AN EXAMINATION OF RETENTION AND CUMULATIVE GRADE POINT AVERAGES FOR DUAL ENROLLMENT STUDENTS AT PUBLIC TWO-YEAR INSTITUTIONS OF HIGHER EDUCATION IN TENNESSEE

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AN EXAMINATION OF RETENTION AND CUMULATIVE GRADE POINT AVERAGES FOR DUAL ENROLLMENT STUDENTS AT PUBLIC TWO-YEAR INSTITUTIONS OF HIGHER EDUCATION IN TENNESSEE

by

Matthew Pryor Hunter

A Dissertation
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Major: Higher and Adult Education

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ABSTRACT

Postsecondary institutions are measured in part by their students' success and retention rates and seek to employ best practices with their students to prepare them for academic success. Federal, state, and local government programs have produced guidelines for preparing students who are academically ready to enter the workforce. Research findings demonstrate that most students are likely to take more than three years to complete associate degrees and up to six years to complete their baccalaureate degrees. Thus, students who participate in dual enrollment programs tend to complete their degrees sooner than those who do not participate in dual enrollment programs. Student success and retention rates have become issues of concern among stakeholders facing increasing pressure to prepare students adequately for college success and to minimize failure rates. Community colleges in Tennessee have embraced and implemented programs such as dual enrollment to increase students’ GPA scores and improve their retention rates.

The purpose of this quantitative non-experimental study was to compare the GPAs and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee. Subjects in this study were classified as entering first-time freshmen (30 or fewer hours) postsecondary students at Tennessee community colleges. Some of the students had been involved in one of the dual enrollment programs within the Tennessee Board of Regents (TBR) system and some not. Community colleges are vested in creating programs that allow students to have lasting success while pursuing an education at their respective institutions.

This study investigated the effectiveness of dual enrollment by comparing cumulative college GPAs and retention rates of dual enrollment students to non-dual enrollment students.
following the second semester at the thirteen community colleges in Tennessee. The following research questions guided the study:

**RQ1:** To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?

**RQ2:** To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

A quantitative research methodology with non-experimental comparative analysis was used in this study. This study collected quantifiable information to assess the differences between retention rates and GPA scores for freshmen in dual enrollment courses and those in non-dual courses following their second semester. The quantitative research methodology for this study focused on testing hypotheses and quantifying differences between independent and dependent variables. This included testing the differences between GPA scores and student retention.

Not only has the number of high school students taking dual enrollment courses increased dramatically over the last decade, but these students are also more likely than their peers to graduate high school, attend college, and earn degrees. Over 88% of the first-time freshmen in this study who had taken at least one dual enrollment course continued at a Tennessee community college after high school. Additionally, the findings of this study indicate that the median GPAs of dual enrollment students and non-dual enrollment students were statistically significant different. Students' high school GPA can be affected by dual enrollment classes. Dual enrollment can also affect college GPA scores because dual enrollment college course credits may be transferred onto a freshman's college transcript by colleges and universities.
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DEDICATION

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CHAPTER ONE: INTRODUCTION

The rise and emerging popularity of dual enrollment in the United States has elicited mixed reactions among scholars about its effectiveness in improving student performance. Dual enrollment refers to instances in which high school students enroll in college-level courses during high school to earn college credits and complete high school graduation requirements (U.S. Department of Education, 2019). Some proponents have noted that nearly half of the postsecondary institutions in the United States have adopted a dual enrollment approach to promote student academic success.

Dual enrollment students are an important and growing population in 21st-century higher education (Liu, 2019). The National Alliance of Concurrent Enrollment Partnerships (NACEP, 2021) noted that the number of students participating in dual enrollment increased from 1.2 million to 2 million between 2000 and 2017 and that these students constitute approximately 10% of the total student population in the United States. Other sources have reported a 7% growth in dual enrollments between 2002 and 2019 (New America, 2021).

Research has demonstrated that students who enroll in dual enrollment programs are likely to have higher grade point averages (GPAs) and retention rates in high school than those not enrolled in such programs. For instance, Austin and Pardo (2021) explored GPA and retention data from 3,500 dual enrollment students at 73 high schools across the United States. Their findings included: (a) retention rates for students in dual enrollment programs were three times higher than for those in conventional programs, (b) students in dual enrollment programs had obtained an average of 25 college credits, and (c) nearly 87% of the dual enrollment students went on to enroll in postsecondary institutions.
Christenson (2020) reported increased student participation in dual enrollment programs in North Carolina, resulting in higher retention rates for those students compared to others not in such programs. Comparable results were reported by Denecker (2020), who found that retention rates of students participating in dual enrollment programs was eleven times higher than students who were not exposed to postsecondary coursework during their high school education.

Similarly, in 2019, the U.S. Department of Education released the results of a national study on retention rates and academic attainment. This study noted that students participating in dual enrollment programs attained statistically significantly higher GPAs, averaging 2.81 compared to 1.89 for students who were not enrolled in dual enrollment coursework. There were also statistically significant differences in retention and persistence between dual enrollment participants and non-participants favoring those students taking dual enrollment courses.

However, some researchers have reported mixed findings regarding differences in student retention rates and academic outcomes for those participating in dual enrollment programs and those not exposed to dual enrollment coursework while in high school (Hemelt et al., 2020). For instance, Austin and Pardo (2021) conducted a quantitative study to investigate retention rates and academic outcomes among students who participated in dual enrollment programs and those who did not, and found no statistically significant differences in retention rates. However, there were statistically significant differences in the students’ academic attainment at the college level, with those in dual enrollment programs five times more likely to succeed in college than those who did not take part in dual enrollment programs (Austin & Pardo, 2021).

In a quantitative study, Mokher and Leeds (2019) noted that dual enrollment students had a higher retention rate in their first year compared to students who did not take part in dual enrollment programs. In addition, students who did not participate in a dual enrollment course(s)
after the first year of enrollment reported a higher retention rate in college. The criticism that some dual enrolled students don’t perform as well as others could also be linked to inadequate preparation of students for higher education in dual enrollment programs (Mokher & Leeds, 2019).

Similar results were also reported by Cherney et al. (2021), whose findings revealed that the slight differences in student retention rates in college (74.21% for dual enrollment compared to 73.90% for non) were not statistically significant. Given that the success of dual enrollment programs is traditionally measured using student retention and GPA (An & Taylor, 2019), Cherney et al. (2021) called for further research comparing student GPA and retention rates between dual enrollment and non-dual enrollment students across the United States. This study addressed this need and the data analysis gap in the current literature by comparing the college GPA scores and retention rates in dual and non-dual enrollment students in thirteen community colleges in Tennessee.

**Statement of the Problem**

Postsecondary institutions are measured in part by their students' success and retention rates (An & Taylor, 2019; Austin & Pardo, 2021) and seek to employ best practices with their students to prepare them for academic success. Federal, state, and local government programs have produced guidelines for preparing students who are academically ready to enter the workforce (Cherney et al., 2021; McManus, 2019). Research findings demonstrate that most students are likely to take more than three years to complete associate degrees and up to six years to complete their baccalaureate degrees (Mokher & Leeds, 2019). Thus, students who participate in dual enrollment programs tend to complete their degrees sooner than those who do not participate in dual enrollment programs (Mokher & Leeds, 2019). Student success and retention
rates have become issues of concern among stakeholders facing increasing pressure to prepare students adequately for college success and to minimize failure rates (Austin & Pardo, 2021). Educational institutions in several states have embraced and implemented programs to increase students’ GPA scores and improve their retention rates (Liu & Xu, 2019). One of the programs that has been adopted is dual enrollment (Austin & Pardo, 2021; Liu & Xu, 2019).

Although dual enrollment programs have become popular recently, there is limited quantitative research on their effectiveness in terms of course program retention and GPA scores (Liu & Xu, 2019). Limited research for students at community colleges makes it challenging to ascribe success rates (retention and GPA) to dual enrollment programs at community colleges (Hunter & Wilson, 2019; Lee et al., 2022). There is an inadequate body of recent research investigating GPA and retention rates between dual enrollment and non-dual enrollment students’ college outcomes at community colleges (Austin & Pardo, 2021; Hillman et al., 2018).

Proponents and opponents of dual enrollment programs have mixed speculations regarding the impact of dual enrollment on students' retention and academic outcomes (Lee et al., 2022). Critics of dual enrollment have argued that participating in college education while in high school is likely to decrease the quality of college education such as course rigor, teaching and learning, completion and persistence, etc. (Austin & Pardo, 2021). Supporters have contradicted this perspective by contending that dual enrollment programs are foundational in supporting high school students' academic success and college readiness (McManus, 2019; Zinth, 2021). Some, for example, have argued that dual enrollment participation supports marginal students in fulfilling higher academic standards, adds value in small schools, and promotes retention in high school, while others have suggested that dual enrollment programs increase career awareness and introduce students to college culture (Lee et al., 2022).
The problem addressed in this study is the scarcity of quantitative research-based evidence to support or rebut the differences in retention rates and GPA scores of dual enrollment and non-dual enrollment students (Austin & Pardo, 2021; Troutman et al., 2018). More specifically, this study sought to address this gap by examining data to compare college GPAs and retention rates of dual enrollment and non-dual enrollment students in the thirteen community colleges in Tennessee, because community colleges in Tennessee are the main gateway for delivery of dual enrollment courses. Additionally, many students choose the community college path post-dual enrollment because of the open admissions policy and the opportunity to have their community college courses paid for through TN Promise (Hunter & Wilson, 2019).

It is a challenge for postsecondary institutions to assist students in a positive transition from high school to the postsecondary environment. Research supports dual enrollment’s promotion of academic rigor, exposure to college-going processes, and the value associated with the completion of dual enrollment courses during high school that ultimately leads to greater success after high school graduation with regard to college GPA and retention (Austin & Pardo, 2021; Lee et al., 2022). Tennessee faces challenges as it promotes educational access and success to high school students to be mentally and socially ready for college-level rigor in their academic coursework (Tennessee Department of Education, 2018).

**Purpose of the Study**

The purpose of this quantitative non-experimental study was to compare the GPAs and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee. Subjects in this study were classified as entering first-time freshmen (30 or less hours) postsecondary students at Tennessee community colleges. Some of the students had
been involved in one of the dual enrollment programs within the Tennessee Board of Regents (TBR) system and some not.

Community colleges, like other schools, are focused on student success. Stakeholders, such as taxpayers in Tennessee, have a vested interest in the continued survival of the community colleges and the continued growth of dual enrollment programs across the state. Furthermore, community colleges are vested in creating programs that allow students to have lasting success while pursuing an education at their respective institutions.

**Research Questions and Hypotheses**

This research investigated the effectiveness of dual enrollment by comparing cumulative college GPAs and retention rates of dual enrollment students to non-dual enrollment students following the second semester at the thirteen community colleges in Tennessee. The following research questions guided the study:

**RQ1:** To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?

\[H_0: \text{There will be no statistically significant difference in student retention rates between first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.}\]

\[H_1: \text{There will be a statistically significant difference in student retention rates between first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.}\]
**RQ2:** To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

**H₀:** There will be no statistically significant difference between the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

**H₁:** There will be a statistically significant difference between the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

**Research Methodology and Design**

A quantitative research methodology with non-experimental comparative analysis was used in this study. Quantitative research designs are used to investigate study phenomena by gathering and analyzing quantifiable information. Likewise, this study collected quantifiable information to assess the differences between retention rates and GPA scores for freshmen in dual enrollment courses and those in non-dual courses following their second semester (Cypress, 2018; Stockemer et al., 2019).

Quantitative researchers may also seek to investigate the relationships between independent and dependent variables, exploring the impact that a study variable has on other variables (Cypress, 2018; Savela, 2018). This made a quantitative research methodology compatible with the current study that focused on testing hypotheses and quantifying differences between independent and dependent variables. This included testing the differences between GPA scores and student retention.
Significance

Dual enrollment programs throughout Tennessee continue to experience increased numbers of students participating in postsecondary opportunities before graduation from high school (McManus, 2019). However, even with an increased emphasis on dual enrollment programs by postsecondary institutions and K-12 systems, there is still opposition to the programs from policymakers, postsecondary and K-12 administrations, and the public (Hunter & Wilson, 2019). K-12 systems can offer these dual enrollment courses with the potential for postsecondary credit if the student receives an A, B, C, or D letter grade and receives similar high school credit for the course (Hillman et al., 2018).

This study adds to the quantitative research literature on dual enrollment college GPA, fall-to-fall retention outcomes, and their link to non-dual enrollment students (Hunter & Wilson, 2019). The analyses compare the retention rates of students who participated in Tennessee’s dual enrollment program to those who did not participate. This comparison is of value to both postsecondary and K-12 systems concerning state initiatives such as “Drive to 55” that seeks to increase the number of postsecondary students who graduate (Hunter & Wilson, 2019). For Tennessee to achieve the goals of this program by the target year of 2025, postsecondary and K-12 systems must exhaust all possible avenues by which students can achieve and acquire postsecondary credit.

In addition, Tennessee has begun offering Early Postsecondary Opportunities (EPSOs) to students. These opportunities are outlined in the state’s Move On When Ready Act of 2014 (Lee et al., 2022). This legislation includes specific requirements that must be addressed before students can graduate early from high school. However, because of the stringency of the requirements, such as completing all high school graduation requirements, college entrance
requirements, etc., it may not be possible for some students to graduate early and simply move on to postsecondary education (Hyde, 2020). Accordingly, these students may benefit from dual enrollment programs that allow them to take college courses by way of an admissions waiver even if they have not met high school GPA requirements to participate in dual enrollment coursework (Hunter & Wilson, 2019). EPSO guidelines also state that students must have taken at least four postsecondary level courses to receive the EPSO Diploma of Distinction (Hemelt et al., 2020). Again, this would ultimately mean that they would benefit greatly from dual enrollment programs to meet these requirements.

**Definition of Terms**

Dual enrollment programs have different meanings within K-12 and postsecondary institutions. For this study, the definition of dual enrollment comes from the Tennessee Student Assistance Corporation (TSAC), the state of Tennessee’s administrator for the dual enrollment programs.

**Dual Enrollment:** A postsecondary course, taught either at the postsecondary institution or the high school, by postsecondary faculty (any credentialed faculty, full-time or adjunct), which upon successful completion of the course, allows students to earn postsecondary and secondary credit concurrently (Tennessee, 2010).

**Dual Enrollment Grant:** A grant for students at an “eligible postsecondary institution that is funded from net proceeds of the state lottery and awarded to students who are attending an eligible high school and who are also enrolled in college courses at eligible postsecondary institutions for which they will receive college credit” (Tennessee, 2010, p. 2).

**Retention:** The practice of maintaining student enrollment in an institution until course completion or graduation (Hunter & Wilson, 2019).
Tennessee Education Lottery Scholarship Program: An initiative that provides financial awards to offset the cost of pursuing postsecondary education or a degree (Hunter & Wilson, 2019).

Tennessee HOPE Scholarship: “Scholarship for study in pursuit of an associate or baccalaureate degree at an eligible postsecondary institution that is funded from net proceeds of the state lottery” (Tennessee, 2010, p. 3).

Weighted Grade Point Average (GPA): Grade point average on a 4.0 scale calculated with additional points awarded for advanced placement, honors, or another similar type of rigorous coursework (Tennessee, 2010).

Assumptions

This study’s data have been obtained from College System of Tennessee (i.e., the Tennessee Board of Regents or TBR). The TBR collaborated with the researcher by providing the data required for this study. The documents provided by the TBR were original, accurate, and not altered in any way to affect their reliability, with the exception of removing identifying data. Regarding methodology, a quantitative research methodology with the ANOVA and Chi-square design was appropriate for investigating the groups’ differences in freshmen retention and GPA scores at the end of their second semester. This study assumes that dual enrollment is a main contributing factor for GPA and retention. This assumption could present a potential selection bias. However, it is noted that dual enrollment coursework does in fact provide a level of motivation for students who begin as their college coursework as dual enrollment was a choice for them and does provide a means for greater success (Hunter & Wilson, 2019).
Delimitations

The selected research problem and topic for this proposed study was a delimitation in and of itself. Dual enrollment includes postsecondary courses taught either at the postsecondary institution or the high school by postsecondary faculty (any credentialed faculty full time or adjunct), which upon successful completion of the courses, allows students to earn postsecondary and secondary credit concurrently. In this case, dual enrollment was studied only in reference to freshmen at Tennessee community colleges. The key areas of the study included student retention and GPA scores at the end of their second semester. This means that while there were other students taking dual enrollment courses, only the data from the end of the second semester of college course work was analyzed.

The theoretical framework adopted for this proposed study was also a delimitation to the research. Approaching and studying the current research problem through Tinto’s (1987) persistence theory implies that other theoretical models are excluded and not applicable, but that is not the case due to the large scope of theoretical models that could be applied to this study. The selected quantitative research methodology also delimited this study because other research methodologies and designs were not used to investigate the current research problem, such as qualitative or mixed methods methodologies and designs.

Limitations

This study did present some limitations. The study evaluated only first-time, full-time, first-year college students from thirteen public two-year community colleges in Tennessee, but no other community colleges across the nation. Two-year institutions have been selected to prepare students to transition to a four-year institution (Hunter & Wilson, 2019). Four-year public and private schools provide dual enrollment opportunities at their respective colleges or
universities, but four-year institutions were not included. The exclusion of four-year institutions in the analysis makes applying the findings to such institutions difficult.

   Another potential limitation relates to the sample size. Although quantitative studies typically use a larger sample size than qualitative studies, the sample size of 8,514 in this study could be considered a limitation, as similar studies have larger sample sizes. In addition, the limited sample size likely affects the generalizability of the results to other settings.

   Time constraint is another key limitation related to the study. As an academic study, it had to be completed using only one academic high school graduating cohort to allow for consistency from academic year to academic year. If multiple academic years had been evaluated, data would not be accurate when looking at data points such as fall-to-fall retention rates. Additionally, utilizing only one academic year ensured that extraneous conditions, such as the COVID-19 pandemic, were not evaluated in order to provide more concise pre-pandemic data analysis.

Summary

   Based on documented research, programs like dual enrollment can provide a foundation for student retention at postsecondary institutions (McManus, 2019). Additionally, there is value associated with the potential for students to achieve a higher GPA as a result of participating in dual enrollment (Hunter & Wilson, 2019). However, despite documented research, there continues to be criticism of the dual enrollment program in the state of Tennessee and its direct effect on low student retention rate (Hemelt et al., 2020; Hunter & Wilson, 2019).

   The second chapter of this study provides an overview of previous literature on dual enrollment. The theoretical framework set forth by Tinto and goal setting theory guided the research in this process. Chapter Two also provides historical background on the state of
Tennessee’s dual enrollment program as a whole and how the program has moved forward since its conception in 2005.
Dual enrollment programs in higher education offer qualifying high school students the opportunity to take college credit-bearing courses during their high school years. Although these programs have operated for a few decades, research from the last ten years has begun to question the rigor of the courses (An & Taylor, 2019). For students to matriculate successfully to college as full-time freshmen with some postsecondary credit, they typically have participated in some type of early postsecondary opportunity such as dual enrollment, AP courses, local or statewide dual credit, etc. (Hunter & Wilson, 2019). There are several ways that high school students may achieve these objectives, such as advanced placement or international baccalaureate programs, dual credit by examination, and dual enrollment programs. Of these, high school students can use academic credit programs by utilizing a dual enrollment program if their high school has partnered with a higher education institution (Hemelt et al., 2020). In Tennessee, the dual enrollment opportunity is coupled with Tennessee’s Educational Lottery Scholarship that provides funds for qualified students (McManus et al., 2019).

**Overview of Dual Enrollment**

Increasing numbers of high school juniors and seniors that are participating in dual enrollment programs to earn college credit before high school completion and the research on higher education reinforce the importance of strong relationships with high schools to foster student success (Hunter & Wilson, 2019). For example, Lin et al. (2020) reported that high schools may help prepare students for post-high school education by introducing them to dual enrollment programs. There is also an increasing need for greater attention to preparing high school students with the skill sets needed to succeed in the college classroom (Lawrence & King, 2019).
Dual enrollment is a general term describing programs in which students can take college credit coursework at a higher education institution while enrolled at the same time in a program to acquire high school credit for graduation (Lin et al., 2020). Some dual enrollment programs focus on sending college teachers to the high school campus. In contrast, others focus on credentialing qualified high school teachers to teach dual enrollment courses at the high school campus (Kremer, 2020). Other programs allow for additional scenarios, including having students from high school travel to the college campus to take courses where dual enrollment and traditional college students mix in the classroom (Lawrence & King, 2019; Lin et al., 2020). Open access at the community college for dual enrollment students allows them to mix with the general student population, encouraging them to reach the highest level of academic success (Cherney et al., 2020; Kremer, 2020).

Over the last 20 years, there have been increasing numbers of students who are ready and qualified for college coursework while in high school and who have the incentive to access the college system (Hunter & Wilson, 2019; Lin et al., 2020). In addition, many college-bound students utilize a college articulation agreement, a formal document or agreement between two institutions that allows for seamless transfer credit options provided by a single-system entity, such as the Tennessee Board of Regents System and the Tennessee Transfer Pathway (Cherney et al., 2020). This allows students to begin degrees at community colleges and transfer the credits to four-year institutions (Hunter & Wilson, 2019).

Scholars such as Lawrence and King (2019) have also reported that recent interest in dual enrollment programs could be attributed to students hoping to obtain college credits before starting their postsecondary education. College preparedness is another reason for the increased interest in dual enrollments. For instance, Stein and Klosterman (2020) reported that student
preparation to enter the postsecondary environment is a major indicator of postsecondary completion or graduation. In a longitudinal study on the high school and college performance of students, Ison (2022) found that students with dual enrollment experience had a degree completion rate of 49% compared to 71% of those with no remedial or dual enrollment participation and called for stakeholders in learning institutions to promote college preparedness to facilitate student retention until completion. Given those findings, there is a need to understand differences in the rates of student retention and success for dual and non-dual enrollment participants (Ison, 2022).

There are 47 states and the District of Columbia with dual enrollment policies (Rivera et al., 2019) although these policies vary widely. Approximately 44% of states in the nation have comprehensive policies with little restriction in courses, liberal credit-granting policies, and minimal (or no) student fees (Rivera et al., 2019). 52% of the states have limited policies that do not provide student tuition funding, and have more restrictions on credit and student access (Rivera et al., 2019). These differences arise when there are no formal guidelines regarding how an individual state adopts dual enrollment (Hunter & Wilson, 2019). This is complicated by the lack of a centralized state or national database of dual enrollment policies (Rivera et al., 2019).

Funding for dual enrollment programs continues to be difficult as states work to improve access for students to such programs. For example, Pennsylvania has a statewide dual enrollment program currently on hold because of a lack of funding (Rivera et al., 2019). Rivera et al. (2019) outlined various sources of funding: Students/parents in 44% of states, K-12 systems in six states, postsecondary institution funding in three states, state departments of education in three states, multiple funding sources in four states, and no clear avenue for funding dual enrollment programs in six states (2019). The shift to performance-based funding for many learning
institutions, which is how a large part of the institutional budget is comprised, has created an increased need for schools to improve student success rates in exchange for funds from the government (Xu et al., 2021). With such funding mechanisms, learning institutions have adopted programs such as dual enrollment to promote student retention and success to attract government funding (Alsup et al., 2020). In addition, the high cost of postsecondary education has prompted some students to view free or reduced-cost dual enrollment programs as a means of decreasing their expenses because they might graduate sooner (Hunter & Wilson, 2019).

**Dual Enrollment in the United States**

Historically, the national push for dual enrollment and increased postsecondary education opportunity traces back to the Soviet Union’s launch of the Sputnik satellite in 1957. This Soviet milestone created great fear that education in the United States was lagging behind other countries. In early 1966, the Coleman report (U.S. Department of Education, 2019), formally adopted with the title *Equality as Educational Opportunity*, identified key inequalities in the United States education system (Atteberry & McEachin, 2020). The federal government expected that the Coleman report would identify segregation as a key issue and promote equal funding for Black American students (Atteberry & McEachin, 2020). Coleman extended his commission’s mandate, however, by surveying nearly 600,000 students regarding their schooling experiences and found that equal funding for students was less of an issue than had been anticipated (Hu & Yuan, 2021). The fundamental results of the Coleman report underscored the importance of students' family educational backgrounds, the effect on students' achievement made by specific students who excelled academically, and the significant achievement gap between Black and white students (Hu & Yuan, 2021). In this report, Coleman asserted that social inequalities in the United States played an important role in students’ poverty compared to
regional resources. Since its adoption in 1966, there have been efforts by scholars and stakeholders to close the gaps identified in Coleman’s report (Atteberry & McEachin, 2020). The most recent was research by Morgan (2016) who found that despite educational milestones such as each degree attainment witnessed in the last five decades, the gaps identified by the Coleman report still existed (cited in Hu & Yuan, 2021).

In 1960, in the midst of concerns of a weak American educational system and its national risk, Admiral James Watkins, then U.S. Secretary of Energy, officially commissioned research on strengthening educational programs. The findings revealed that the U.S. had made considerable efforts to increase equal educational opportunities for minority groups. As a result of Watkins’ research in 1960, President Obama officially signed, in 2009, the American Recovery and Reinvestment Act, authorizing $4.3 billion to the Race to the Top fund. This was one of the most significant investments in the United States to promote education and academic degree completion.

Dual enrollment programs have witnessed significant growth in the past five decades. In a study by the National Center for Educational Statistics (NCES, 2022), investigators found that between 2010 and 2019, dual enrollment participation in the U.S. had doubled to nearly two million students annually. Growth rates in dual enrollment programs were significantly higher for racial minorities, rural schools, and schools in the Northeast and Southeast regions (NCES, 2022). As of 2017, nearly 11% of high school juniors and seniors completed dual enrollment courses, and by 2018 almost 83% of public schools were participating in dual enrollment processes (NCES, 2022).

Since 2010, the number of public and private high schools taking part in dual enrollment increased from 14,900 to 18,000. As per the NCES (2022), in 2019, 35% of entering high school
students participated in the dual enrollment process as a junior and/or senior and statistics indicated widespread inequalities among racial groups enrolled in dual courses. The findings revealed that 39% of students participating in dual enrollment programs were identified as white, 38% Asian, 27% Hispanic, and 25% African American (NCES, 2022).

Research findings also indicated that parents’ educational background could influence student participation in dual enrollment programs, with nearly 43% of students in dual enrollment programs had parents who had earned a bachelor’s degree or higher compared to 26% of students whose parents did not have advanced education (NCES, 2022). The region where students live could also influence their participation in a dual enrollment program. For example, 79% of all dual enrollment students participated in dual enrollment programs on their high school campus versus on a college campus, and students who lived in cities where dual enrollment programs were more prevalent were more likely to consider enrolling in postsecondary programs. The findings also indicated that students in remote areas had a higher frequency of taking online courses versus those students who had access to face-to-face options either on their respective high school campus or on neighboring college campus (Hart et al., 2019).

As dual enrollment programs continue to be adopted, support has continued to grow, as well. In November 2018, ACT provided four primary recommendations for guiding policy and increasing dual enrollment in the United States. These were:

- to increase funding and other incentives for students,
- to improve training and develop high school teachers’ competence in dual enrollment programs,
• to prepare students for the challenges of early college work through regular monitoring of their progress, and

• to provide access to educational opportunities through online options (ACT, 2018).

In 2016, President Obama officially invoked section 487(B) of the Higher Education Act to permit experimental access to federal grants by all high school students regardless of their backgrounds (U.S. Department of Education, 2019). Additionally, the Go To High School, Go To College Act of 2017 was proposed (unsuccessfully) to increase the number of students attending postsecondary institutions. Overall, the evidence reviewed in this section indicates that dual enrollment programs in the United States have attracted scholars' attention, and their research suggests that more students are enrolling in such programs for benefits such as transferable credits when attending college.

**Dual Enrollment Policies: Virginia and Ohio**

To understand the dual enrollment systems utilized in various states and compare them to Tennessee, it is necessary to discuss the policies that regulate these programs. Virginia and Ohio are two useful states for exploring different approaches to dual enrollment, specifically because of contrasts between the programs and their comparable student enrollment numbers for dual enrollment programs (Horn et al., 2018). Although other states have had robust dual enrollment programs, such as Texas and North Carolina, the program requirements do not provide sufficient contrast to Tennessee’s program (Hillman et al., 2018). Virginia and Ohio are examples of states implementing successful dual enrollment programs to compare to Tennessee’s program (Horn et al., 2018).

Both Virginia and Ohio guidelines endorse dual enrollment programs that offer qualified students the opportunity to earn both high school and college credits at the same time for
successful completion of qualified courses given on either a high school or a college campus (Denecker, 2020). However, outside of this general outline, the disparity in policy is both extensive and noteworthy (Horn et al., 2018). The most noticeable distinction is that in Virginia, all dual enrollment is provided via the twenty-three institutions of higher learning that the Virginia Community College System (VCCS) encompasses. In Virginia, this distinctive service area viewpoint has created a situation in which school districts and high schools are aware of the single entity in charge of dual enrollment in their region. In comparison, high schools in Ohio can have multiple institutions of higher learning providing dual enrollment courses.

In Virginia, high school juniors and seniors are normally the only students eligible for these programs. Rather than dual enrollment qualification depending on high school GPA, student eligibility in Virginia is contingent upon a student’s acceptance into college-level classes based on the subject area placement exam performance, along with a reference from the student’s high school (Alsup et al., 2020). Even though opportunities for dual enrollment in Ohio seem to be available to more students than in Virginia with regard to access and admissions requirements, each institution of higher learning in Ohio can require students to meet additional eligibility requirements (Denecker, 2020).

A final noteworthy dissimilarity is the ability to transfer credits earned while in the dual enrollment program. Ohio’s policy on transferring credits is more centralized and consistent in comparison to Virginia’s policy. Ohio has designated specific courses as “Ohio Transfer Module” (OTM) or “Transfer Assurance Guarantee” (TAG) (Denecker, 2020). Students participating with OTM are more likely to have their courses accepted as the previous credits contribute to their aggregate high school grade point averages, whereas TAG courses do not
(Denecker, 2020). Many courses can have both designations, thereby satisfying requirements for both general education and a major (Denecker, 2020).

Given that some four-year institutions insist on college level courses to satisfy requirements for general education and majors at the collegiate level, this can be a challenging situation (Hillman et al., 2018). For instance, one four-year institution of higher learning may accept ENG 111 as satisfying a college level general education requirement for English, while a different institution may not accept ENG 111, but require ENG 101 (Horn et al., 2018).

**Academic Success and Dual Enrollment**

Student preparedness, defined as a student being ready to enter postsecondary education with ease (versus a student with no preparedness that will require additional effort on the part of the postsecondary school and the student) is an important determinant of educational attainment in higher learning institutions. As a result, stakeholders have embraced several strategies to prepare students adequately for higher education. Hunter and Wilson (2019) investigated the relationship between students’ retention and academic attainment and their preparedness for college. A sample of 332 students took part in the study. The analysis indicated that how well students are prepared to tackle challenging courses in college level coursework, with regard to academic rigor and student maturity, determines their academic outcome and retention rate. Hunter and Wilson (2019) found that students unprepared for complex programs in college had no academic motivation, leading to low academic performance, a high dropout rate, and a low retention rate.

Several studies have investigated the link between persistence and dual enrollment. For instance, Kolvoord et al. (2019) conducted a qualitative study to examine perceptions toward dual enrollment programs in the United States. They conducted interviews with 37 teachers and
found that students' preparedness through dual enrollment programs increased their persistence rates in different programs until graduation (Kolvoord et al., 2019). According to Hart et al. (2019), exposing students to dual enrollment courses improved their college preparedness and ability to handle challenges linked to a college education. This increased their self-efficacy in persisting in their programs until completion. However, non-dual students had low self-efficacy, given that they had no prior exposure to college work, leading to low retention and graduation rates (Hart et al., 2019).

Lile et al. (2018) also reported comparable results in 2018. Their findings indicated that dual enrollment students found it less challenging to adjust to college education given their previous experience, leading to high retention and academic outcomes (Lile et al., 2018). On the contrary, non-dual enrollment students found it challenging to adjust to the college environment, given their lack of exposure to such programs while in high school (Lile et al., 2018). This led to low retention rates and decreases in academic performance as measured by GPA. While Kolluri (2018) extended previous findings regarding the influence of dual enrollment programs on students’ persistence, their results were limited to one geographical region and recommended further research to replicate their findings using a diverse population.

Other scholars have also emphasized improving student retention rates at postsecondary institutions through dual enrollment programs. Xu and Dadgar (2018) found that dual enrollment programs played an important role in preparing students academically for their postsecondary education, and Gibbons et al. (2019) also investigated the benefits of dual enrollment programs. Such benefits included increasing students' academic performance and minimizing challenges when transitioning from high school to college. In addition, Gibbons et al. (2019) indicated that
dual enrollment programs are cost effective, time saving, and increase educational opportunities for students in different regions.

Comparable results were reported by Franke and Bicknell (2019). Their findings revealed that students with prior dual enrollment experience found it less difficult to adjust to a college environment, resulting in high retention rates and academic outcomes. However, this was not the case for students without prior experience of dual enrollment programs, who found it challenging to adapt to the college environment (Franke & Bicknell, 2019). In sum, it can be argued that student retention rate and academic outcomes depend at least partially on the student’s preparedness to handle complex college work.

Retention rates are often used as a measure of institutional success (Hunter & Wilson, 2019). Students who exercise dual enrollment options have a greater chance of matriculating to a community college or a four-year university than their non-dual enrollment peers (Hyde, 2020). Additionally, dual enrollment students tend to have higher GPAs and retention rates because of increased academic rigor (Hillman et al., 2018). Based on current trends in dual enrollment programs and retention rates as a measure of institutional success, dual enrollment programs in higher education warrant further research.

The effectiveness of dual enrollment programs in community colleges must be examined within different demographics, for example, how rural or metro areas can impact the effectiveness of dual enrollment programs on how well a student navigates postsecondary instruction leading to viable employment. Moving students toward success in today’s job market has become the main driver in modern school settings (Bowman et al., 2018). Accordingly, high schools wish to provide their students access to rigorous coursework (Hart et al., 2019), but might not have the tools to do so (Denecker, 2020). Dual enrollment programs allow students to
have access to programs that high schools would otherwise be unable to provide (Denecker, 2020).

Academic success can be measured in different ways. For this study, academic success was measured by: (a) the first-time freshman fall-to-fall retention rates of students who participated in dual enrollment courses, (b) students obtaining a degree at the community college, or (c) students transferring from community college to a four-year institution. As in many other research studies, academic success was also measured by first-year student GPA (Hillman et al., 2018).

Dual enrollment programs bond the curriculum of high school with that of college curricula. This helps students prepare for those academic challenges as entering first-year students at postsecondary institutions (Hart et al., 2019). Along with readiness, dual enrollment programs offer students the opportunity to challenge themselves and their academic ability through increased rigor not readily found within most high school curricula (Lin et al., 2020).

Researchers cite multiple benefits associated with dual enrollment, including academic rigor, academic success, college readiness, and an easier transition from high school to college (Gibbons et al., 2019). Along with these benefits, there are tuition and cost savings, time savings when curricula can be mastered earlier, and increased educational opportunities for those students that, at one time, may not have had the opportunity to access college-level coursework during high school, such as those in rural areas (Hart et al., 2019).

Studies have shown that students who participate in dual enrollment programs are likely to have higher academic attainment than non-participants within higher education. For instance, Lin et al. (2020) reviewed data from 1,500 students who graduated from over 30 institutions in the United States. The findings indicated that dual enrollment students had earned an average of
25 more credits, 25% had earned an associate degree, and 85% continued with their postsecondary studies successfully. Lin et al. (2020) also found that dual enrollment programs helped students to respond to challenges in the college environment whereas students who did not participate in dual enrollment programs experienced more frequent issues matriculating to postsecondary.

Additional research has shown that dual enrollment programs lead to students' overall academic progress, given their previous exposure to college work. In addition, participating in dual enrollment programs has been linked to higher GPAs and retention rates among students compared to non-dual enrollment students (Hart et al., 2019). While researchers have made a considerable effort to investigate the impact of dual enrollment programs on students, there is still the need to replicate these findings using the most current data. Therefore, this study addressed that gap in the literature by investigating community college retention rates and academic outcomes (college GPA) for students who participated in dual enrollment programs versus those who did not participate in such programs (Hunter & Wilson, 2019).

Criticisms of Dual Enrollment

Although there are several proven benefits of dual enrollment, dual enrollment programs have been criticized for various reasons (Liu & Xu, 2019). Both college and K-12 faculty members have expressed concerns about a potential lack of quality instruction when the course is taught on the high school campus, and the potential lack of rigor when dual enrollment courses are taught by unseasoned faculty, away from the traditional campus environment (Hart et al., 2019). Despite the criticisms and potential downsides of dual enrollment programs, research continues on the factors related to the success of dual enrollment students compared to students who do not participate in dual enrollment.
Credit Transfer Difficulties

Suppose students participating in dual enrollment while in high school choose to not continue their college careers where they received dual enrollment credit. In that case, they may find that their credits are not transferrable to other universities, although most colleges and universities agree to take dual enrollment credits in transfer (Martinez, 2018; Troutman et al., 2018). Liu & Xu (2019) found that nearly 12% of credits obtained by dual enrollment students were not used during their college registration because the dual enrollment course(s) were not applicable for the student’s chosen major of study. The non-transferability of previously earned credit to college student registration may also increase dropout out rates (Wecker & Wilde, 2020).

Students who have gone through dual enrollment programs often express frustration regarding transferring credits, despite having positive initial perceptions of the program (Westwick et al., 2018). For example, one student believed that the college level dual enrollment courses would help her/him enter college as a sophomore rather than as a freshman; however, some of those courses did not transfer. Most students understood that some of the credits cannot be transferred to college or used to facilitate their admission to colleges (Westwick et al., 2018).

Negative Interactions with Others

Negative interactions with other individuals while on campus have also been deemed a minus concerning dual enrollment. Lile et al. (2018) explored students’ perceptions toward dual enrollment programs, and some students noted that their high school peers thought the dual enrollment students believed they were special because they were taking college-level classes. Lile et al. (2018) also found that some students remember experiencing dirty looks and demeaning remarks from college students. However, it was not clear why the researchers
hypothesized that these college students felt threatened or were upset that high school students were taking up space in the college classes. In addition, the researchers also reported that there were challenges in social interactions among dual enrollment and non-dual enrollment students (Ison & Nguyen, 2021).

Ison and Nguyen (2021) also investigated challenges encountered by instructors in dual enrollment programs. Their results indicated that the instructors were not confident about teaching college courses to high school students, and questioned the high school student’s capacity to absorb such content (Ison & Nguyen, 2021).

Students have also mentioned feeling detached from the college community and these thoughts of alienation may lead to doubts about fitting in at the institution as actual college students. For example, McWain (2018) found that some students chose or were enrolled in classes that had material they did not previously know. Although they passed the courses, they did not feel accepted or welcomed into the community.

Feeling detached from the community may cause students to not take advantage of resources available to them (Cram & Béjar, 2019). For instance, Contreras and Fujimoto (2019) found that students chose not to obtain tutoring help or study in the library. Alternatively, An and Taylor (2019) established that others simply could not avail themselves of the resources available at the college because they were not there full time. All of these problems resulted in negative experiences and are factors that dual enrollment program organizers should consider when creating these programs (Contreras & Fujimoto, 2019).

**Limited Support Systems**

Students in a dual enrollment program scrutinized by Adkins et al. (2021) felt that they did not receive enough support to ensure they could complete the program. For example, high
school personnel rarely communicated with the students regarding their dual enrollment courses after students registered for classes (Adkins et al., 2021). Given the study’s findings, it was possible that school counselors did not conduct due diligence to ensure that students were counseled on benefits and challenges of dual enrollment programs (Adkins et al., 2021). The implication was that students received minimal guidance on the program and found it difficult to decide whether to join the dual enrollment program. In addition, although dual enrollment programs have been linked to high graduation and student retention rates, there are concerns that juggling between high school and college programs presents an additional burden to students, and those who cannot manage the increased workload may fail to achieve the required high school credits to graduate (Witkowsky & Clayton, 2020).

**Dual Enrollment in Tennessee**

In late 1983, Lamar Alexander, the governor of Tennessee, started supporting what he called the Better Schools Program. This was a ten-point program intended to reform Tennessee’s education system. The majority of the issues and recommendations highlighted in the program focused on improving secondary and postsecondary education by teaching computer skills before the students reached the ninth grade. In addition, another recommendation of the program was to double the high school science and math requirements, create summer programs for all academically gifted learners, and restructure all vocational education programs to align with job opportunities.

Given its criticality and implementation challenges, only recommendations relating to vocational education were fully approved and forwarded to Tennessee’s assembly for approval. However, given that most of the recommendations of the Better Schools Program were approved, Governor Alexander had no alternative but to immediately convene an extra session of
the general assembly which resulted in the adoption of the Comprehensive Educational Reform Act of 1984, as well as the Educational Governance Act. Most of the requirements of the acts directly impacted increased student expectations, especially among secondary school students. In particular, a study to investigate the effectiveness of these programs, such as Comprehensive Educational Reform Act of 1984, revealed a 20% decrease in the number of high school students who entered high school but failed to graduate. In addition, findings showed a 10% improvement in performance as more students passed the statewide proficiency tests and there was a relative increase in test scores for students who took the SAT or ACTs.

As of 2017, a progress report on the Education Improvement Act revealed a 10% increase in student attendance rates from 2007. In addition, there was an overall improvement in students’ academics in Tennessee, leading to higher retention and graduation rates. Statistics also indicated that Tennessee students increased their ACT scores from 67% to 83% between 1994 and 2003. However, the findings also revealed that students' composite scores remained stagnant and below the national average. Student graduation rates were estimated to increase by 60% in 2002 and 75% in 2007. Implementing dual enrollment programs increased Tennessee’s college enrollment rates by nearly 17% between 1988 and 2018. In addition, researchers also found that the college degree completion rates in four-year institutions increased by 3% - 5% in 2018 for students who participated in dual enrollment.

The number of dual enrollment programs in Tennessee has increased gradually in the recent past. Following the implementation of the Complete College Tennessee Act in early 2010, the state of Tennessee started funding dual enrollment grants using monies obtained from the HOPE lottery fund. While the grants failed to cover the full cost of dual enrollment, the participation rate in dual enrollment programs increased over the next five years by 57%.
In early 2015, data from the Tennessee Department of Education showed that nearly 42% of Tennessee’s high school graduates took part in at least one dual enrollment program. Hunter and Wilson (2019) also reported that after implementing dual programs in Tennessee, the mean ACT scores for graduates as of 2017 was 19.5 which is higher than previous years. Thus far, the research literature suggests that dual enrollment programs have gained acceptance in Tennessee as more students enroll in them.

To participate in a dual enrollment program in Tennessee, a student must receive written support from the principal, counseling staff, and the participating institution of higher learning (Education Commission of the States, 2022). Freshman university-level classes taken at the college are substituted for corresponding classes the student needs to graduate from high school. Essentially, the dual enrollment program provides concurrent credit. Thus, students are completing their required high school credits for their senior year of high school while simultaneously completing college coursework required for their freshman year of college. Additionally, while most Tennessee community colleges do not allow dual enrollment students to take developmental courses, a few students may be allowed to (Education Commission of the States, 2022).

There is also a career and technical education (CTE) component to dual enrollment. The Consortium for Cooperative Innovative Education is obligated to supervise the development of a “high school to postsecondary” process (Education Commission of the States, 2022). This arrangement builds on supported college and career technical paths to specialized postsecondary programs of study comprised of early postsecondary credit throughout the state (Education Commission of the States, 2022).
Tennessee’s dual enrollment program is also logistically flexible. Dual enrollment teaching can take place at high school institutions, online, or at college facilities, including community colleges (Hunter & Wilson, 2019). Course instructors include postsecondary professionals and faculty, as well as secondary school instructors who meet the criteria for adjunct faculty. Faculty must have a master’s or doctoral degree and must have taken 18 graduate-level credits in the topic of study (Hyde, 2020). However, no secondary licensure requirements are specifically associated with dual enrollment instruction (Hemelt et al., 2020).

Students receive credits and course grades for secondary enrollment credits based on Tennessee’s uniform grading policy used to calculate the HOPE Lottery Scholarship GPA and the local grading system for dual enrollment (TN Department of Education, 2018). Finally, the Tennessee Department of Education has specified that students enrolling in postsecondary education as dual enrollment must pay tuition for those courses.

Eligibility criteria for dual enrollment grants referenced in the definitions section in Chapter One (TN Department of Education, 2018) include the following:

- Dual enrollment courses must be taken during a student's junior or senior high school years.
- Dual enrollment grants must be re-applied for annually.
- Cumulative GPA must remain at 2.75 or higher to qualify for postsecondary dual enrollment courses taken during secondary school.

Students eligible for Dual Enrollment Grants have the opportunity to take the first two college courses tuition free (capped at $500 per course), plus $200 for the third course, for a total of $1,200. Additionally, once a dual enrollment student completes their fourth college course, the student may then begin to “borrow” funds (up to $1,800) from their HOPE scholarship, with this
amount deducted in their first semester as a full-time freshman (Education Commission of the States, 2022). Private and home school students may also apply for a Dual Enrollment Grant (Education Commission of the States, 2022).

Tennessee continues to experience increased dual enrollment growth throughout the state. These increases have been aided by funding provided through the Tennessee Education Lottery Scholarships for Dual Enrollment Grants (Education Commission of the States, 2022). Additionally, students earning college credit also earn high school credit to meet graduation requirements, potentially leading to high school honors such as Graduation with Distinction. Research has suggested that dual enrollment programs enhance the ability of high school students to accomplish several goals:

- facilitate and foster the transition from high school to college
- quick avenues to degree completion
- cost reduction and cost savings for higher education expenses
- introduction of greater rigor within the curriculum
- elimination of remediation needs once at the postsecondary institution

**Theoretical Frameworks**

Tinto’s (1982) college student departure theory and goal setting or persistence theory formulated the theoretical bases for this study and served as guides to help focus on the interaction between student involvement in dual enrollment programs and how this interaction relates to the integration and success of students at postsecondary institutions. Tinto’s (1982) theory on student attrition was “designed to highlight in the clearest explanatory terms specific types of relationships between individuals and institutions that may account for particular types of dropout behavior” (p. 689). Through social interactions, students end up shifting their goals,
which ultimately has an impact on retention (Choi et al., 2019). Tinto created one of the most valid student retention models concerning pre-entry variables (Tinto, 1975; Xu & Webber, 2018). In his mockup of institutional departure, he identified several factors that discourage students from finishing their college careers (Tinto, 1987). In education, Tinto’s work is incredibly valued and is the most extensively documented regarding student retention (Hepworth et al., 2018).

Tinto (1987) hypothesized that students enter institutions of higher learning motivated by various forms of individual, family, and intellectual qualities; factors concerning their high school educational experiences; and career aspirations. Tinto also specified that students arrive at institutions with various qualities, characteristics, and preconceptions related to “race, ability, and social status origins” that may affect their performance while in college (Tinto, 1987, p. 26). He determined that “an institution’s capacity to retain students is directly related to its ability to reach out and make contact with students and integrate them into the social and intellectual fabric of institutional life” (Tinto, 1987, p. 180).

Caballero (2020) corroborated Tinto’s findings regarding the need for social and academic integration and emphasized the significance of faculty engaging with students regarding academic affairs. Xu and Webber (2018) identified relevant pre-college traits of ability, accomplishment, character, ambition, and race. These traits are comparable to the pre-entry qualities Tinto identified in his paradigm of social and academic integration.

According to Tinto (1987), a departure from school “mirrors the character of student commitments and the quality of effort they are willing to make on behalf of the goal of college completion…students must themselves become responsible for their learning” (p. 181). This assessment is comparable to research on the connection between self-efficacy and task
engagement, especially when identifying the preparedness of students to manage complex college programs. For example, Caballero (2020) found that task engagement was greater and more constant for people who had elevated levels of self-efficacy. In addition, participants with above-average beliefs in self-efficacy at the onset of assignments could maintain their engagement levels. In contrast, participants who suffered from low self-efficacy beliefs became disengaged as time passed (Constantine et al., 2019).

Although there has been extensive research on dual enrollment, in addition to theoretical frameworks for understanding college success, there has been little research on dual enrollment that relates college GPA and retention rate for dual enrollment versus non-dual enrollment students. There has also been little research explaining how to strengthen dual enrollment programs and implement specific policies that result in higher retention and GPA. Thus, the purpose of this study will be to determine if there is a statistically significant gap in the literature by explaining how dual enrollment programs may lead to more positive and desired outcomes for students. Tinto’s (1987) college student departure theory will be used in this study to understand factors influencing student persistence and retention such as college preparedness and readiness that can be attributed to dual enrollment.

Summary

Dual enrollment programs continue to offer solutions to high school students for the opportunity to take college credit-bearing courses while in high school. Even as the programs have expanded, higher education faculty continue to question the academic rigor of those courses (An & Taylor, 2019). There has been a surge of high school juniors and seniors interested in dual enrollment programs to earn college credit prior to high school graduation, cultivating the need for excellent relationships between higher education and secondary schools to ensure student
success (Hunter & Wilson, 2019). Over the last five decades, significant growth in dual enrollment that drives the need for more research in this area (NCES, 2022). Additionally, dual enrollment policy work continues to help higher education institutions better align their programs to ensure student success (Horn et al., 2018). As a result of this work and the need to ensure student success, stakeholders of dual enrollment programs have embraced efforts to promote student success (Hunter & Wilson, 2019).

Dual enrollment programs have not come without some criticisms. Some higher education faculty continue to express their disappointment with the lack of quality instruction when the course is taught on a high school campus (Liu & Xu, 2019). Additionally, there have been issues associated with the transfer of credits from the institution that offered the enrollment courses to a different institution where students later enrolled, creating obstacles when students attempt to move forward with their college coursework (Martinez, 2018).

Tinto’s (1982) college student departure theory and goal setting or persistence theory provided the theoretical bases for this study and helped guide the focus on the interactions between students and the dual enrollment programs. Caballero (2020) supported Tinto’s findings for the integration of social needs and academics to promote student success and emphasized the significance of faculty engagement with students.
CHAPTER THREE: METHODOLOGY

Dual enrollment programs need to be analyzed using data acquired over a long period (An & Taylor, 2019). As dual enrollment programs have become more common, data collection methods have become available that allow for detailed studies across different variables. This study compared retention rates of dual enrollment and non-dual enrollment students in two-year community colleges in Tennessee examining data for high school graduates from 2018 (May/June) who became entering first-time, full-time freshmen at a Tennessee community college. Dual enrollment, for the purposes of this study, refers to a situation where a high school student enrolls simultaneously in high school classes and college classes (Hunter & Wilson, 2019), typically during the student’s junior and/or senior years.

It is also important to track college GPA to see whether dual enrollment students are doing better than, worse than, or the same as their peers. Therefore, this study also looked at the success rate of dual enrollment students and non-dual enrollment students. As a result, the study investigated two outcomes: Retention rates and cumulative GPA in the second semester as a full-time freshman.

Purpose Overview and Research Questions

The purpose of this quantitative non-experimental study was to compare GPAs and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee. The following research questions guided this study.

RQ1: To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?
H₀: There will be no statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H₁: There will be a statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

RQ2: To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

H₀: There will be no statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H₁: There will be a statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

Research Design

The study was a quantitative non-experimental comparative analysis utilizing archived institutional data maintained by the Tennessee Board of Regents for all thirteen community colleges in Tennessee. The researcher examined student GPA scores and retention rates of first-year freshmen at community colleges in Tennessee after their second semester to investigate whether there were statistically significant differences between the freshmen who were dual enrollment students and those who were not.
This research used a quantitative non-experimental comparative design (Creswell & Creswell, 2017; Stockemer et al., 2019) which offered an in-depth investigation of dual enrollment and non-dual enrollment success. Researchers such as Kleinbaum et al. (1991) have noted that quantitative researchers use non-experimental comparative designs to investigate relationships between variables. This study design was appropriate because there was no manipulation of variables (Creswell & Creswell, 2017). A comparative research design essentially compares two groups to derive conclusions about them and develop an in-depth understanding of how the variables affect or relate each other (Stockemer et al., 2019).

Investigators also seek to identify and analyze similarities and differences between groups, often comparing two distinct groups (Stockemer et al., 2019). Such research can also increase understanding between the two groups (participated in dual enrollment or did not participate in dual enrollment) to create a basis for compromise, collaboration, and policy formulation (Kan & Gero, 2017; Stockemer et al., 2019).

A non-experimental study design aligned with the study focus, given that there were two similar groups that differed primarily on one variable, although there were in-group differences (Stockemer et al., 2019). The first group included students who participated in dual enrollment programs and completed at least one course. The second group was students who did not participate in dual enrollment programs while in high school.

Institutional data was extracted from TBR’s Banner student information system. Unique data points were used to retrieve student information from the database, including information on demographics, such as Tennessee county of residence, high school GPA of 3.0 or higher, academic year and month of high school graduation, year they joined the community college, fall 2018 to fall 2019 college retention, and cumulative college GPA after their second full term
The dependent variables for the study were two measures of student success: postsecondary retention rate and average cumulative GPA.

**Participants**

The target population for the study included students entering as first-time freshmen within community colleges in Tennessee in fall 2018 who graduated from high school in spring 2018. The sample specifically included students who participated in dual enrollment and those who did not participate in such programs. Data associated with these two groups of freshmen included GPAs after entering the community college and retention rates. Sample size for this study was 8,514 participants based on the final dataset.

This study focused only on students in Tennessee taking college coursework at one of the 13 community colleges in Tennessee. The rationale for this limited focus was threefold. First, the thirteen community colleges in Tennessee produce a large sample of high school students in dual enrollment at the community colleges, permitting more statistically powerful results. Second, enrollees at the selected community colleges in Tennessee encompass a wide range of students seeking to complete programs in various courses, thus providing enough data for analysis of their retention and success rates. Last, it is possible to gather reliable data from the Tennessee Board of Regents concerning dual enrollment and non-dual enrollment students because the records are readily available for analysis.

The participants from each of these community colleges differed on aspects such as (a) geographical location; (b) the missions of each community college (i.e., some community colleges have a greater emphasis on dual enrollment compared to others); and (c) populations of participants may vary based on the location of the community college in the state, such as areas that differ in the size of minority populations.
Data used for this study was comprised only of high school students graduating in either May or June of 2018 from a Tennessee high school. Additionally, only high school students with a high school GPA of 3.0 or higher were included because the admissions requirements for dual enrollment programs at community colleges in Tennessee require a 3.0 or higher high school GPA; all participants with a high school GPA of 2.99 or lower were excluded. Further, the 2018 high school graduate cohort was used to provide more concise data that excluded variances that could be attributed to the COVID-19 pandemic, which would have an effect on high school graduates as the academics both in higher education and in the secondary systems were lessened due the nature of how the learning had to take place beyond the 2018 high school graduates cohort used for the purpose of this study.

Data Collection

IRB approval from the university was acquired in February 2022. After gaining approval to conduct the study, the researcher emailed the Tennessee Board of Regents requesting permission to conduct the study within the selected community colleges in Tennessee. The data was collected using the ARGOS software package to extract student data from the Banner student information system. The data collected included freshmen cumulative college GPA scores for the sample and their retention rates at the end of their second semester. In addition, although not included as part of the analyses for the current study, demographic data such as age, gender, and ethnicity were collected for potential future research resulting from this study.

All secondary data was collected, anonymized (student and institution names), and stored on a personal computer that was password protected to prevent unauthorized third-party access. All hard copies of the raw and analyzed data were stored in a secured location in the researcher’s home office space.
Data Analysis

Inferential statistical methods were used to analyze the research questions for the study. To address the first research question, chi-square was used to measure and compare retention rates between dual enrolled and non-dual enrolled students. The second research question was analyzed using an independent t-test to assess whether there was a statistically significant difference between cumulative college GPA scores for dual enrolled and non-dual enrolled students. SPSS V. 21 was used for data analysis. Both analyses relied on a significance level of $p = 0.05$

Limitations

Studying the success of dual enrollment programs and students can be challenging, both with structuring the research and identifying relevant detailed data. Programs like the Tennessee Dual Enrollment Grant may affect the data because students have access to two free dual enrollment courses, but beyond those free courses students must pay some portion of the tuition and fees. This may be a strength of the dual enrollment program but introduce a potential confounding effect if students take advantage of the free courses option and matriculate on to community college, but are unsuccessful either with dual enrollment coursework or college coursework. They may be unwilling or unable to achieve the desired level of academic momentum to move successfully through the dual enrollment program. There also may be students included who enrolled in the program without intending to go on to postsecondary education. This study use fall 2018 cohort data and may have included such students. The effect of the Tennessee Dual Enrollment Grant program on dual enrollment participation should, however, be studied.
Another limitation of the study was the difficulty of accounting for factors that make the dual enrollment program at one institution successful while another program in the same system is not. Some dual enrollment programs are directed with little oversight of policy and process, while other dual enrollment programs work within a framework of carefully designed policies and processes. Some dual enrollment programs may be understaffed or staffed by inexperienced personnel. Additionally, some community colleges may use instructors that are adjunct faculty and not full-time faculty. The community colleges may not provide the same experiences and the students could be getting drastically different educations. It was outside the scope of this study to quantify all variables affecting different programs at different institutions.

Another limitation the study overlooked was the characteristics of the students themselves. Students that are dual enrolling may not represent the typical student population. Students that dual enroll are often college-track students that are already doing well in school. This study did not address how students who are not near the top of their class would handle the rigors of dual enrollment. Further, it is also noted that TBR did not deliver high school GPA in the correct format. High school GPA’s were rounded to the nearest whole number; however, high school GPA was not part of this study but this data could be used in further research if the high school GPA data was accurate.

**Ethical Issues and Trustworthiness**

All secondary data was stored on a personal computer and password protected to avoid data breaches by third parties. Trustworthiness was established through credibility and dependability. The credibility of the results was enhanced by ensuring that the data collected addressed the research questions. A detailed audit trail was maintained, enabling future researchers to replicate the findings to affirm (or not) the dependability of the study. This record
of the research process includes information about how data was collected, analyzed, and presented.

Summary

This chapter has enumerated the steps for completing a study of the success of dual enrollment students. Dual enrollment students are students in their junior and/or senior years of high school who have also enrolled in community college. The study measured the success rate of those students to assess the viability of the program. It also looked at whether the students who were dual enrolled had GPAs that were higher, lower, or similar to students who were not dual enrolled. Additionally, the retention rates for dual enrolled and non-dual enrolled students were analyzed to identify statistically significant differences, if any.

There are several potential limitations to the study. The researcher made every attempt to address these and other obstacles to gaining reliable, valid results. In addition, all possible safeguards were used to protect student privacy and the confidentiality of the data.
CHAPTER FOUR: RESULTS

The purpose of this quantitative non-experimental study was to compare the retention rates and GPAs of dual enrollment and non-dual enrollment students in community colleges across Tennessee. Participants in this study were classified as entering freshmen (30 or fewer hours) postsecondary students at Tennessee community colleges. Some of the students had been involved in one of the dual enrollment programs within the Tennessee Board of Regents (TBR) system and some had not. This research investigated the effectiveness of dual enrollment by comparing cumulative college GPAs and retention rates of dual enrollment students to non-dual enrollment students following their second semester at the thirteen community colleges in Tennessee. The following research questions and hypotheses guided the study:

RQ1: To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?

Ho: There will be no statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

RQ2: To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?
H0: There will be no statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course.

The following is a discussion of the study’s data collection process, population, and sample as well as a demographic description of the sample. Demographic descriptions include frequencies and percentages for categorical (nominal) variables and means and standard deviations for interval variables. Also presented are the testing of parametric assumptions for the statistical analyses and the results of statistical testing. This chapter concludes with a discussion of the results of this study.

Data Collection

The target population for the study included students entering as first-time freshmen in Tennessee community colleges in the fall of 2018. The sample specifically included students who participated in dual enrollment and those who did not participate in such programs. After gaining IRB approval to conduct the study, the researcher emailed the Tennessee Board of Regents requesting permission to conduct the study within the selected community colleges in Tennessee. The data were collected using the ARGOS software package which extracted student data from the Banner student information system. The data collected included demographics as well as retention and cumulative college GPA scores for the sample at the end of their second semester.
Demographic Data Analysis

The data set consisted of $N = 8,514$ students of which 5,233 (61.5%) were females and 3,281 (38.5%) were males. There were 583 (6.8%) Hispanic students and 7,757 (91.1%) non-Hispanic. The remaining 174 (2.0%) did not respond to the ethnicity question. All students graduated from high school in 2018. The mean age of the sample of high school graduates was 18.05 years ($SD = 0.80$) and their ages ranged from 15 years to adult students 56 years of age. Tables 1, 2, and 3 provide an overview of this information. There were nine students aged 21 or over. However, these students had no data associated with them, and were not included in the analysis since list wise deletion was used with SPSS, which involves using cases with only complete information.

**Table 1**

*Gender*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>5,233</td>
<td>61.5</td>
</tr>
<tr>
<td>Male</td>
<td>3,281</td>
<td>38.5</td>
</tr>
<tr>
<td>Total</td>
<td>8,514</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 2**

*Ethnicity*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>583</td>
<td>6.8</td>
</tr>
<tr>
<td>Not Hispanic</td>
<td>7,757</td>
<td>91.1</td>
</tr>
<tr>
<td>No response</td>
<td>174</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>8,514</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 3

Age

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>56</td>
<td>18.05</td>
<td>.798</td>
</tr>
</tbody>
</table>

There were 3,016 (35.4%) students that participated in dual enrollment and 5,498 (64.6%) that did not (Table 4).

Table 4

Dual Enrollment

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>5,498</td>
<td>64.6</td>
</tr>
<tr>
<td>Yes</td>
<td>3,016</td>
<td>35.4</td>
</tr>
<tr>
<td>Total</td>
<td>8,514</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Regarding retention, 7,265 (85.3%) students did continue enrollment and 1,249 (14.7%) did not (Table 5).

Table 5

Retention

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1,249</td>
<td>14.7</td>
</tr>
<tr>
<td>Yes</td>
<td>7,265</td>
<td>85.3</td>
</tr>
<tr>
<td>Total</td>
<td>8,514</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Gender, ethnicity, and retention by dual/non-dual enrollment status are provided in Tables 6, 7, and 8 below and represent a demographic data analysis.
Table 6

*Gender by Enrollment Type*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3,348</td>
<td>60.9</td>
</tr>
<tr>
<td>Male</td>
<td>2,150</td>
<td>39.1</td>
</tr>
<tr>
<td>Total</td>
<td>5,498</td>
<td>100.0</td>
</tr>
<tr>
<td>Dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1,885</td>
<td>62.5</td>
</tr>
<tr>
<td>Male</td>
<td>1,131</td>
<td>37.5</td>
</tr>
<tr>
<td>Total</td>
<td>3,016</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 7

*Ethnicity by Enrollment Type*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>458</td>
<td>8.3</td>
</tr>
<tr>
<td>Not Hispanic</td>
<td>4,906</td>
<td>89.2</td>
</tr>
<tr>
<td>No response</td>
<td>134</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>5,498</td>
<td>100.0</td>
</tr>
<tr>
<td>Dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>125</td>
<td>4.1</td>
</tr>
<tr>
<td>Not Hispanic</td>
<td>2,851</td>
<td>94.5</td>
</tr>
<tr>
<td>No response</td>
<td>40</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>3,016</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 8

Retention by Enrollment Type

<table>
<thead>
<tr>
<th>Enrollment Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>909</td>
<td>16.5</td>
</tr>
<tr>
<td>Yes</td>
<td>4,589</td>
<td>83.5</td>
</tr>
<tr>
<td>Total</td>
<td>5,498</td>
<td>100.0</td>
</tr>
<tr>
<td>Dual enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>340</td>
<td>11.3</td>
</tr>
<tr>
<td>Yes</td>
<td>2,676</td>
<td>88.7</td>
</tr>
<tr>
<td>Total</td>
<td>3,016</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Analysis of Student Success

Academic success was measured by utilizing students’ GPA scores for fall 2018, spring 2019, and fall 2019. GPAs ranged from 0.0 to 4.0 with the mean by semester as follows: Fall 2018 ($M = 2.89$, $SD = 0.93$), spring 2019 ($M = 2.84$, $SD = 0.88$), and fall 2019 ($M = 3.01$, $SD = 0.70$). Table 9 provides an overview of this information.

Table 9

Overall Sample GPAs for Fall 2018, Spring 2019, and Fall 2019

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2018 GPA</td>
<td>7,982</td>
<td>.000</td>
<td>4.000</td>
<td>2.89</td>
<td>.93</td>
</tr>
<tr>
<td>Spring 2019 GPA</td>
<td>7,263</td>
<td>.000</td>
<td>4.000</td>
<td>2.84</td>
<td>.88</td>
</tr>
<tr>
<td>Fall 2019 GPA</td>
<td>5,597</td>
<td>.000</td>
<td>4.000</td>
<td>3.01</td>
<td>.70</td>
</tr>
</tbody>
</table>

GPA by enrollment type (dual enrollment versus non-dual enrollment) is depicted in Table 10. Those students that participated in dual enrollment had consistently higher GPAs for fall 2018 ($M = 3.08$, $SD = 0.83$), spring 2019 ($M = 3.10$, $SD = 0.74$), and fall 2019 ($M = 3.19$, $SD = 0.61$) compared with non-dual enrollment with GPAs for fall 2018 ($M = 2.77$, $SD = 0.97$), spring 2019 ($M = 2.69$, $SD = 0.92$), and fall 2019 ($M = 2.89$, $SD = 0.72$).
### Table 10

**GPA by Enrollment Type (Dual Enrollment Versus Non-dual Enrollment)**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No dual enrollment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2018 GPA</td>
<td>5,016</td>
<td>.000</td>
<td>4.000</td>
<td>2.77</td>
<td>.97</td>
</tr>
<tr>
<td>Spring 2019 GPA</td>
<td>4,588</td>
<td>.000</td>
<td>4.000</td>
<td>2.69</td>
<td>.92</td>
</tr>
<tr>
<td>Fall 2019 GPA</td>
<td>3,462</td>
<td>.000</td>
<td>4.000</td>
<td>2.89</td>
<td>.72</td>
</tr>
<tr>
<td><strong>Dual enrollment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2018 GPA</td>
<td>2,966</td>
<td>.000</td>
<td>4.000</td>
<td>3.08</td>
<td>.83</td>
</tr>
<tr>
<td>Spring 2019 GPA</td>
<td>2,675</td>
<td>.000</td>
<td>4.000</td>
<td>3.10</td>
<td>.74</td>
</tr>
<tr>
<td>Fall 2019 GPA</td>
<td>2,135</td>
<td>.000</td>
<td>4.000</td>
<td>3.19</td>
<td>.61</td>
</tr>
</tbody>
</table>

#### Analysis of Retention Data

Regarding retention (yes/no) by dual enrollment status, a greater percentage of students completed the semester and participated in dual enrollment (88.7%) compared with students that did not continue and participated in dual enrollment (11.3%). Figure 1 illustrates this comparison.
In order to determine whether there was a statistically significant association between dual enrollment and retention, a Chi-square test was performed. Additionally, to determine any significant mean differences in GPAs between dual and non-dual enrollment students, independent t-tests were conducted. Before conducting tests, some assumptions had to be verified. There are three assumptions to be met for Chi-square: (a) there are two nominal variables, (b) observations are independent, and (c) all cells should have expected counts greater than five. The variables retention (yes/no) and dual enrollment (yes/no) are both categorical.

Figure 1

Dual Enrollment by Retention Status

Testing of Parametric Assumptions
(nominal). It was also assumed that there was no formal relationship between the observations in the groups of the categorical variables. The third assumption, all cells should have expected counts greater than five, was tested within the Crosstabs procedure in SPSS. All cells had expected counts greater than five. Thus, the three requirements for Chi-square were met.

Regarding the assumptions of the independent t-test, these included normality, absence of outliers, and equality of variances. Due to the large sample size of the study, normality was assessed by examination of skewness and kurtosis indices, as tests of normality are very sensitive to large sample sizes and quite frequently result in a statistically significant test. In such cases, it is best to use skewness and kurtosis indices to assess normality. Hair et al. (2010) and Bryne (2010) argued that data is considered normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. Using these guidelines, GPAs showed no severe departure from normality, as skewness was within these ranges. Table 11 summarizes this information.
### Table 11

*Skewness and Kurtosis for GPAs*

<table>
<thead>
<tr>
<th>No dual enrollment</th>
<th>$N$</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2018 GPA</td>
<td>5,016</td>
<td>-.861</td>
<td>.010</td>
</tr>
<tr>
<td>Spring 2019 GPA</td>
<td>4,588</td>
<td>-.723</td>
<td>-.121</td>
</tr>
<tr>
<td>Fall 2019 GPA</td>
<td>3,462</td>
<td>-.704</td>
<td>.230</td>
</tr>
<tr>
<td>Dual enrollment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2018 GPA</td>
<td>2,966</td>
<td>-1.260</td>
<td>1.249</td>
</tr>
<tr>
<td>Spring 2019 GPA</td>
<td>2,675</td>
<td>-1.156</td>
<td>1.167</td>
</tr>
<tr>
<td>Fall 2019 GPA</td>
<td>2,135</td>
<td>-1.122</td>
<td>1.700</td>
</tr>
</tbody>
</table>

Additionally, histograms of GPAs for all groups at all time points were visually inspected and appear in Figures 2 through 7. The GPA distributions were slightly negatively skewed to the left.

![Histogram](image)

**Figure 2**

*Spring 2019 GPA (Non-dual Enrollment)*
Figure 3

Fall 2018 GPA (Non-dual Enrollment)

Figure 4

Fall 2018 GPA (Dual Enrollment)
Figure 5

Spring 2019 GPA (Dual Enrollment)

Figure 6

Fall 2019 GPA (Non-dual Enrollment)
Because the sample size for this study was large and all the distributions were similarly skewed, non-normality did not affect the Type I error rate substantially and the independent-samples t-tests are considered robust (Field, 2018). Thus, the deviation from normality was not a limitation.

Outliers were assessed by transforming the GPA scores into standardized scores. Fall 2019 (Non-dual Enrollment group), and GPAs for dual enrollment had standardized values outside -3 to +3 standard deviations (Field, 2018). Therefore, there were outliers present in the data set (Table 12).

**Figure 7**

*Fall 2019 GPA (Dual Enrollment)*

Because the sample size for this study was large and all the distributions were similarly skewed, non-normality did not affect the Type I error rate substantially and the independent-samples t-tests are considered robust (Field, 2018). Thus, the deviation from normality was not a limitation.

Outliers were assessed by transforming the GPA scores into standardized scores. Fall 2019 (Non-dual Enrollment group), and GPAs for dual enrollment had standardized values outside -3 to +3 standard deviations (Field, 2018). Therefore, there were outliers present in the data set (Table 12).
Table 12

Ranges of Standardized GPA Scores

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall 2018 GPA</td>
<td>5,016</td>
<td>-2.84</td>
</tr>
<tr>
<td>Non-dual Enrollment</td>
<td>Spring 2019 GPA</td>
<td>4,588</td>
<td>-2.93</td>
</tr>
<tr>
<td></td>
<td>Fall 2019 GPA</td>
<td>3,462</td>
<td>-4.02</td>
</tr>
<tr>
<td></td>
<td>Fall 2018 GPA</td>
<td>2,966</td>
<td>-3.73</td>
</tr>
<tr>
<td>Dual Enrollment</td>
<td>Spring 2019 GPA</td>
<td>2,675</td>
<td>-4.19</td>
</tr>
<tr>
<td></td>
<td>Fall 2019 GPA</td>
<td>2,135</td>
<td>-5.19</td>
</tr>
</tbody>
</table>

Last, the equality of variance assumption was tested by conducting Levene’s tests of homogeneity of variances within the independent t-test procedure in SPSS. The results of the test were statistically significant ($p < .001$) indicating that the assumption of the equality of variance was violated.

Since outliers may have a detrimental impact on the results of independent t-tests, it was decided to conduct Mann-Whitney U tests. This is a rank-based nonparametric test that can be used to determine if there are differences between two groups on a continuous or ordinal dependent variable. There is no assumption of normality and outliers do not affect the outcome as much as they do in the independent t-test. The Mann-Whitney U test was used to determine statistically significant differences in GPAs between those students that participated in dual enrollment and those that did not.

Results of Hypothesis Testing

The Chi-Square test of association was conducted to address and test the first research question and hypotheses:
RQ1: To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?

Ho: There will be no statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

The result of the Chi-Square test was statistically significant, $\chi^2(1) = 43.048, p < .001$. Within the dual enrollment group, 88.7% of the students completed the semester whereas 11.3% did not. Within the retention group (those who completed the semester), 83.5% participated in dual enrollment and 16.5% did not. Thus, this first null hypothesis is rejected and it is concluded that there is a statistically significant difference in student retention rates between first-time freshmen who have taken at least one dual enrollment course and those who have not taken a dual enrollment course. These differences were statistically significant. Table 13 depicts these results.
Table 13

*Retention by Dual Enrollment Cross-tabulation*

<table>
<thead>
<tr>
<th>Retention</th>
<th>No dual enrollment</th>
<th>Dual enrollment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Frequency</td>
<td>909</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>% within Enrollment Type</td>
<td>16.5%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Yes</td>
<td>Frequency</td>
<td>4,589</td>
<td>2,676</td>
</tr>
<tr>
<td></td>
<td>% within Enrollment Type</td>
<td>83.5%</td>
<td>88.7%</td>
</tr>
<tr>
<td>Total</td>
<td>Frequency</td>
<td>5,498</td>
<td>3,016</td>
</tr>
<tr>
<td></td>
<td>% within Enrollment Type</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

χ²(1) = 43.048, p < .001

Mann-Whitney U-tests were conducted to address and test the second research question and hypotheses:

RQ2: To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

H0: There will be no statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course.

Results of Mann-Whitney U-tests for fall 2018 \( U = 8,878,080.00, z = 14.476, p < .001; \) spring 2019 \( U = 7,796,298.50, z = 19.259, p < .001; \) and fall 2019 \( U = 4,611,271.50, z = 15.593, p < .001 \) were statistically significant (Table 14).
Table 14

Results of Mann-Whitney U-Tests

<table>
<thead>
<tr>
<th>GPA Semester</th>
<th>U</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2018</td>
<td>8,878,080.00</td>
<td>14.476</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Spring 2019</td>
<td>7,796,298.50</td>
<td>19.259</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Fall 2019</td>
<td>4,611,271.50</td>
<td>15.593</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

This indicates that the median differences in GPAs between dual enrollment students and non-dual enrollment students were statistically significantly different. Specifically, the median GPAs of dual enrollment students for fall 2018 ($Mdn = 3.29$), spring 2019 ($Mdn = 3.26$), and fall 2019 ($Mdn = 3.30$) were greater than for students not enrolled in dual enrollment for fall 2018 ($Mdn = 3.00$), spring 2019 ($Mdn = 2.88$), and fall 2019 ($Mdn = 3.00$). Table 15 provides this information.

Table 15

Median GPAs

<table>
<thead>
<tr>
<th></th>
<th>Fall 2018 GPA</th>
<th>Spring 2019 GPA</th>
<th>Fall 2019 GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dual enrollment</td>
<td>3.00</td>
<td>2.88</td>
<td>3.00</td>
</tr>
<tr>
<td>Dual enrollment</td>
<td>3.29</td>
<td>3.26</td>
<td>3.30</td>
</tr>
</tbody>
</table>

Summary

This study investigated the effectiveness of dual enrollment in Tennessee by comparing cumulative college GPAs and retention rates of dual enrollment students to non-dual enrollment students following their second semester at the thirteen community colleges in Tennessee. The following research questions and hypotheses guided the study:
RQ1: To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course?

H0: There will be no statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in student retention rates in first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

RQ2: To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

H0: There will be no statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

H1: There will be a statistically significant difference in the GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course.

Results of Chi-square tests concluded that there was a statistically significant association between dual enrollment and retention. Specifically, dual enrollment was associated with a higher retention rate for first-time freshmen who had taken at least one dual enrollment course compared to those who had not taken a dual enrollment course. However, the retention rate for both groups was high. Thus, the first null hypothesis was rejected.
Results of the Mann-Whitney U-tests indicated that the median difference in GPA between dual enrollment students and non-dual enrollment students was statistically significant. Specifically, the median GPA of first-time freshmen who took at least one dual enrollment course was greater than for students not enrolled in dual enrollment for fall 2018, spring 2019, and fall 2019. Thus, the second null hypothesis was rejected. It should be noted that while Dual Enrollment students had a higher GPA at all three time points, information about high school GPA or an ACT score at baseline (i.e., prior achievement) could not be controlled for in this analysis because they were not available. Thus, this is another limitation of the study because it is possible that dual enrollment students started out with an achievement advantage at the beginning of the study.

What follows in Chapter Five is a discussion of how the results of this study are interpreted in the context of the theoretical framework. Limitations of the results of the study will be provided and recommendations for future research will be discussed.
CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this quantitative non-experimental study was to compare the GPA and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee following their second semester. This chapter includes a discussion of major findings as related to the literature on the GPA and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee. The chapter concludes with a discussion of the limitations of the study, recommendations, areas for future research, and a brief summary. This chapter also contains discussion and future research possibilities to help answer the research questions:

RQ1: To what extent is there a difference in retention rates of first-time freshmen following their second semester who have completed at least one dual enrollment course and those who have not taken a dual enrollment course following their second semester?

RQ2: To what extent is there a difference in the cumulative college GPA scores of first-time freshmen following their second semester who have taken at least one dual enrollment course and those who have not taken a dual enrollment course?

Summary of the Findings

Research Question One

The results of the Chi-square test were statistically significant, $\chi^2(1) = 43.048, p < .001$. Within the dual enrollment group, 88.7% of the students completed the semester and only 11.3% did not, compared to 85.3% and 14.7% for the Non-dual enrollment group respectively. Thus, this first null hypothesis is rejected and it is concluded that there is a statistically significant difference in student retention rates between first-time freshmen who have taken at least one dual enrollment course and those who have not taken a dual enrollment course, with the retention rate
for the dual enrollment group being higher than the Non-dual enrollment group. It is also important to recognize that not only is there a statistically significant difference in the finding, but there is also a meaningful difference as related to the data associated with retention.

**Research Question Two**

Results of Mann-Whitney U-tests for fall 2018 ($U = 8,878,080.00, z = 14.476, p < .001$); spring 2019 ($U = 7,796,298.50, z = 19.259, p < .001$); and fall 2019 $U = 4,611,271.50, z = 15.593, p < .001$ were statistically significant. This indicated that the median difference in GPA between dual enrollment and non-dual enrollment students was statistically significant. Specifically, the median GPAs of dual enrollment students for fall 2018 ($Mdn = 3.29$), spring 2019 ($Mdn = 3.26$), and fall 2019 ($Mdn = 3.30$) were higher than for students not enrolled in dual enrollment for fall 2018 ($Mdn = 3.00$), spring 2019 ($Mdn = 2.88$), and fall 2019 ($Mdn = 3.00$). However, baseline equivalence was not able to be established due to lack of high school data. Further, not only did this study show that the findings associated with GPA between dual enrollment and non-dual enrollment students was statistically significant, but the findings also represented a meaningful difference as well related to GPA between these two groups.

**Interpretation of the Findings**

**Research Question One**

Not only has the number of high school students taking dual enrollment courses increased dramatically over the last decade, but these students are also more likely than their peers to graduate high school, attend college, and earn degrees. Over 88% of the first-time freshmen in this study who had taken at least one dual enrollment course continued at a Tennessee community college after high school compared to 85.3% of students who did not participate in dual enrollment. Community colleges have an opportunity to market themselves as low-cost,
high-quality, and close to home, as well as places for former dual enrollment students on their way to a four-year degree. In line with this study, An et al. (2019) argued that the number of high school students taking community college classes has risen dramatically in the last 15 years, as students and their families have recognized the potential of dual enrollment to give students a head start on college while also saving money by completing college sooner. In recent years, the popularity of dual enrollment has skyrocketed.

However, many colleges and states lack a clear understanding of how many dual enrollment students continue on to college. This study breaks down the effects of dual enrollment on student academic and retention outcomes for community colleges in Tennessee. Many states have identified significant disparities in degree completion rates between lower and higher income students. According to Caballero (2020), nationally, nearly two-thirds of community college dual enrollment students come from low- or middle-income families, roughly the same proportion as students who begin at a community college after high school. Taking college courses in high school has the potential to help students move more quickly toward a college degree.

Although community colleges are well-known for many aspects of their mission, such as technical and workforce training, college transfer, and community education, they are perhaps best known for their accessibility and close ties to the communities and regions they serve. Dual enrollment of regional high school students has emerged as a common practice across the country and provides another element of access to the community college mission (Cherney et al., 2020). Dual enrollment has been associated with higher educational aspirations and is a better predictor of those aspirations than grades or parents’ education (Gibbons et al., 2019). Collaborations among institutions and partners will be critical in the future to overcome the
limited resources available to economically distressed areas. Partnerships also aid in the development of system-wide education. Dual enrollment is one collaborative option for increasing access and potentially improving student success.

While dual enrollment was initially designed to serve advanced students, Gibbons et al. (2019) found that dual enrollment in technical career areas expands opportunities for high school students and creates a logical transition into workforce preparation programs at technical or community colleges. The author recommends further research on dual enrollment and implications for students completing courses in different disciplines. Students in dual enrollment courses have adequate knowledge in high school curriculum and are capable of college-level coursework, which is more advanced and rigorous than the regular high school curriculum.

Previous research has shown that the location of a course influences student experiences. In the Kremer (2020) interview study, all dual enrolled students were satisfied with their dual enrollment participation; however, students who took courses on a college campus "appeared more satisfied" and felt more responsible for their own success. In a study of dual enrollment in Georgia's technical colleges, instructors admitted that some high schools lacked the necessary equipment and lab facilities for several dual enrollment courses, limiting student options. Dual enrollment, according to instructors, should be offered on college campuses to expose students to college life. Nonetheless, instructors noted that scheduling and transportation were barriers to offering dual enrollment on college campuses.

**Research Question Two**

The findings of this study indicate that the median GPA of dual enrollment students and non-dual enrollment students were statistically significantly different. Students' high school GPA can be affected by dual enrollment classes. Dual enrollment can also effect college GPA scores
because dual enrollment college course credits may be transferred onto a freshman's college transcript by colleges and universities.

In line with these findings, Lee et al. (2022) suggested that dual enrollment courses are likely to affect students’ college GPA scores even when using the courses as college credits. Most colleges only consider the grades earned by college students. Different colleges use different standardized formulas to calculate GPAs because every high school weights grades differently. Colleges use high school GPA scores and other measures such as ACT scores to gauge how much students challenge themselves.

There are unquestionable benefits to taking dual enrollment courses. Meeting the academic standards of previously accepted students is the first step toward increasing students’ chances of acceptance at a postsecondary institution. Selective colleges use a metric known as the Academic Index to screen applicants based on high school GPA and test scores. If students are not academically prepared, they may be automatically rejected.

Dual enrollment can have an impact on a student's high school GPA, either positively or negatively. Any college class taken as a dual enrollment student will be transferred to their high school and included on their high school transcript. Because dual enrollment classes are weighted at some high schools on a 5.0 GPA scale, grades can transfer as A++, Bs can transfer as As, and Cs can transfer as Bs. If a student does poorly in their dual enrollment courses, their high school GPA will suffer as a result (Lawrence & King, 2019). If a high school student takes a dual enrollment course at a local college or university, those college courses are worth one point. These weighted grades are intended to assist in accurately calculating GPAs while taking into account the curriculum's difficulty.
Many students believe that AP courses are preferred by colleges over dual enrollment courses or vice versa. While there is no preferential treatment at the college admissions level, students should make sure to investigate which options best meet their personal needs. Generally, an AP exam has much higher stakes than a dual enrollment class. In contrast, dual credit students are guaranteed college credit if they pass with at least a C in colleges where the course is accepted. Dual enrollment courses are a low-cost way to obtain college credit, especially if Tennessee high school students can use the Tennessee Dual Enrollment Grant to help offset costs. Dual enrollment courses are typically significantly less expensive per credit than equivalent courses taken while enrolled in college.

**Limitations**

This study does present some limitations. Two-year institutions have been selected to prepare students to transition to a four-year institution (Hunter & Wilson, 2019). Four-year public and private high schools provide dual enrollment opportunities at their respective colleges or universities, but four-year postsecondary institutions were not included. The exclusion of four-year institutions in the analysis may make applying the findings to such institutions difficult, thus reducing the generalizability of the research findings.

Time constraint is another key limitation related to the study, as it was completed using only one postsecondary academic year to evaluate outcomes. Utilizing only one academic year, however, ensured that extraneous conditions, such as the COVID-19 pandemic, were not evaluated and enabled a more concise pre-pandemic data analysis. Therefore, the available data was not the most recent.

Another limitation is that the research data was limited to students who are Tennessee residents. In addition, it was not possible to determine if they had completed their entire high
school career at a Tennessee high school. The students could have transferred to another state in their junior year for example. Finally, the high school GPA data used were rounded to the next whole number, which affected the reliability of the final results.

**Implications for Practice**

Given the results of this study, implementing dual enrollment programs is suggested. Dual enrollment helps schools gain a better understanding of students' needs and ways to promote their continued success in college as a result. Incorporating dual enrollment opportunities into career-focused small learning communities encourages student participation by giving coursework focus and relevance—and it broadens, rather than narrows, students' expectations for themselves. Students who are preparing to be first-generation college students, gain a great deal of confidence by being successful in these courses like dual enrollment, knowing that they can negotiate challenging text and ideas and take more ownership over their own learning (Loveland, 2017, p. 37). The findings of this study indicate that a single course can earn both high school and college credit, potentially shortening the time required to complete a college degree. Additionally, this study was consistent with Allen and Dadgar (2012) who reported that dual enrollment programs reduce the time it takes a student to complete a degree and increase a student’s overall GPA and retention.

Colleges and secondary school districts have begun to embrace dual enrollment as a strategy for increasing college attendance and persistence among students who may not receive adequate college preparation otherwise. Participation in dual enrollment can help these students succeed in higher education by providing them with a realistic understanding of what college entails and a head start on college-level work. Dual enrollment has the added benefit of potentially lowering college costs by offering low- or no-cost college credit and shortening the
time it takes to complete a degree. Further, dual enrollment programs continue to attract a wide range of students and are particularly attractive because of the cost of dual enrollment courses is typically less than regular college tuition, a factor that influences overall college-going figures (Olwell & Shaw, 2019). Dual enrollment programs may benefit both institutions and students by providing a forum for colleges and high schools to discuss college readiness standards and curriculum alignment. Colleges and high schools form relationships through dual enrollment work and they frequently collaborate to design high school content, pedagogies, and student services that better prepare students for college success. Further, research suggests that students who participate in dual enrollment programs leave high school better prepared to enter college, thus providing students with a better understanding of what it takes to succeed in college and reach degree attainment (Vargas et al., 2017).

**Recommendations for Future Research**

One recommendation for a future study is to use a mixed methods approach. Qualitative research is typically defined as research that is evaluated using questionnaires and surveys (Creswell, 2017). This type of research can also provide numerical data, as the information gathered is quantified to make it possible to analyze statistically. The qualitative approach, on the other hand, is best suited to gathering exploratory, descriptive data (Creswell, 2017). Furthermore, qualitative data deals with perceptions and opinions, and a future study could investigate participants' attitudes and individual opinions about a particular phenomenon. As a result, a mixed method approach has the potential to uncover the potential causes of any observed relationships.

Additionally, in their longitudinal study of ten dual enrollment programs over a six-year period, Haxton et al. (2016) found that underserved students had a higher rate of GPA and degree
attainment when dual enrolled. It is also important to note that dual enrollment programs do increase student success in college per similar studies (Vasquez-Colina et al., 2022). Also, St. Amour (2019) found that the GPA for dual-enrolled students was 0.06 points higher than traditional college students when attending a class together. While this may suggest that dual enrolled students may be more incentivized to do well when enrolled in a class with non-dual enrolled students, this is not specifically addressed in the study.

Some dual enrollment programs are career-focused, with students enrolled in career-technical education (CTE) high schools or pathways. High school-college partnerships create a sequence of career-technical courses in these programs, bridging the gap between high school CTE pathways and college CTE programs. Student participation in CTE dual enrollment is linked to increases in college enrollment, GPA, and credit accumulation, and it has also been linked to greater college persistence.

**Conclusions**

There has been little research comparing the GPAs and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee. Hence, the purpose of this quantitative non-experimental study was to compare the GPAs and retention rates of dual enrollment and non-dual enrollment students in community colleges across Tennessee after their second postsecondary semester. As more colleges and K-12 systems continue to embrace the idea and functionality of dual enrollment programs, opportunities for students to achieve college credit while in high school will only increase and provide a pathway for student success in college. Further, the expectation moving forward will be that more and more students will take advantage of these programs and maximize their opportunities with dual enrollment courses, thus making dual enrollment programs the norm (Loveland, 2017).
The results of this study indicated a statistically significant difference in student retention rates and GPA between first-time freshmen who had taken at least one dual enrollment course and those who had not taken a dual enrollment course. First-time freshmen who had taken at least one dual enrollment course recorded better performances on both outcomes. As more students take dual enrollment courses while in high school, these programs provide a catalyst for their success in post-secondary education, especially with regard to their cumulative college GPA and retention (St. Amour, 2019). The implementation of dual enrollment can bring together secondary and postsecondary teachers, faculty, and administrators to help students prepare for college and navigate their first college experience. Collaboration among these groups sets the stage for greater student success and increased retention, providing a means by which more students will have access to and success with their postsecondary coursework and degree attainment (Vargas et al., 2017).
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APPENDIX A

Internal Review Board Notification

Institutional Review Board
Division of Research and Innovation
Office of Research Compliance
University of Memphis
315 Admin Bldg
Memphis, TN 38152-3370

February 16, 2022

PI Name: Matthew Hunter
Co-Investigators:
Advisor and/or Co-PI: Ronald Platt
Submission Type: Admin Withdrawal
Title: An Examination of Retention and Cumulative Grade Point Averages for Dual Enrollment Students at Public Two-Year Institutions in Tennessee
IRB ID: PRO-FY2022-333

From the information provided on your determination review request for “An Examination of Retention and Cumulative Grade Point Averages for Dual Enrollment Students at Public Two-Year Institutions in Tennessee”, the IRB has determined that your activity does not meet the Office of Human Subjects Research Protections definition of human subjects research and 45 CFR part 46 does not apply.

This study does not require IRB approval nor review. Your determination will be administratively withdrawn from Cayuse IRB and you will receive an email similar to this correspondence from irb@memphis.edu. This submission will be archived in Cayuse IRB.

Thanks,

IRB Administrator
Division of Research and Innovation
Office of Research Compliance
315 Administration Building
Memphis, TN 38152-3370
P: 901.678.2705
F: 901.678.4409