scheduling conflicts can arise, as students may not have space in their schedule for Advanced Placement courses once these students finalize their graduation plans.

Students have also viewed Advanced Placement courses as problematic. Interviews conducted with 84 students from four study sites and research indicated that students may develop an unflattering stereotype from taking Advanced Placement courses, undertake a heavy workload, and experience stress and fatigue (Foust et al., 2009). Researchers found that students who took five or more Advanced Placement or honors courses had notably more homework than those who took fewer of these courses (on average about 4 hours per night). Students handle stress differently, and researchers concluded students who took one Advanced Placement or honors course in comparison to those who took multiple courses had similar stress levels (Challenge Success, 2013). While students may find Advanced Placement challenging, Tennessee provides students the opportunity to take these challenging courses along with other early-postsecondary courses to aid in their college readiness.

**Advanced Placement in Tennessee.**

As Tennessee continues to expand its early post-secondary opportunities, the Advanced Placement program has grown exponentially in the last decade. In 2017, Tennessee’s Education Commissioner, Candice McQueen, reported more than 29,000 students took 48,355 exams, a record high. In addition 16,240 students earned college credit, compared to 15,065 students in
2016. In 2017, Tennessee students earned 79,833 college credits, an increase of 54% from the 2011-2012 school year (Tennessee Department of Education, 2017g).

Tennessee’s Department of Education (2017a) created the Advanced Placement Expansion Pilot to increase the number of students who take and pass the exam. The pilot program offers teacher training and additional resources for high schools considering the implementation of Advanced Placement. Tennessee also currently provides students waivers to pay for the Advanced Placement exam. The Advanced Placement program could aid Tennessee in reaching its “Drive to 55” goal, the initiative implemented by Tennessee Governor Bill Haslam, which calls for 55% of Tennesseans to be equipped with a degree by 2025 (Tennessee Department of Education, 2017c). While Tennessee recognizes a need to offer post-secondary opportunities to its students, Tennessee also acknowledges the need to aid students in attaining a higher score on the ACT by establishing a goal of all students attaining a composite score of 21 by 2020 (Tennessee Department of Education, 2017b).

**Self-Determination Theory**

This study and the literature reviewed have been viewed through the lens of the Self-Determination Theory. Various factors motivate students as they prepare for their future and college or career. Merriam Webster (2017) defines motivation as the act or process of motivating (to provide with a motive). Some students seek rewards for their efforts while others inherently enjoy learning. Ryan and Deci (Deci, Vallerand, Pelletier & Ryan, 1991) developed the Self-Determination theory that has been implemented in the various fields, including education.

**Defining Self-Determination.**

Motivation is the energy and desires that all individuals naturally acquire; the higher the levels of desire cause a higher level of energy to be displayed while completing the task (Rugutt
Some define motivation in the form of extrinsic or intrinsic forces. External forces include grades, rewards, or the others opinions, whereas intrinsic forces include interest, curiosity, and care (Self Determination Theory, 2017).

Extrinsic behaviors are not performed out of interest but because there is a perceived positive or negative consequence. Four types of extrinsic motivation have been identified. External regulation, a form of extrinsic motivation, refers to a behavior in which the ‘locus of initiation’ is external to the person, praise, threat, punishment, or to avoid parental confrontation (Kusurkar, Croiset & Cate, 2011; Deci, et al., 1991). Introjected regulation involves internalized rules, “threatened sanction,” or “promised rewards.” Identified regulations stipulate that an individual will more willingly participate in an activity. Integrated regulation is the most advanced form of extrinsic motivation. It has some relation to intrinsic motivation, as autonomous behaviors are present (Deci et al., 1991).

While there are various factors that motivate students, intrinsic factors allow students to internalize their educations. The three physiological needs of the Self-Determination Theory of intrinsic motivation are autonomy, competence, and relatedness (Kusurkar, et al., 2011; Deci, et al., 1991). Autonomy in education allows students to feel they are carrying out a task of their choice, and competence indicates that the student feels capable of learning to study the material. Relatedness provides a connectedness or sense of belonging with classmates and the teacher (Kusurkar et al., 2011). While students are motivated for a myriad of reasons, various researchers (Irvin, Meltzer, & Dukes, 2007; Rugutt & Chemosit, 2009) have viewed the Self-Determination Theory through the lens of education.
**Self Determination Theory in Practice.**

Paul Pinrich (year) developed five generalizations of factors that motivate students. First, students who believe they are able can and will do better in terms of effort, persistence, and behavior. Students must believe they can control the outcome, be interested in the content, and see the value in learning. Additionally, students should personalize academic and social goals (What Motivates Students, 2004). Without motivation, teachers have no point of entry; thus lack of motivation fosters a lack of engagement. Irvin et al. (2007) suggested that teachers must begin by getting students interested. Adolescents need a choice, a voice, and a purpose, therefore, those values could lead to motivated students in return.

Rugutt and Chemosit (2009) conducted a study of 2,190 students in 145 classes in the Evening School of the Division of Continuing Education at one sizable Southern university and sought to assess, among other factors, predictors of motivation. Surveys were designed to collect information from students concerning the key variables related to teaching and learning. They stated that encouraging students, providing positive feedback, having constructive interactions, maintaining a positive outlook on student growth, and creating a positive classroom environment could have a strong impact on student motivation. While there are numerous motivations for students, ultimately students must consciously decide how important their education is to them.

Studies (Deci et al., 1991; Haichun Sun, Wiedong, & Bo, 2017) have revealed connections with the Self-Determination Theory and educational outcomes from elementary school to college students. Students who had more self-determined forms of motivation for doing school work had a greater chance to stay in school than those who were less self-determined. Self-determined students believe they have control over their learning and are provided with
choices (Bryan, Glynn, & Kittleson, 2011) such as the ability to take Advanced Placement courses and benefit from them.

Bryan et al. (2011) performed a study that focused on the motivating factors of students who enrolled in an Advanced Placement science course. The study was conducted in a suburban high school in the Southeast United States with an enrollment of 910 students. The students responded to an online essay that assessed their motivation to learn science in Advanced Placement courses. Commonalities were found in student responses, as many of these students used words like “interest,” “confident,” and “challenge.” Some responses also noted that enrolling in more challenging courses would assist in future endeavors of college admissions and careers. Bowman (2011), an Advanced Placement United States History teacher, found that highly motivated students would do the work to succeed in a college-level class.

Guay & Vallerand (1997) studied approximately 1,600 9th graders and 1,100 10th graders using a questionnaire that included the topics: perceptions of parent, teacher, and school administration, autonomy support, perceived school competence and autonomy, and motivation and concluded there was a positive influence of self-determined school motivation on achievement. The first study consisting of a questionnaire for 9th graders found motivation positively affects academic achievement. Additionally, the questionnaires’ from both 9th and 10th graders showed the relation still exists even if controlled for prior achievement; therefore prior achievement is not the predictor of future achievement. Consequently, doing activities out of choice or preference will yield higher levels of achievement than engaging for external reasons. As the College Board (2017b) mentioned, students are able to enroll in and gain a greater understanding of subjects that interest them, therefore as Advanced Placement students take courses that interest these students should display higher exam scores and college readiness.
Kusurkar et al. (2011) conducted a study with health professions that yielded similar findings and made further suggestions of how autonomous teaching/learning should occur. Information must be relevant, intriguing and challenging. Students should be encouraged to actively participate in their learning and take responsibility for what they will gain from their learning. Positive feedback aids in intrinsic motivation as it enhances competence (Deci et al., 1991) and should be non-threatening toward the person (Kusurkar et al., 2011). While noting that every topic will not be interesting to every student, in order to maintain self-determined behaviors, teachers must communicate the value of participating in activities the students find uninteresting.

As many studies (Vallerand, 1997; Bryan et al., 2011) indicated, the Self-Determination Theory is evident in education. Niemiec and Ryan (2009) found that in all levels from elementary to post-secondary, that that high autonomous self-regulation could lead to academic achievement, life satisfaction, and enjoyment in learning. As autonomy is one of three indicators of intrinsic motivation, people are intrinsically motivated if they engage in activities for fun, find a challenge, and appreciate excitement within the activities. With a rigorous workload, Advanced Placement provides students with challenging opportunities to engage in projects, which could provide stimulating findings. Furthermore, students are autonomous when they are willing to devote time and energy to their studies. To truly succeed in Advanced Placement and college or career, individuals must dedicate their time to attain worthy results. Individuals must also have a need for competence, which refers to the experience of behavior as effectively enacted. Students feel competent when they are able to meet the challenges of their schoolwork. Advanced Placement offers students the ability to meet the need for competence as these students succeed in gaining a greater understanding of the content, contribute to stimulating projects, and take the
challenging exams the courses have to offer. According to the American Psychological Association (2004), schools are using the Self-Determination Theory to enhance motivation within students and allow these students to fully accept responsibility for their lives. When students enroll in Advanced Placement courses, they understand the responsibly that comes with the class, as well as the benefits that could lead them to a successful future.

Students must be engaged in their educational activities, value learning, and find worth in accomplishments, even when they lack interest (Deci et al., 1991). While extrinsic factors provide students with motivation to complete tasks, intrinsic motivation allows students to personalize their education, find worth, and develop a greater understanding of the content. Advanced Placement courses provide students the opportunities to score well on exams and earn college credits, but more importantly, the opportunity to take classes that interest them, develop college-level skills, and develop a greater appreciation for content that could aid in college and careers.

**Summary**

Advanced Placement courses offer students the ability to earn college credit, save money, and develop skills needed for college. As the research I reviewed here suggested, further research needs to focus upon larger populations that offer post-secondary opportunities, like Advanced Placement, which may assist students in earning higher ACT scores, ultimately aiding with college admissions, placement, coursework, and possible monetary savings. The purpose of this study was to determine if schools with successful Advanced Placement programs provide more college-ready students than less successful Advanced Placement programs, using ACT composite scores and graduation rates as proxies for college readiness.
This extensive review of literature has provided an overview of the need to prepare students for college and/or career, the Advanced Placement program, the ACT exam, and graduation rates. This review has further explored specific case studies and found areas where further research is still required. The third chapter defines the methods that were developed to complete the study of how schools with effective Advanced Placement programs compared to those schools with less successful Advanced Placement programs in terms of college-readiness.
CHAPTER 3: METHODOLOGY

Background

This study was designed to determine if schools with successful Advanced Placement programs prepare students for college more effectively than those without such programs. The study utilized schools’ ACT composite scores and graduation rates as a proxy for college preparation. According to the Blueprint for College Readiness (Education Commission of the States, 2014), Tennessee includes the following as proxies for college and career readiness: dual enrollment participation and completion, Advanced Placement participation and results, ACT/SAT participation and/or results, post-secondary participation rate, industry certifications earned, and college remediation rates.

Advanced Placement courses offer students a variety of benefits if students are successful in these courses. Students can earn college credit, potentially save money, and allow colleges to judge students using a standardized measure rather than estimating the rigor of the students’ high school work (Manzo, 2010). While Advanced Placement courses provide students many extrinsic motivations, this study viewed the courses through the lens of the Self-Determination Theory and intrinsic motivations that the courses offer.

The problem I am investigating is if the rigor of general education courses in high school is equitable to the rigor of Advanced Placement courses. Quantitative data was utilized for this study. The research design was structured and prepared in advance as the researcher sought to confirm a hypothesis (Center for Innovation in Research and Training, n.d.). This chapter is organized as follows – research questions, sample, data collection, statistical analysis, instruments, research procedures, time period of study, contributions, and a conclusion.
Research Questions

Research has suggested that schools encourage more students to take Advanced Placement courses and prompt students who have taken one Advanced Placement course to take more (Mo et al., 2011). Students who take Advanced Placement courses and exams are introduced to a rigorous curriculum, develop critical thinking skills, and develop the ability to test under time constraints. Therefore, this study was designed to determine if there is a relationship among schools with successful Advanced Placement programs and the schools’ ACT composite scores and graduation rates. The following research questions were developed for this study.

1. Is there a difference in composite ACT scores for schools that have successful Advanced Placement Programs compared to schools that do not have successful Advanced Placement Programs?

2. Is there a difference in graduation rates for schools that have successful Advanced Placement Programs compared to schools that do not have successful Advanced Placement Programs?

The research questions in this study were analyzed using a t-test to ascertain if the mean of samples is equal or indicates a difference.

Sample

The sample for this study was 34 public high schools in Tennessee. Convenience sampling was utilized for this study. Necessary data was easily accessed because it is public information. Tennessee was chosen as the research state because it is providing students opportunities to participate in early post-secondary courses. Similarly, Tennessee requires the completion of the ACT as a graduation requirement and is striving for a state composite ACT
score of 21 by 2020 (Tennessee Department of Education, 2017b). Additionally, 34 schools were chosen because 17 schools earned a gold or silver ranking (successful Advanced Placement programs) and the researcher wanted an equivalent number of less successful Advanced Placement programs to compare. Schools were matched by analyzing the percent of economically disadvantaged students in attempts to control for confounding variables.

**Data Collection**

Data was collected from two primary sources. First, data was retrieved from *U.S. News and World Report*’s Best High School rankings of 2017. The researcher narrowed the data by choosing public schools in Tennessee that received a gold, silver, or bronze ranking. Data was also retrieved from Tennessee’s 2014-2015 State Report Card because it was the corresponding data used by *U.S. News and World Report* and it provided demographic information to match groups, schools’ ACT composite scores, schools’ ACT benchmark scores, and schools’ graduation rates.

**Statistical Analysis**

This study utilized correlational research to determine if there was a relationship or a pattern amongst relationships. A *t*-test for matching samples was chosen for this study. The matching was done to control for confounding variables. I scrutinized each school’s demographics to pair schools. I created a spreadsheet of schools that received a gold or silver ranking from *U.S. News and World Report* then generated columns (schools ACT composite scores, schools ACT benchmark scores, graduation rates, ethnicity- White, African American, Latino, and Asian, size and percent of economically disadvantaged students). Next, I generated a list of schools with less successful Advanced Placement programs and listed their demographics. Lastly, I matched schools that had the most similar demographics.
Ex post facto research was performed as data was “retrieved after the variation in the variable in interest has been determined in the natural course of events” (Ary, Jacobs, Sorensen, Razavieh, 2010, p.332). Ex post facto is also referred to as causal comparative, as the purpose is to scrutinize the cause-and-effect relationship between the variables. Therefore, the researcher is unable to randomize and manipulate variables.

When performing the $t$-test, the standard error of difference of means was computed, then the $t$-test was initiated. If the $t$-value is found as positive, then the first mean was larger. Next, the table of significance was examined and the alpha level, commonly referred to as the risk level, was set at 0.05 (Trochim, 2006). The degrees of freedom were determined, which “is the number of observations free to vary around a constant parameter” (Ary et al., 2010, p.173). Noting the alpha level, the degrees of freedom, and the $t$-value, the $t$-value was subsequently examined in a standard table of significance to determine if the $t$-value was large enough to be significant. Therefore, if the $t$-value is large enough, it can be concluded that the difference between the means for the two groups is significant (Trochim, 2006). If the $t$ ratio is equal to or less than 1, then the observed difference between means is probably due to chance alone (Ary et al., 2010). Lastly, averages were computed from the data sets to provide additional information.

**Instruments**

The $t$-test was utilized to detect the differences in schools’ achievement based on the schools’ ACT composite scores and graduation rates when examining success ranking of implementing Advanced Placement course(s). The ACT was an independent variable in this study. The ACT establishes its own validity and reliability. Validity is determined by construct, criterion, and content. Construct focuses on “test score as an indicator of the accuracy with which the designated attribute is measured.” Criterion denotes if there is a correlation between
test results and outcomes, and content associates test content to noticeable work behaviors by connecting test scores – “e.g., Reading for Information, Applied Mathematics, Locating Information” (ACT, 2014b). ACT also establishes reliability. According to the ACT Technical Manual (2014a), the test was developed for all true scale scores to have approximately constant standard errors of measurement, while students may receive different scores on different tests, those scores could be attributed to the examinee or test administration. Graduation rates were also an independent variable, as its validity is established with the inherent record-keeping provided by the Tennessee Department of Education. The Tennessee Department of Education (n.d.e) provides, via its State Report Card website, data from 2007-present.

There are assumptions associated the t-test of matching samples. An ex post facto study assumes the researcher knows the relevant facts because data was reported accurately. While matches may be made on few relevant factors, there will be many other variables unmatched. Matching may also reduce the number of subjects that can be used in the final analysis. As the number of matching variables increase, it becomes more difficult to find matches. Regression may also occur if matching pairs are taken from two populations (Ary et al., 2010).

**Research Procedures**

Per protocol, the researcher obtained permission from the appropriate school and district-level supervisors, and appropriate paperwork was filed, and IRB approval was approved. Research was conducted over a two-week time period in December of 2017. Data was obtained from *U.S. News and World Report*, which provided the school’s rankings: gold, silver or bronze and the Tennessee State Report Card, which provided school’s ACT composite score, school’s ACT benchmark scores, graduation rate, percent of economically disadvantaged students, ethnicity, and size. Schools were matched based on the percentage of economically
disadvantaged students. The data was programmed into an Excel spreadsheet to acquire the mean, standard deviation, variance, number of subjects, $t$-value, and performance of the $t$-test.

**Time Period of Study**

The prospectus for this research began in July 2017 and was submitted in August of 2017. A review of literature began in July 2017 and was concluded in October 2017. Data was collected in December 2017.

The $t$-test was conducted in January 2018, and additional data was scrutinized in February of 2018.

**Contributions**

This study will contribute to schools that implement Advanced Placement or would consider implementing Advanced Placement courses. The data will allow school leaders to decide if the Advanced Placement courses aid students in earning higher ACT scores, improve graduation rates, and help schools earn superior college readiness scores while allowing these schools to develop a more rigorous curriculum. The $t$-test will establish if there is a relationship among schools with successful Advanced Placement programs and their respective ACT composite scores and graduation rates, thus suggesting college readiness.

**Conclusion**

This study was conducted to determine if Advanced Placement courses offer students more benefits than just the ability to distinguish themselves for the purpose of college admissions, earn college credits, skip introductory classes and build college skills (College Board, 2017). Although Wayne, Larsen, Anderson, and Odasso (2015) argued that it matters greatly if students take and pass the exams, the main objective of this study was to assess if schools with successful Advanced Placement programs provide students with the skills to
contribute to the schools earning high ACT composite scores, graduation rates, and college ready scores, while preparing students with skills to be successful in college.
CHAPTER 4: FINDINGS

In Chapter 1, I defined the need to study schools that offer Advanced Placement courses in relation to preparing students to be college and career-ready. In Chapter 2, I reviewed literature related to Advanced Placement and college and career-readiness and identified the need to investigate if Advanced Placement courses are the best early post-secondary opportunity high schools can offer students. In Chapter 3, I identified the methodology to be utilized in this study to aid in answering my primary research question: Do Advanced Placement courses help better prepare students for college and career? In this chapter, I present the findings of the study.

This chapter begins with an overview of the findings, I describe how *U.S. News and World Report* was utilized as a basis for this study. Next, I provide how demographics and relevant data were employed. I proceed with explanations and charts of the data sets and *t*-test calculations that were implemented on ACT composite scores, graduation rates, and the percentage of students passing Advanced Placement exams. Additionally, comparison of averages of the data collected was conducted. The chapter concludes with schools’ average ACT benchmark scores in English, reading, math, and science.

**Research Process**

The goal of this research was to compare college and career readiness of schools that were ranked by *U.S. News and World Report* as the best high schools. I requested permission to analyze public data from the IRB at Carson Newman University. Upon approval, I accessed *U.S. News and World Report*'s 2017 Best High Schools data and Tennessee’s State Report Card to acquire corresponding data, demographics, graduation rates, and ACT composite scores.
Data

The data collected are divided into three categories. The first category relates to the division of more successful and less successful schools as ranked by *U.S. News and World Report*. Schools that received a gold or silver ranking were considered more successful (more students took and passed Advanced Placement exams) and schools that received a bronze ranking were considered less successful. The second category of data was used as proxies for college readiness. Subsequently, ACT composite scores and graduation rates were gathered from Tennessee’s State Report Card. The third category of data was the demographics used for matching schools, percentage of economically-disadvantaged students, size, and ethnicity of each school. Each category of data, how the data were collected and applied, and results are explained.

**Category 1 - Division of Schools.** A total of 34 Tennessee public high schools were investigated. As indicated in Figure 4.1, two schools (.6%) received a gold ranking, 15 schools (4%) received a silver ranking, and 89 schools (27%) received a bronze ranking. Although the remaining 67% of Tennessee schools may offer Advanced Placement courses, this study utilized the schools that received the gold, silver, or bronze ranking. To receive a ranking, schools are required to meet four criteria as defined by *U.S. News and World Report*: students must perform better than expected in their respective states, disadvantaged students must perform better than the state average, student graduation rates must meet or exceed a national standard, and students must be prepared for college-level coursework (*U.S. News and World Report*, 2017). This study concentrated on the schools that met all four criteria, primarily focusing on the fourth criterion as it was the indicator for college-level coursework. Advanced Placement was utilized as the proxy for college-level coursework.
Figure 4.1 Tennessee Schools Ranked by *U.S. News and World Report* as 2017 Best High Schools.

**Category 2-Data of Schools.** ACT composite scores and graduation rates were gathered as proxies for college and career readiness. Tennessee’s State Report Card details a variety of information. This report card displays graduation rates and ACT scores. Graduation rates are measures of students who graduated high school within four years and one summer based on entering ninth grade four years earlier. ACT composite scores (students’ most recent score was reported) were also gathered. The 2014-2015 report card was utilized to match data on *U.S. News and World Report*.

**Category 3- Demographics of Schools.** In preparation for conducting the *t*-test, matching of the more successful schools and less successful schools was necessary. Tennessee’s State Report Card was assessed to acquire information. While the report card provides information regarding the number of students per school, amount of English Language Learners, percentage of economically-disadvantaged students, students with disabilities, etc., I chose to gather student enrollment for each school, percentage of economically-disadvantaged students,
and ethnicity. Subsequently, I chose to match schools based on the percentage of economically-disadvantaged students. Hopkins (2005) stated that funding has hardly any effect on the outcomes constituting accountability measures. Table 4.1 displays the schools utilized in this study and how they were matched based on the percent of economically-disadvantaged students at each school. The schools on the left are the gold and silver ranked more successful schools and the schools on the right are the bronze ranked less successful schools. Using specific criteria, in particular percentage of disadvantaged students within the chosen schools, schools were ranked and matched according to each school’s socioeconomic status. Schools were assigned a pseudo number prior to matching schools; therefore they are not in numerical order. While there appears to be a disparity between the matched more successful and less successful schools, the data presented reflects information gathered from Tennessee’s State Report Card.
Table 4.1. Schools Matched Based on Economically Disadvantaged Student Percent.

<table>
<thead>
<tr>
<th>More Successful Schools (Gold/Silver)</th>
<th>Percent Disadvantaged</th>
<th>Less Successful Schools (Bronze)</th>
<th>Percent Disadvantaged</th>
</tr>
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<td>46</td>
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</tr>
<tr>
<td>21</td>
<td>30.1</td>
<td>26</td>
<td>53.8</td>
</tr>
<tr>
<td>11</td>
<td>38.6</td>
<td>35</td>
<td>54</td>
</tr>
<tr>
<td>18</td>
<td>45.5</td>
<td>32</td>
<td>55.3</td>
</tr>
<tr>
<td>13</td>
<td>51.6</td>
<td>39</td>
<td>55.5</td>
</tr>
<tr>
<td>16</td>
<td>55.5</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>22</td>
<td>58.3</td>
<td>27</td>
<td>58.9</td>
</tr>
</tbody>
</table>

Results

To ascertain if schools with successful Advanced Placement programs better prepare students for college and their careers, a t-test: two-sample assuming unequal variances, was conducted to determine if there was a statistical significance. A t-test was conducted for three separate sets of data utilizing Microsoft Excel. For data to show statistical significance, t-stat must be greater than t-critical 1. Test (t)-statistic is a standardized value that was calculated from the sample of data during the hypothesis test, which will determine if the null hypothesis can be rejected (Minitab Express Support, 2016). The most commonly used significance level is $\alpha = 0.05$. In this test $1 - \alpha/2$ was computed. If the absolute value of the test statistics is greater than the critical value (0.975), then the null hypothesis can be rejected (Engineering Statistics, 2013). The p-value has also been included. Any p-value lower than 0.05 indicates significance.
Furthermore, if the p-value is significantly different than 0.05, this suggests there are many influences on the data. Average comparisons conclude the results section.

**T-test results of ACT scores for schools.** Table 4.2 displays schools’ ACT composite scores. Column A displays the data set of more successful schools, the schools receiving a gold or silver ranking by *U.S. News and World Report*, and ACT composite scores. Column B displays the data set of less successful schools, schools receiving a bronze ranking by *U.S. News and World Report*, and ACT composite scores. Column A had a mean of 22.84 and Column B had a mean of 19.81. A t-test was then conducted using Excel, which found T-stat, 5.8354465 was greater than t-critical, 1.7056179. In addition, the p-value was calculated at 1.884x10⁻⁰⁶, which is significantly less than the 5% to which it is being compared. This indicates there is a statistical significance. Calculations denote that there is enough difference in the data sets to discuss differences and that the significant differences in the data are not due to randomness.

**Table 4.2. Schools’ ACT Composite Scores.**

<table>
<thead>
<tr>
<th>Successful School</th>
<th>Less Successful Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.6</td>
<td>20</td>
</tr>
<tr>
<td>25.3</td>
<td>22</td>
</tr>
<tr>
<td>24.6</td>
<td>21.2</td>
</tr>
<tr>
<td>25.2</td>
<td>18.6</td>
</tr>
<tr>
<td>22.4</td>
<td>20.4</td>
</tr>
<tr>
<td>23.1</td>
<td>19</td>
</tr>
<tr>
<td>24.1</td>
<td>19.6</td>
</tr>
<tr>
<td>20.4</td>
<td>20.6</td>
</tr>
<tr>
<td>22.3</td>
<td>19.2</td>
</tr>
<tr>
<td>24</td>
<td>18.9</td>
</tr>
<tr>
<td>21.1</td>
<td>18.9</td>
</tr>
<tr>
<td>23</td>
<td>19.8</td>
</tr>
<tr>
<td>22.5</td>
<td>19.5</td>
</tr>
<tr>
<td>21.3</td>
<td>20.4</td>
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<tr>
<td>23.1</td>
<td>21.3</td>
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<tr>
<td>21.3</td>
<td>19.6</td>
</tr>
<tr>
<td>19</td>
<td>17.7</td>
</tr>
<tr>
<td><strong>Mean- 22.84117647</strong></td>
<td><strong>Mean- 19.805882</strong></td>
</tr>
</tbody>
</table>
T-test results of graduation rates for schools. Table 4.3 displays schools’ graduation rates. Column A displays the data set of more successful schools, the schools receiving a gold or silver ranking by *U.S. News and World Report*, and graduation rates. Column B displays the data set of less successful schools, receiving a bronze ranking by *U.S. News and World Report*, and graduation rates. Column A had a mean of 94.39 and Column B had a mean of 95.02. A t-test was then conducted using Excel, which found \( T_{\text{stat}} = -0.5916698 \) was less than \( t_{\text{critical}} = 1.6938887 \). In addition, the p-value was calculated at 0.279, which is greater than the 0.05 it is being compared to, further indicating there is no statistical difference.

Table 4.3. Schools’ Graduation Rates.

<table>
<thead>
<tr>
<th>Successful Schools</th>
<th>Less Successful Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.4</td>
<td>96.8</td>
</tr>
<tr>
<td>96</td>
<td>99.2</td>
</tr>
<tr>
<td>98.1</td>
<td>91.5</td>
</tr>
<tr>
<td>100</td>
<td>94.5</td>
</tr>
<tr>
<td>95.6</td>
<td>96.6</td>
</tr>
<tr>
<td>90</td>
<td>95.5</td>
</tr>
<tr>
<td>89.5</td>
<td>98.4</td>
</tr>
<tr>
<td>95.6</td>
<td>95.4</td>
</tr>
<tr>
<td>93.6</td>
<td>96.9</td>
</tr>
<tr>
<td>91.3</td>
<td>87.9</td>
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<tr>
<td>88.8</td>
<td>90.1</td>
</tr>
<tr>
<td>94</td>
<td>94.7</td>
</tr>
<tr>
<td>94.2</td>
<td>94.6</td>
</tr>
<tr>
<td>97.3</td>
<td>97.9</td>
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<tr>
<td>96.4</td>
<td>96.2</td>
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<tr>
<td>97.2</td>
<td>93.4</td>
</tr>
<tr>
<td>90.6</td>
<td>95.8</td>
</tr>
</tbody>
</table>

Mean= 94.38823529        Mean= 95.02352941
T-test results of percent of 12th graders who passed at least one Advanced Placement exam. Table 4.4 displays the two sets of data on the percent of 12th graders that passed at least one Advanced Placement exam. Column A denotes the more successful schools, those receiving a gold or silver ranking, and percent of 12th graders who passed at least one Advanced Placement exam. Column B denotes less successful schools, schools receiving a bronze ranking, and percent of 12th graders who passed at least one Advanced Placement exam. Column A had a mean of 33.94 and Column B had a mean of 7.71. A t-test was conducted using Excel, which found T-stat, 9.1780914 was greater than t-critical, 1.7207429. In addition, the p-value was calculated at 4.255x10^-9, which is significantly less than the 5% it is being compared to, indicating there is a statistical significance. Calculations demonstrate that there is enough difference in the data sets to discuss differences and that the significant differences in the data are not due to randomness.

Table 4.4. Percent of 12th Graders who Passed at Least One Advanced Placement Exam

<table>
<thead>
<tr>
<th>Successful Schools</th>
<th>Less Successful Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>9</td>
</tr>
<tr>
<td>37</td>
<td>10</td>
</tr>
<tr>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>35</td>
<td>3</td>
</tr>
<tr>
<td>33</td>
<td>15</td>
</tr>
<tr>
<td>33</td>
<td>11</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>6</td>
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<td>27</td>
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<tr>
<td>27</td>
<td>14</td>
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<tr>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>18</td>
<td>4</td>
</tr>
</tbody>
</table>

Mean- 33.94117647 | Mean- 7.705882353
Comparing averages of ACT scores of schools. Further tests were conducted to compare the averages of the data sets to gain additional information. I calculated the difference comparing the mean of the less successful schools’ ACT composite scores to the mean of the successful schools’ ACT composite scores. The composite ACT mean of the less successful schools was 19.8, and the composite ACT mean of the successful schools was 22.8. The three-point difference between these two means indicates the less successful schools would need to increase their mean by 15% to equal the scores of the successful schools. The common factor in the more successful schools is the strength of the Advanced Placement program due to the higher enrollment and passing of exams. This additional data provides information for further discussion in the next chapter regarding the need for more students to take Advanced Placement courses, which could lend higher ACT scores and college-readiness.

Comparing averages of amount of AP courses taken at schools. To be designated as a successful school for the purpose of this study, it was imperative that more students take Advanced Placement courses; 14.5% of the less successful schools’ 12th graders took Advanced Placement courses, and 48.5% of the successful schools’ 12th graders took Advanced Placement exams, indicating a difference of 34% (48.5%-14.5%). This result would suggest that less successful schools would need to increase their mean by 234% to equal the mean of the successful schools.

Therefore, if the less successful schools increased the number of 12th graders taking Advanced Placement courses by 234%, according to these results, then they would improve their ACT score by 15.2%. Although this would be an improvement on ACT scores, overall achievement would be minimal when considering the increase in the number of 12th graders that would need to enroll in Advanced Placement Courses.
Comparing averages at schools and the number of AP exams passed. As detailed in Chapter 2, many argue the importance of passing Advanced Placement exams as a precursor to success, as opposed to enrollment in Advanced Placement courses (Warne, Larsen, Anderson, and Odasso, 2015). While 7.7% of the less successful schools’ 12th graders passed at least one Advanced Placement exam, 33.9% of the more successful schools’ 12th graders passed at least one Advanced Placement exam. This indicated a difference of 26.2%. Comparing the number 26.2 to the original mean of the less successful schools’ 7.7 would suggest that the less successful schools would need to increase their mean by 340% to equal the successful schools mean of 33.9% and have more 12th graders passing the Advanced Placement exams. This average comparison also provides information that will allow for further discussion in the next chapter of the significance of passing the Advanced Placement exam.

While there would need to be a dramatic increase in the percentage of 12th graders passing an exam, it is still noteworthy that 69.9% of the successful schools’ 12th graders that took an Advanced Placement exam also passed the test. Similarly, 53.1% of the less successful schools’ 12th graders that took an Advanced Placement course passed the test.

Schools’ average ACT benchmark scores. Though a school’s ACT composite score provides an overview of the school’s achievement on the overall test, the average benchmark scores provide a better analysis of students’ college readiness. For students to have a 50% chance of obtaining a B or higher or a 75% chance of achieving a C or higher in a comparable college course, students must meet the following ACT benchmarks: English – 18, Reading – 22, Math – 22, and Science – 23 (ACT, 2016).

In addition to schools’ ACT composite scores collected, ACT benchmark scores for each of the four subjects were collected. Data was entered into an Excel sheet, and the average was
computed. As displayed in Table 4.5, the more successful schools’ average benchmark scores were averaged. The schools with more successful Advanced Placement programs met three of the four benchmarks. Their average English score was 22.83, average math score was 22.2, average reading score was 23.15, and average science score was 22.26. The more successful schools’ average English score was more than four points higher than the college readiness benchmark, the average math score was only .20 higher, the average reading score was .15 higher, and the average science score was .62 lower than the college readiness benchmark score.

Table 4.5. Successful Schools’ Average ACT Benchmark Scores.

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Math</th>
<th>Reading</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>22.83529412</td>
<td>22.20588235</td>
<td>23.15882353</td>
<td>22.62941176</td>
</tr>
</tbody>
</table>

The schools with less successful Advanced Placement programs met only one of the four benchmark scores. As displayed in Table 4.6, the schools’ average benchmark scores were calculated. Their average English score was 19.44, the average math score was 19.27, the average score reading was 20.00, and the average science score was 20.00. The less successful
Schools’ average English score was 1.44 points higher than the college readiness benchmark, the average math score was 2.73 points less than the college readiness benchmark, the average reading score was two points less than the average college readiness benchmark, and the average science score was three points lower than the benchmark score.

**Table 4.6. Less Successful Schools Average ACT Benchmark Scores**

<table>
<thead>
<tr>
<th>English</th>
<th>Math</th>
<th>Reading</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.8</td>
<td>19.3</td>
<td>20.1</td>
<td>20.3</td>
</tr>
<tr>
<td>22.3</td>
<td>20.9</td>
<td>22.4</td>
<td>21.9</td>
</tr>
<tr>
<td>21.6</td>
<td>20.2</td>
<td>21.5</td>
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<tr>
<td>17.7</td>
<td>18.1</td>
<td>18.5</td>
<td>19.3</td>
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<tr>
<td>20</td>
<td>20.7</td>
<td>20.1</td>
<td>20.3</td>
</tr>
<tr>
<td>18.2</td>
<td>18.5</td>
<td>19.4</td>
<td>19.6</td>
</tr>
<tr>
<td>19.7</td>
<td>18.6</td>
<td>19.5</td>
<td>20</td>
</tr>
<tr>
<td>20.2</td>
<td>20.4</td>
<td>20.6</td>
<td>20.8</td>
</tr>
<tr>
<td>18.6</td>
<td>18.2</td>
<td>19.8</td>
<td>19.7</td>
</tr>
<tr>
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<td>18.5</td>
<td>19.2</td>
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<tr>
<td>18.4</td>
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<td>18.6</td>
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<tr>
<td>19.2</td>
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<td>19.8</td>
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<tr>
<td>19</td>
<td>18.7</td>
<td>19.9</td>
<td>19.7</td>
</tr>
<tr>
<td>20.8</td>
<td>19.3</td>
<td>20.2</td>
<td>20.7</td>
</tr>
<tr>
<td>21.1</td>
<td>20.8</td>
<td>21.8</td>
<td>21.2</td>
</tr>
<tr>
<td>18.6</td>
<td>19.4</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>17.1</td>
<td>17.4</td>
<td>20.1</td>
<td>18.1</td>
</tr>
<tr>
<td>Mean: 19.44705882</td>
<td>Mean: 19.27058824</td>
<td>Mean: 20.00588235</td>
<td>Mean: 20.00588235</td>
</tr>
</tbody>
</table>

**Summary**

In this chapter, I have presented evidence that there was a statistically significant difference between schools with more successful Advanced Placement programs as opposed to schools with less successful Advanced Placement programs by applying schools’ ACT composite scores as a proxy for college and career readiness. Based on these findings I will argue in the following chapter that schools with more successful Advanced Placement programs may better prepare students for college, as the t-test of ACT scores indicated a correlation.
between the two. Conversely, the use of graduation rates as a proxy for college and career-readiness did not indicate a statistical significance. Additional data in this chapter indicates that while a statistical significance was discovered from three data sets, the average comparisons indicate that the significances among the data are not great. However, these results allow for interpretations and conclusions to be drawn about the Advanced Placement program. Further data was also included to assess schools’ average ACT benchmark scores. Although Tennessee’s Report Card displays schools’ overall composite scores, individual subject benchmark scores provide more insight regarding college and career readiness. In the next chapter, I will discuss the findings, their indications, and suggestions for further studies.
CHAPTER 5: CONCLUSIONS, IMPLICATIONS, and RECOMMENDATIONS

I began this dissertation by examining the rigor that I present in my Advanced Placement class. Advanced Placement courses should deliver a rigorous curriculum that provides students with a deeper understanding of the content. With students being able to earn college credits with a passing Advanced Placement exam score, courses should be taught with a college-level rigor; therefore, I chose to explore Advanced Placement through the lens of college-readiness. Students who take college-level courses should ultimately be better prepared for four-year institutions. In Chapter 1, I discussed the need to explore the Advanced Placement program to assess if it was an effective early post-secondary opportunity that would prepare students for college. In Chapter 2, I reviewed relevant literature that detailed support and critical reviews of the program, which led to findings of some qualitative and quantitative studies that suggested this topic needed further study. In Chapter 3, I described the quantitative approach I would utilize to explore the relationship between Advanced Placement courses and college-readiness. In Chapter 4, I presented my results on the findings of the schools that were considered to have less successful Advanced Placement programs compared to schools with more successful Advanced Placement programs utilizing ACT composite scores and graduation rates as proxies. T-tests were conducted to assess statistical significance.

In this chapter, I begin by discussing the research design, population, and sample. I then discuss the significance of the findings of each test individually and any implications of strengths and weaknesses. In the next section, I discuss the conclusions gathered from the tests and confirm my hypothesis. Finally, I suggest ideas for future research and offer recommendations.
Research Design

A quantitative approach was utilized for this study, and a t-test was used as the principle research instrument two sample assuming unequal variances. Subsequently, additional tests were conducted to compare averages from the data sets. This study was conducted using public data from *U.S. News and World Report’s* 2017 Best High Schools rankings and Tennessee’s State Report Card. Convenience sampling was utilized.

While the $t$-test was an accurate test to measure significances in the data provided in this study, a study involving path analysis could have provided greater detail because more variables would be included to determine the independent variables that have a greater effect on the dependent variable. The path analysis would not discover causes, but rather elucidate the tenability of the casual models based on knowledge and theoretical framework (Ary et al., 2010).

Population

Tennessee high schools were used for this study. Tennessee schools were chosen for several reasons, primarily because I teach in Tennessee and Tennessee provides an abundant amount of data via the State Report Card. Additionally, to earn a high school diploma in Tennessee, all graduating seniors are required to take the ACT. Examining the role Advanced Placement played in conjunction with ACT composite scores could help aid Tennessee schools when implementing early post-secondary opportunities. While this study only analyzed data from Tennessee, other states that implement Advanced Placement courses and also require students to take the ACT to graduate could use this study to aid in their decisions on which early post-secondary opportunities best suit their students.
Sample

The sample population was 34 Tennessee high schools. *U.S. News and World Report*’s 2017 Best High Schools ranking were utilized. There were 17 schools that received a gold or silver ranking. I matched those 17 identified schools to 17 schools that received the bronze ranking.

Research

Schools were matched based on the percentage of economically-disadvantaged students in each school (See Appendix A). A t-test was conducted for each matched set of data, schools’ ACT composite scores, and graduation rates. Additionally, t-tests analyzed the number of students that passed at least one Advanced Placement exam. Further, comparisons scrutinized the averages of the schools’ ACT composite scores and number of 12th graders taking Advanced Placement to assess what the bronze ranked schools would need to accomplish to become gold or silver ranked schools. Finally, ACT benchmark average scores were computed.

Discussion of Findings

The general conclusions of the findings from the data, including detailed arguments below, are separated by section: ACT, Graduation, etc. There were two t-tests that addressed the effect of Advanced Placement courses on college and career-readiness. Schools’ ACT composite scores and graduation rates were used as proxies for college and career-readiness. The t-test indicated statistically significant findings between the more successful schools with Advanced Placement programs and schools’ ACT composite scores. In contrast, the t-test conducted on schools’ graduation rates displayed no statistical significance, indicating graduation rates may not be the best college-readiness indicator. The test on the percentage of 12th graders that passed at least one Advanced Placement exam indicated statistical significance, designating that passing
the exam is vital for success. In addition, the more successful schools met the majority of the ACT benchmark scores and the less successful schools only reached 25% of the benchmark scores, indicating the more successful schools were college-ready.

**ACT.** Many high schools and colleges utilize the ACT as a college-readiness indicator. Students may begin taking the ACT as early as their freshman year and may take it as many times as possible to achieve the highest score possible, a 36. College-bound students aspire to attain the highest score because their composite score could determine college admission and scholarship money. While earning scholarship money is an extrinsic factor, the Self-Determination Theory suggests that students who do well on the ACT test internalize the need to succeed by their test preparation skills. There are many ways in which students can prepare for the test, from test preparation classes to taking early post-secondary opportunities. While students aim for the highest score possible, ACT has established benchmark scores to equate students’ likelihood to be successful in college.

With the ACT establishing benchmarks for college readiness, English (18), Reading (22), Math (22) and Science (23) (ACT, 2016), this study found that the most successful schools’ mean benchmark scores were above the college readiness level, therefore the school’s students, on average, meet 75% of the benchmarks. Their average English score was 22.83, math 22.2, reading 23.15, and science 22.62. Although the collective average of these schools did not meet the science readiness benchmark, they were less than a half a percentage point below the standard. Data from this study confirms Tiemann (2011) and Bumpous’ (2015) indications that students who take Advanced Placement courses in high school will be college-ready. This work further supports the premise that students from schools with the less successful Advanced Placement program were not as college-ready. The schools with the less successful Advanced
Placement programs only met one (English) of the four ACT benchmark scores. In these schools, the English score was 19.44, the math score was 19.27, the reading score was 20, and the science score was 20.

Furthermore, the t-test conducted on the data sets of ACT composite scores for the more successful schools and less successful schools that have Advanced Placement programs denoted a statistically significant difference, therefore fostering discussion that Advanced Placement courses provide students with many components that enhance ACT test-taking skills and better prepare these students for college-level work. Advanced Placement courses offer students the opportunity to read more difficult level texts because Advanced Placement textbooks are written at a college level. Consequently, as students take more Advanced Placement courses and read and analyze more difficult texts, they help prepare themselves to be more successful on the reading portion of the ACT.

Taking Advanced Placement courses offers students the ability to build skills needed for college, perfect study skills, discuss challenging issues, and study content more in-depth. As the literature suggested, Advanced Placement has a positive impact on performance and retention of college students (Mo et al., 2011; Klopfenstien & Thomas, 2009). Furthermore, students who participate in Advanced Placement courses benefit by outperforming non-Advanced Placement students in academic achievement, which includes college admissions tests (Warne, 2017; Wojonowski, 2011).

Similarly, the Advanced Placement test preparation provides aid to students when taking the ACT and preparing for college. Many focus on the extrinsic motivators that are associated with Advanced Placement, such as earning college credits and saving money. However, to be successful, students must internalize the preparation to succeed. The Self-Determination Theory
suggests that high autonomous self-regulation could lead to academic achievement, life satisfaction, and enjoyment in learning (Niemiec and Ryan, 2009). Students will learn time management as they prepare for Advanced Placement, achievement tests, and college. Students will learn how to manage their time to study for their Advanced Placement exams, as well as learn to manage time while taking the tests. Advanced Placement exams are separated into sections and timed in the same manner as the ACT. The ACT is divided into four subparts: English, math, reading, science, with the option to add the writing section (ACT, 2017), and timed at 175 minutes (Jacobsen, 2017). Advanced Placement exams are divided into two parts, multiple choice, and free response questions, taking between two and three hours depending on the test (Sadler et al. 2010). While in an Advanced Placement course, students will take more unit practice tests and timed tests that will aid them when taking the ACT.

The t-test indicated there was significance between the more successful schools that have Advanced Placement programs and ACT scores, suggesting a correlation between the two. The successful schools had a higher ACT composite average. While Advanced Placement courses could be a factor, the difference in the average composite ACT between the more successful schools and less successful schools prompted consideration of additional factors that could have led to higher ACT composite scores. Possible factors of the more successful schools include whether schools were in rural or urban districts, money spent per student, and student/teacher ratio. While other dynamics may have contributed to higher ACT scores, this study indicated that there is a correlation between the successful schools, which are those that received the gold and silver rankings from U.S. News and World Report, and higher ACT composite scores.

Furthermore, it is worth noting that students who are usually successful in Advanced Placement and on the ACT have some innate motivation to succeed, as the Self-Determination
Theory suggests. Students often motivate themselves to do well because of intrinsic factors, such as self-discipline and personal drive to learn course content. Advanced Placement courses aid students in a variety of ways to prepare for the ACT and college. While many high schools and colleges utilize the ACT as a college-readiness factor, Milkus (2018) reported that while graduation rates can be used as performance indicators, they do not share similar safeguards with standardized tests. Standardized tests are controlled by norming (ACT, 2014) and typically lack bias because committees are formed to ensure neutrality. While institutions may control various aspects of standardized tests, states are able to establish graduation criteria on their standards (Tennessee: acquire 28 credits and complete the ACT and civics test). Due to the pressure of Race to the Top and the emphasis on increasing graduation rates, states may be incentivized to manipulate the graduation rates in various ways.

While a statistical significance was found between the successful schools and ACT composite scores, it is worth noting that only four of the 17 matches were within 10% of each other for socioeconomic status (SES) of students. The schools were ranked and matched from lowest to highest based on socioeconomic status. While the paired schools indicated statistical significance when utilizing ACT as a college-readiness proxy, graduation rates did not.

Graduation. Though graduation rates have recently been increasing (Gompers & Nagaoka, 2017; Turner, 2016), this study indicated that there was no statistical difference between the two sets of schools’ graduation rates. Furthermore, the less successful schools, schools receiving a bronze ranking from U.S. News and World Report’s 2017 Best High Schools, had a graduation rate of 95.02% compared to the more successful schools, those receiving a gold or silver ranking, who had a graduation rate of 94.38%. Though both sets of data report superb graduation rates, skeptics should question the factors that allow schools to achieve these
percentages. Furthermore, skeptics should question if graduation rates are a valid college and career-readiness indicator. Malkus (2018) stated that graduation inflation scandals (credit-recovery, teaches changing grades, etc.) are happening across the country to add to the steady increase recently evidenced in national graduation rates. Though the less successful schools had a higher graduation rate, the Advanced Placement program can provide college-level rigor to students that take the courses.

Numerous studies have reported that national graduation rates have been steadily increasing (Gomperts & Nagaoka, 2017; Kamentz & Turner, 2016), which allows states, schools, and districts to appear impressive. Graduation rates have been climbing at an astonishing rate in some areas, up 24 points in New York City from 2005-2015 (Malkus, 2018). This should prompt investigation into what is causing this dramatic increase. Districts are turning to programs such as credit recovery; a program that allows students to enroll in condensed, easier-to-pass classes, to make up for courses a student has previously failed. Credit recovery allows the students to earn the credit in half the time and with less effort than their classmates.

After the District of Columbia’s Public Schools national test scores declined in 2015, officials turned to record-breaking graduation rates to suggest reforms were working; however, Malkus (2018) reported the system has come under considerable scrutiny. Many graduates in the District of Columbia received diplomas and were in direct violation of the district policy. Test scores began declining for the first time in 2015, which triggered officials to turn to record-breaking graduation rates as proof that education reforms were successful. While graduation rates have been on the increase, diplomas were granted to students in the District of Columbia who had violated the district’s policies. For instance, 20% of these students had excessive absences, 15% received credits through “credit-recovery” courses, and late grade changes had
been made. Furthermore, 55% of teachers in the District of Columbia believed their graduation rate was inaccurate. Teachers had been pressured to do “whatever it takes” to enhance graduation rates. Therefore, while graduation rates have been increasing, many should question the cause of these impressive numbers. In 2015, about 33% of Tennessee’s students who graduated from high school did not earn the required credits. Most commonly, students were missing foreign language and social studies credits (Farmer, 2017). Officials in Camden, New Jersey reported that nearly half of the 2014 graduating class failed required exit exams. Therefore, it is possible for students to be absent a substantial number of days, repeat courses in credit recovery, and fail required exit exams and still be presented with a diploma. Subsequently, this fosters impressive graduation rates. States, districts, and schools dote on receiving awards, and demonstrating growth in graduation rates is one way they can show improvement. Schools can monitor students who may be falling behind and place them in credit recovery to ensure these students meet the graduation requirements of earning the diploma in four years, which would prevent graduation rates from declining.

Furthermore, this study’s findings indicate that there was no statistical difference in the schools that offer Advanced Placement and graduation rates. As previously detailed, there are numerous other factors that can contribute to inflated graduation rates. This study found that the average graduation rate for the less successful schools – 95.02%, was higher than the graduation rate of more successful schools – 94.39%. After reviewing the numbers, it is plausible that the less successful may spend more time and effort on graduating students than devoting efforts to promote early post-secondary opportunities, like Advanced Placement. While there was merely 0.63% difference, one might expect higher graduation rates at the gold and silver ranked schools. Furthermore, though the more successful schools had a slightly lower graduation rate, their
college and career-ready students are likely the ones on track to graduate despite other factors. Additionally, expectations at the less successful schools may have been lower than the expectations at the more successful schools. The less successful schools may focus more on students acquiring the minimum college-preparatory classes to earn credits required to graduate rather than suggesting students enroll in early post-secondary opportunities to challenge themselves. This may have allowed students at the less successful schools to earn diplomas with the aid of several factors. These factors include credit recovery and teachers being coerced into changing grades (Malkus, 2018). Credit recovery also likely helped these students graduate. Thus, graduation rates, while informative, are not the most accurate measure of college and career-readiness.

**Percentage of 12th Graders passing one Advanced Placement exam.** Students taking Advanced Placement courses encounter college-level texts, more complex questions, and the opportunity to apply their knowledge in different settings. Furthermore, the Advanced Placement program claims to provide students with the ability to distinguish themselves during the college admissions process by allowing them to earn college credits, and Advanced Placement courses also allow students to save money and time during their college years (College Board, 2017).

This study ascertained that the more successful schools had many more seniors that had taken at least one Advanced Placement course during their high school career. The more successful schools had almost 50% of their 12th grade population taking an Advanced Placement course, where the less successful schools had only 15% of their 12th grade population taking an Advanced Placement course. While the most successful schools had more students taking Advanced Placement courses and reported higher ACT composite scores, numerous other factors could enhance opportunities to offer Advanced Placement courses to more students. As noted in
Chapter 2, Advanced Placement can be costly. For instance, a class set of textbooks could cost between $3,000-$6,000 (College Board, 2017). Furthermore, students, schools, and school districts are responsible for paying for Advanced Placement exams at the conclusion of coursework, which costs approximately $100. Additionally, schools must subsidize teacher attendance at workshops, which often costs up to $3,000 when considering the workshop fees, meals, and travel expenses. Consequently, some districts may be unable to afford the training; therefore, different levels of rigor could be presented in classes. Hence, socio-economic status of a school may significantly impact accurate assessment of school’s success in Advanced Placement.

While many variables should be considered when assessing the success of schools’ Advanced Placement programs, student enrollment in Advanced Placement courses offers specific benefits, such as encountering difficult texts and questions. Additional research (Hargrove, Godin, & Dodd, 2008; Geiser & Santelices, 2004; Hansen, Reeve, Gonzalez, Sudweeks, Hatch, Esplin, & Shaw, 2006) reported that the Advanced Placement program is more beneficial for those students that earn a passing score on the end-of-course Advanced Placement exam.

Warne, Larsen, Anderson, and Odasso (2015) suggested that it matters significantly whether students take and pass the Advanced Placement exam. Matthews stated (2007) that students participating in Advanced Placement may benefit from higher GPA’s, credit hours earned, and higher graduation rates, suggesting that increasing the number of students taking Advanced Placement will have a meaningful impact. Advanced Placement exams are lengthy, timed exams that test the student’s knowledge of the content of the entire course. Of the 38 courses offered, each exam is administered over a two-week period. Each test is administered on
the same day and the same time nationwide, like the ACT. Students prepare for a rigorous test that will determine if they receive college credit.

This study indicated that 34% of students at the successful schools passed at least one Advanced Placement course in comparison to the 7.7% that passed at the less successful schools. The data suggests that with the successful schools having a higher percentage of students passing an Advanced Placement exam, these students should be college-ready and experience greater success in college. Therefore, students at the successful schools are more likely to be intrinsically motivated, driven by their desire to learn the content, and discipline themselves to prepare for college-level work. In theory, the students passing the Advanced Placement exam(s) have spent countless hours on their own time preparing to do well on the exam(s). To succeed on the exams, students must internalize the need to study so they will perform well.

While this study indicates that the more successful schools have more students passing the Advanced Placement exams and scoring higher on the ACT, other factors should also be included. There is some correlation between Advanced Placement and students being college-ready. However, other factors, such as socio-economic status of successful schools, student/teacher ratio, and teacher preparation should be included when assessing the success of schools’ Advanced Placement programs. In addition, Advanced Placement teachers are not evaluated; thus, rigor could vary among schools and teachers within a particular school. The Advanced Placement program is meaningful, although schools should evaluate their individual success.
Conclusions From Data

This study supplements the College’s Board argument that the Advanced Placement program is effective. This study indicated a correlation among the schools that had more successful Advanced Placement programs. More students in these schools take the courses and pass the exams, and these students also demonstrated higher results on the ACT. Based on the Self-Determination Theory, students at the more successful schools may be motivated by their own innate sense to learn and succeed, which allows them to perform better on the ACT and be more college and career-ready. The Advanced Placement program provides students with college-level texts, timed tests, more complex content, a deeper understanding of the content, and more application-type questions. While rigor may vary in Advanced Placement courses, Advanced Placement teachers should have high expectations because they are also preparing their students to pass a test that will help these students earn credits in college. Furthermore, while it is easy to ascertain the extrinsic factors that accompany taking an Advanced Placement course and passing the exam (saving money and time in college), students will be intrinsically motivated because they must manage their time to complete assignments and study. Students taking Advanced Placement clearly possess some intrinsic motivating factors because they choose to take the Advanced Placement course as opposed to the average college preparation class schools offer. While this study indicated that the more successful schools scored high on the ACT, which was an indicator of college-readiness, graduation rates did not lend to the correlation.

In addition, students at the more successful schools are more college-ready, suggesting they will perform better their first year in college. The Advanced Placement program advocates that students should build college-level study skills and prepare for college-level rigor (Warne,
Advanced Placement courses require students to be more intrinsically motivated, as they may encounter struggles of how to read additional college-level texts and discuss challenging questions. Consequently, students should learn to persevere in high school and continue to persevere in college. Mattern, Shaw, and Xiong (2009) studied 196,362 students from 110 colleges and universities and found that higher Advanced Placement performance on the English Language, Biology, Calculus AB, and U.S. History exams corresponded to higher first-year college grade point averages, higher second-year retention rates, and attendance at more selective institutions.

Graduation rates have been on the rise in recent years, and contrary to the public’s knowledge, many factors accompany these inflated graduation rates. This study indicated that the less successful schools had a higher graduation rate than the more successful schools. Though the difference was minimal (0.64), it should call into question why the more successful schools did not have a much higher graduation rate. In numerous instances, however, success ratings are based on other factors than graduation rates. Schools and districts are held accountable; therefore, they need to demonstrate success and growth whenever possible. Schools can manipulate graduation rates to some extent, as 33% of Tennessee’s 2015 graduates did not earn the required credits but still received a diploma (Farmer, 2017). Additional manipulations include students taking credit recovery courses or not passing state exit exams. Furthermore, less successful schools may have lower expectations than the more successful schools. More successful schools reported having nearly 50% of the 12th grade population enrolled in at least one Advanced Placement course, so these schools can hold the students that take these courses to higher expectations. Conversely, less successful schools reported 15% of their 12th graders took Advanced Placement courses. Graduation rates may indicate the number of diplomas schools are
distributing, but this may not accurately inform the public of the schools’ success in preparing students to be college-ready.

After a comprehensive review of all data and statistical tests, this study confirms a correlation between schools with successful Advanced Placement programs with higher ACT scores, as well as preparing students to be college and career-ready. Studies indicated that taking Advanced Placement has a positive impact on performance and retention of college students (Mo et al., 2011; Klopfenstein & Thomas, 2009). Additionally, research (Warne, 2017; Wojonowski, 2011) stated that students who participate in Advanced Placement courses benefit by outperforming non-Advanced Placement students in academic achievement, which includes college admissions tests. After reviewing the literature, I expected the amount of increase in the successful schools’ average ACT and less successful schools’ average ACT to show a greater margin. While there was a three-point difference in the average ACT composite score of the two sets of schools, the more successful schools should be expected to have higher ACT scores. Many factors may impact schools’ failure to report high ACT composite scores. In 2014, ACT reported students’ most recent ACT score as opposed to the students’ highest ACT score (Tennessee Department of Education, 2018). Data from this study was gathered from the 2014-2015 report card, prior to Tennessee’s emphasis on encouraging early post-secondary opportunities and requiring students to take the ACT to graduate. While there could be potential errors in data reporting, students may now be utilizing additional preparation opportunities for the ACT and college-readiness other than enrollment in Advanced Placement courses. Students may take ACT preparation courses, take dual enrollment classes through local colleges, or enroll in summer institutions on college campuses. Irrespective of which avenue students take to
prepare themselves for college, they likely internalize the will to succeed and find the
opportunities that most suit them and their learning needs.

**Null Hypothesis and Hypothesis**

The null hypothesis stated that there would be no significant difference in ACT scores
and graduation rates of schools that have successful Advanced Placement programs compared to
schools that do not have successful Advanced Placement programs. The hypothesis stated that
schools with successful Advanced Placement programs would have higher ACT composite
scores and higher graduation rates.

As evidenced by the research conducted in this study, the null hypothesis is partially true.
Schools with more successful Advanced Placement programs had a higher ACT composite score
and met more of the ACT benchmark scores. However, the schools with less successful
Advanced Placement programs had a higher graduation rate than the schools with the more
successful Advanced Placement programs. This study provided insight into the Advanced
Placement program and proxies that are utilized as college-readiness factors.

**Strengthens and Weaknesses of Research**

While this study provided meaningful insight into college readiness, research was limited
to one state. Advanced Placement is a nationally-recognized early post-secondary opportunity,
and ACT scores and graduations are utilized nationally as college-readiness factors.
Furthermore, with Advanced Placement being a nationally-recognized early post-secondary
opportunity, there are few sources that report on the program’s success at the state, district, and
school levels. The College Board issues an annual Advanced Placement Honor Roll, which
includes the criterion of increasing participation in numbers and minorities, as well as improved
performance (AP District Honor Roll, 2018). The Advanced Placement Honor Roll does not
showcase schools more than once. Furthermore, while *U.S. News and World Report’s* 2017 Best High Schools includes the factor of college readiness utilizing Advanced Placement as its readiness indicators, there are other criteria required to receive a gold, silver, or bronze ranking. Rigor within individual Advanced Placement courses is also a weakness of this study. There are no indicators for teachers’ level of knowledge on a subject or the amount of educator training in a subject, which can lead to varying experiences in the classroom. While the study is limited in some respects, it also provides beneficial information.

Although Tennessee was the only state utilized for this study, this research provides greater insight for individual districts and schools because Tennessee is now encouraging schools to offer additional early post-secondary opportunities, such as dual enrollment courses, where high school partner with local colleges, Advanced Placement, and statewide dual credit. Students may choose which early post-secondary opportunity is the most beneficial, most interesting, and best option for their career path.

Tennessee also mandates the ACT as a graduation requirement. In comparison, the ACT is an effective representation for college and career-readiness because many high schools and colleges use the ACT to assess students’ readiness. Finally, this study supplements the College Board’s findings that Advanced Placement is a successful early post-secondary opportunity that can be offered to students. While this study provides readers with extensive information regarding college-readiness factors and the Advanced Placement program, the matched Tennessee schools used in this study proved to be a weakness. There were only four of the 17 matched schools that were within 10% of each other for socio-economic status of students, suggesting future studies with a potential for a more direct match need to be conducted to obtain more accurate measures.
**Future Research**

It is likely that Advanced Placement alone is insufficient to effectively prepare students for college; students must begin with strong elementary and middle school education. However, there are limited studies on Advanced Placement and college-readiness. Nevertheless, it is believed that effective implementation of Advanced Placement courses can provide students with a rigorous curriculum that aid students in being college-ready. Additionally, while the College Board provides educators with the rigorous curriculum, educators should take every opportunity to better prepare themselves to aid in their students’ successes.

Although the College Board audits individual teacher’s syllabi, no prerequisites exist to teach the Advanced Placement courses, which can lead to varied experiences and performance in Advanced Placement courses (Challenge Success, 2013). Meanwhile, Advanced Placement teachers are encouraged to register for professional development on the College Board’s website (Donald, 2013). Accordingly, further research should be conducted to provide a more comprehensive study of educators teaching the Advanced Placement courses. It is the responsibility of the educator to possess an in-depth understanding of the content, so he/she can provide students with a rigorous workload that prepares them for their first years of college.

While there is no flawless measure for college readiness, the ACT is an achievement test that many high schools utilize to determine college readiness (Education Commission of the States, 2014). Though the ACT is utilized nationally, a worthwhile study could investigate or aid in developing a more accurate measure of college-readiness. Whereas some students excel on standardized tests, this does not ensure that they are college-ready. In addition, a nationally-utilized college-readiness indicator could aid in efficient implementation of a nationally aligned curriculum. High school teachers should prioritize preparing students for college and their
careers. Established national standards would allow educators to better prepare their students. Although some institutions will not grant permission for researchers to access student data, tracking individual high school students and their success in Advanced Placement courses could further develop this study. Warne, Larsen, Anderson, and Odasso (2015) stated it is more important to assess the students’ pass rates on Advanced Placement exams and not just their enrollment in the courses. Students could be tracked freshman to senior year, tabulating the number of Advanced Placement courses taken and the exam pass rate of students. Further information could be collected in assessing these students ACT scores and first year in college.

With a passing Advanced Placement exam score, students can save a substantial amount of money and time in college. Though this would require the collection of student records, a worthwhile study should be conducted to determine the average savings per student at his/her desired university with a passing Advanced Placement exam(s) score. As college becomes more competitive and expensive, early post-secondary opportunities, like Advanced Placement, could aid students in their accelerated academic progress in college.

While Advanced Placement has been an effective early post-secondary opportunity since its implementation in the 1950s, much of the literature about the program stems from the College Board. Further research can aid in establishing the program’s success or lack of success in aiding schools in determining which post-secondary opportunities are the best fit for their students.

**Recommendations**

Though there are many early post-secondary opportunities for students to choose from, Advanced Placement is a nationally-recognized option. Accordingly, I recommend that all high schools offer students early post-secondary opportunities. While Advanced Placement is not the only valuable early post-secondary opportunity, students may take an Advanced Placement test
even if the school does not offer the course. While Advanced Placement opportunities should be communicated to all students, it is recommended that schools evaluate each early post-secondary opportunity to determine which opportunities are most beneficial to students. Furthermore, if schools offer several early post-secondary opportunities (Advanced Placement, Dual Enrollment, Statewide Dual Credit, etc.), these schools should make every effort to diversify the courses to provide students the most opportunities to earn the most credits. It is also recommended that schools provide teachers with the necessary training to properly instruct an Advanced Placement course. Dual Enrollment teachers are typically professors with a graduate degree in the appropriate subject area. Presently, Advanced Placement teachers are merely required to submit their syllabi for approval. It is recommended that Advanced Placement teachers attend a new teachers workshop hosted by the College Board prior to instructing their first class and receive additional training as the College Board redesigns the curriculum of each course. Lastly, I would recommend that students who have taken one Advanced Placement course take additional Advanced Placement courses.

Final Thoughts

This dissertation developed as a colleague and I, who also teaches Advanced Placement, discussed the impact of Advanced Placement courses on our students and their college-readiness. Over the last six years, our school has been adding one Advanced Placement course each year to provide students with additional post-secondary opportunities other than Dual Enrollment courses that are currently offered. It is imperative that educators provide students with every opportunity to succeed, particularly in Tennessee, where schools are encouraged to offer additional post-secondary opportunities, taking the ACT is required to graduate, and college is becoming more affordable due to the numerous scholarship opportunities.
I began this dissertation by analyzing how I approach teaching my Advanced Placement course. I find myself teaching most of the content more in-depth, though I still need to provide the students more opportunities to encounter challenging questions and think more analytically. While I do have a minor in the subject I teach and participated in the initial training for the course, I have not returned for further training as my subject’s curriculum continues to change. I remained current with the current standards and textbooks; I am still responsible for providing students with a college-level experience in the classroom. While students can encounter a variety of instruction in Advanced Placement courses, this process has encouraged me to not only challenge my students, but also challenge myself to be a life-long learner. This process has also challenged me to continue to provide my students with a quality education and better prepare them for the future.

Furthermore, if students can take full advantage of Advanced Placement courses, hopefully they will see that while being in the class is an opportunity to prepare for college-level work, they will also prepare to their best ability for the exam. When students pass the Advanced Placement exam, they experience more success (Warne, Larsen, Anderson, and Odasso, 2015). Being successful in Advanced Placement courses and passing Advanced Placement exams require a different caliber of student. Students must possess some intrinsic motivation to study, complete reading outside of school, and prepare for tests. Though there are extrinsic motivators, such as credits earned and money saved, intrinsic motivators are necessary for students to perform well in the Advanced Placement classes and on the Advanced Placement exams.

This experience prompted me to examine the rigor I present in my classes (Advanced Placement or College Prep). My job is to prepare students for college or their careers, and
maintaining current educational practices (ex. most effective early post-secondary opportunities) allows me to provide my students with the best educational opportunity possible.
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Appendix A

Successful Schools Data
## Appendix A - Successful Schools Data

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<th>School Pseudo #</th>
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<th>Schools ACT composite</th>
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W-White, A- Asian, B-Black, H-Hispanic
Appendix B

Less Successful Schools Data
## Appendix B - Less Successful Schools Data

<table>
<thead>
<tr>
<th>School Pseudo #</th>
<th>Graduation rate</th>
<th>Schools ACT composite</th>
<th>% of 12 graders who passed at least one exam</th>
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<th>School Pseudo #</th>
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<th>Size</th>
<th>Percent of Economically Disadvantaged</th>
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W-White, A- Asian, B-Black, H-Hispanic