

GRADUATION RATES: A COMPARISON OF COLLEGE GRADUATION SUCCESS
RATES OF DUAL ENROLLMENT VERSUS NON-DUAL ENROLLMENT
STUDENTS AT THE COMMUNITY COLLEGE

By

Kathy O Thacker

David W. Rausch
Associate Professor
Chair of Committee

Beth K. Crawford
Assistant Professor
Methodologist

Valerie C. Rutledge
College of Health,
Education and Professional Studies
Committee Member

Susan E. Graybeal
External Reviewer
Committee Member

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Kathy O Thacker

A Dissertation Submitted to the Faculty of the
University of Tennessee at Chattanooga in
Partial Fulfillment of the Requirements of the
Degree of Doctor of Education

The University of Tennessee at Chattanooga
Chattanooga, Tennessee

May 2014

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ABSTRACT

Graduation Rates: A Comparison of College Graduation Success Rates of Dual Enrollment Versus Non-Dual Enrollment Students at the Community College

Dual enrollment programs are designed to offer students academic opportunities and college access, along with the potential to decrease the amount of time it takes to complete a college degree and to lower the cost of college. This study was a comparison of college success rates for dual enrolled and non-dual enrolled students at a community college. The research study compared graduation success rate data from four consecutive years of high school graduates through the completion of their associate degrees.

Five research questions were assessed. RQ1: Was there a statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college? RQ2: Was there a statistical difference in the college graduation success rate of students who graduated from high school with earned college credit through dual enrollment and those students who graduated from high school without earned college credit through dual enrollment at the community college? RQ3: Was there a statistical difference in the percentage of student retention from first and second year of college for dual enrolled versus non-dual enrolled students? RQ4: Was there a statistical difference in the number of dual enrolled and non-dual enrolled students who graduated within three years? RQ5: Was there a statistical difference in the speed of completion

of dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry into college as a full-time freshman?

Findings revealed that dual enrolled students in the study were more likely to complete degrees, retention was more likely for dual enrolled students, and students who had been dual enrolled in high school were more likely to graduate within the 3-years after high school graduation. Finally, this study concluded that dual enrolled students graduated at a greater speed of completion than did non-dual enrolled students.

DEDICATION

This work is dedicated to my family: husband Dennis, son Warren and his wife Abigail, and daughter Jennifer. Each has been a steady force of inspiration and a constant cheerleader for me throughout this journey.

ACKNOWLEDGEMENTS

First and foremost I want to give thanks and praise to my Lord and Savior, Jesus Christ for the strength to complete this research project. There were many days that I drew from His strength and clarity when my strength and clarity were weak. While I had some great encouragement from so many others, I give thanks to God for His awesome help and strength in completing this research project.

I extend my sincere appreciation and gratitude to my doctoral committee chair Dr. David Rausch and to my committee members Dr. Beth Crawford, Dr. Susan Graybeal, and Dr. Valarie Rutledge. You all have been so encouraging along the way and I truly appreciate your guidance. I want to thank Ms. Connie Church for her help, and willingness to share of her knowledge of Excel. A special thank you goes out to my daughter Jennifer for her willingness to share her expertise, support, and assistance with the SPSS program. I want to thank my assistant Ms. Shawna Shafer for her help with APA formatting. I could never have done it without you. Last but not least, I want to extend a huge thank you to my friend Amy Sallee for her constant encouragement through this journey. She has been a great support to me personally as I worked to complete this lifelong learning project.

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CHAPTER 1

INTRODUCTION

In a day when more and more states are placing heavy emphasis on education, there are increased efforts to find programs that positively influence college attendance and retention (Pascarella, 1982). A surprising number of programs have been implemented at the postsecondary level, and recently more emphasis has been placed at the secondary level. According to the National Center for Education Statistics (Marken, Gray, & Lewis, 2013), the number of associate degrees has increased 30 percent from 1997 to 2007, and that number is expected to rise another 30 percent by 2020. One particular program at the secondary level is the dual enrollment program. Dual enrollment programs were designed to offer a student: academic opportunities, college access, decrease the amount of time it takes to complete a college degree, and lower the cost of college to the student (Bontrager, Clemsten, & Watts, 2005; Harnish & Lynch, 2005; Karp, Calcagno, Hughes, Jeong, & Bailey, 2008; Karp et al., 2008; Karp & Hughes, 2008a). High School juniors and seniors can take postsecondary courses from a 2-year or 4-year institution and earn both high school credit and college credit simultaneously (Bailey, Hughes, & Karp, 2003; Hebert, 2001; Johnson & Brophy, 2006; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007).

Research defines dual enrollment as a partnership between the high schools and colleges to provide academic programs and college access to students while yet in high school (Hebert, 2001). This kind of partnership enables the student/the college/and the state to save time and

money while at the same time it results in the student getting an early start to enrolling in college, graduating earlier, and entering the workforce sooner (Hebert, 2001).

Research indicates dual enrollment benefits students, parents, high schools, and colleges (Johnson & Brophy, 2006). Dual enrollment provides motivation, financial savings, promotes access to college, and allows students to experience the college atmosphere (Bailey, Hughes, & Karp, 2003; Harnish & Lynch, 2005; Johnson & Brophy, 2006; Jordan, Cavalluzzo, & Corallo, 2006). Much of the research completed on dual enrollment has focused on the social value in this experience (Harnish & Lynch, 2005), to promote college completion (Bontrager et al., 2005), and the “why” students chose dual enrollment (Johnson & Brophy, 2006; Karp & Hughes, 2008a). Currently there is very little research which involves quantifying data to understand if dual enrollment helps students be more successful in college (Karp & Hughes, 2008a) and therefore persisting through to completion.

Background and Statement of the Problem

Currently, statistics indicate that it takes most students three years to complete an associate degree and six years to complete a baccalaureate degree (ACT, 2013; DOE, 2012; Harnish & Lynch, 2005; Kelly, 2013; THEC, 2011). States are looking for programs that will increase retention and completion. Dual enrollment programs continue to grow in popularity, but there is very little quantitative research about their effectiveness. The lack of data makes it difficult to conduct studies on the effectiveness of dual enrollment as associated with student success (Fleischman & Heppen, 2009; Karp & Hughes, 2008a). This information is critical at a time when many states are experiencing financial crises and programs are being cut. It is difficult

for high school and college administrators, parents, students, and policy makers to determine the effectiveness of dual enrollment (Fleischman & Heppen, 2009; Karp & Hughes, 2008a).

There are very few studies that examine the relationship between dual enrollment participants' and non-dual enrollment participants' college outcomes (Jordan et al., 2006; Karp & Hughes, 2008a). The problem lies in the fact there is very little quantitative research-based evidence to support or refute the effectiveness of the programs (Karp et al., 2008).

Purpose of the Study

This study was a comparison in college graduation success rates of dual enrollment and non-dual enrollment students at the community college. The study examined existing data from four consecutive years of high school graduates through their associate degrees to compare graduation success rates. Participants in this study were from local high schools participating in the dual enrollment program at the target community college within the Tennessee Board of Regents (TBR) system.

Research Questions and Related Hypotheses

1. Is there a statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college?

Ho₁: There is no significant difference in dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college as measured by gender.

2. Is there a statistical difference in college graduation success rate of students who graduated from high school with earned college credit through dual enrollment and those students who graduated from high school without earned college credit through dual enrollment at the community college?

Ho₂: There is no significant difference in college graduation success rate between students who enter the community college with earned college credit through dual enrollment and students entering community college without earned college credit through dual enrollment.

3. Is there a statistical difference in the percentage of student retention from first and second year of dual enrolled and non-dual enrolled students that did not return to college?

Ho₃: There is no significant difference in retention from first to second year returning students for dual enrolled students as opposed to non-dual enrolled students.

4. Is there a statistical difference in the number of dual enrolled and non-dual enrolled students who graduated within three years?

Ho₄: There is no significant difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years.

5. Is there a statistical difference in the speed of completion of dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry?

Ho₅: Among students who graduated within three years, there is no difference in the speed of completion between dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry.

Rationale for the Study

The study was designed to compare college graduation success rates of dual enrollment and non-dual enrollment students at the target community college. There were data implying that dual enrollment is a motivation for accelerating students through college to completion, but there is very little quantitative research about its effectiveness. The purpose of this research was to examine and compare completion rates/graduation success rates of both dual enrollment and non-dual enrollment students at the target community college.

Theoretical/Conceptual Framework

While this quantitative research study was based on graduation success rates of dual enrollment and non-dual enrollment students, there is still a theoretical framework on which the study was based. The theoretical concept for this research was based heavily on the many years of research conducted by Thomas Bailey, Melinda Karp, and Katherine Hughes (2003; Karp, Bailey, Hughes, & Fermin, 2004; Karp et al., 2007) and others at the Teachers College at Columbia University on dual enrollment programs in America. Their research indicated a strong compulsion to understand the characteristics of dual enrolled students before they took a dual enrollment class and then followed them to see how they compared to students that did not participate in dual enrollment. The foundation for this study was grounded in Karp and Hughes many years of research dedicated to “examine, in a statistically rigorous way, the relationship between dual enrollment participation and subsequent postsecondary outcomes” (Karp & Hughes, 2008a) and also in Pascarella’s (1982) theory of student development.

There is a growing base of research indicating that dual enrollment programs offer students an opportunity to experience college life before graduating high school (Bailey et al.,

2003; Harnish & Lynch, 2005; Johnson & Brophy, 2006; Jordan et al., 2006). This experience also affords the student with opportunities to become socially and academically integrated into the institution (Pascarella & Terenzine, 1991). For this reason, the target community college strives to place competent and credentialed professional instructors in the dual enrollment classes.

Pascarella (1982) revealed the significance of a connection between the student-faculty informal contacts. Sometimes the level of connection is determined by institutional factors such as size of college, admissions, and personal contact from the dual enrollment administrative staff. The more involvement the student has with the institution often determines the student's overall perception of college. This informal contact goes hand-in-hand to create favorable college experiences (Pascarella, 1982) which may lead to increased college graduation rates.

Pascarella (1982) indicates that graduation rates are affected by student academic factors such as ACT Scores, high school attended, college major, and college grades. The constructs of measurement for this study include: high school enrollment status, high school location, high school grade point average (GPA), cumulative dual enrollment credits earned, academic year (AY) entering college, socioeconomic status, domicile, gender, ethnicity, academic year graduated from the community college, cumulative college credit earned, and final college GPA.

This research study was designed to analyze existing student information data to track entering freshmen from AY 2006, 2007, 2008, and 2009 to compare student retention and completion of dual enrollment credit students with non-dual enrollment credit students at the target community college.

Significance of the Study

Many of the nation's students require financial assistance to attend college. In today's economic downturn, there is significant growing strain on resources of colleges, state, and federal governments to keep up with the growing demand for educational needs. According to the U. S. Department of Education, \$141.9 million in Federal Student Aid (FSA) was awarded to over 15 million students in FY 2012. The report indicated this is an increase of two million new students from FY 2011 (DOE, 2012).

State, local, and federal governments continue to coordinate new programs to assist with the ever growing need for resources. One of the programs colleges have in place to assist in this endeavor is the dual enrollment programs. The dual enrollment program was designed to increase college access to students while they were still in high school, to provide motivation, enhance financial savings, allow students to experience college and to promote college completion (Bailey et al., 2003; Bontrager et al., 2005; Harnish & Lynch, 2005; Johnson & Brophy, 2006; Jordan et al., 2006; Karp & Hughes, 2008a).

This study investigated graduation success rates between students who participated in dual enrollment and students who did not participate in dual enrollment during their junior and senior high school years. The results will be used to assist high school and college administrators, parents, students, and policy makers to determine the effectiveness of dual enrollment.

Definition of Terms

1. Domicile: (for the purpose of this study) did student reside at the same address as parent/guardian

2. Dual enrollment: Concurrent high school and college enrollment; enrolled student earns both high school and college credit (NeSCC, 2012)
3. Dual enrollment student eligibility: Must have junior or senior standing in high school; must submit a college application, fee, high school transcript, and have earned a minimum of 19 in English, reading, and math on the ACT or a composite score of 920 with minimum of 460 in math and verbal on the SAT (NeSCC, 2012)
4. Dual enrollment courses: postsecondary course, taught by the postsecondary faculty, which upon successful completion of the course allows students to earn college and secondary credit concurrently (NeSCC, 2012)
5. Enrollment status: (for the purpose of this study) is defined as either dual enrolled or non-dual enrolled
6. First time freshman: (for the purpose of this study) students were classified as first time freshman based on their first time enrollment at the college after high school graduation
7. GPA: Grade Point Average
8. High school enrollment status: (for the purpose of this study) students were classified as dual enrolled students or non-dual enrolled students based on their participation in the dual enrollment program at their respective high schools
9. Joint enrolled: Concurrent high school and college enrollment; enrolled student earns college credit for college courses (NeSCC, 2012)
10. NeSCC: Northeast State Community College
11. Primary service area: NeSCC service area includes the Tennessee counties of Carter, Johnson, Sullivan, Unicoi, and Washington Counties (NeSCC, 2012)

12. Retention: (for the purpose of this study) whether a student returns to the target community college

13. TBR: Tennessee Board of Regents

Methodological Assumptions

For the purpose of this study, the researcher assumed that the methodology was appropriate for the problem stated, that the data gathered was accurate and comprehensive, and that the statistical procedures listed addressed the problem and purpose. The researcher assumed that the results will be relevant to the target community college and stakeholders.

Delimitations of the Study

For the purpose of this study, subjects were delimited to dual enrollment, non-dual enrollment, and first time freshmen in one community college within the Tennessee Board of Regents system. The study included students entering the target community college after high school graduation in the immediate semester following the graduating year were considered in the study. This means that high school students graduating between December to June in the academic years 2005-06, 2006-07, 2007-08, and 2008-09 that enter the target community college in January, May, or August immediately following high school graduation, in 2006, 2007, 2008, 2009 were included in the study.

Subjects were limited to students graduating from one of the five county high schools participating in the target college's dual enrollment program. To be a dually enrolled student at the target community college, the student was required to be a junior or a senior at the high school level. Dual enrollment students who continued their education at a college or university other than the target community college were not included in the study.

Limitations of the Study

Due to the nature of an ex-post-facto study, using institutional data, the researcher cannot account for lack of social support, health, and/or the economic situations of the students. One limitation of this study was that if students had taken dual enrollment classes at another institution, there was no classification to determine if the transfer credit was dual enrollment. The study was reliant on proper key entry by the college personnel who input data into the Banner Student Information System. Another limitation for this study was that the researcher had no record about whether students were or were not employed while attending high school and/or college.

Summary

This study was organized into five chapters. Chapter 1 includes a brief introduction, statement of the problem, research questions, definition of terms, delimitations and limitations, and an overview of the study. Chapter 2 presents a review of the literature from 2001-2013 related to high school students earning college credit through the dual enrollment program. This chapter includes sections relating to the opportunities for academic success, transitioning from high school to college, financial benefits to dual enrollment, and college readiness. Chapter 3 clarifies the research methods of the study including the population, design, data collection, methodology, and data analysis. Chapter 4 contains the analysis and interpretations of the data. Chapter 5 contains the summary, conclusions, implications, and recommendations for further study.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

Excitement and interest continue to grow in expanding dual enrollment programs to allow students to earn college credit while still in high school (Andrews, 2004; Harnish & Lynch, 2005; Hughes, 2010). Dual enrollment programs provide opportunities for high school junior and senior students to take college courses and earn both high school and college credit simultaneously (Andrews, 2004; Bailey et al., 2003; Harnish & Lynch, 2005; Johnson & Brophy, 2006; Karp & Hughes, 2008a). Students can either take dual enrollment courses in the comfort of their high school classrooms, with other high school students, or on the college campus (Hebert, 2001). Whether students choose to experience dual enrollment classes as part of their normal high school routine or attend classes at the college, their dual enrollment courses are taught by a qualified and credentialed college faculty member (Bailey et al., 2003).

Opportunities for Academic Success

Dual enrollment programs were designed to offer students academic opportunities, college access, decrease the amount of time it takes to complete a college degree, and lower the cost of college to students (Bontrager et al., 2005; Harnish & Lynch, 2005; Karp & Hughes, 2008a). Dual enrollment has grown in popularity among high school systems and colleges (Karp

& Hughes, 2008a), but why should students be encouraged to participate in dual enrollment as a junior and senior in high school?

Research indicates that based on the supposition that dual enrollment programs were designed to offer students academic opportunities that may shorten the time it takes to complete a college degree, and reduce the cost of college to students (Bontrager et al., 2005; Harnish & Lynch, 2005; Karp & Hughes, 2008a; Kronholz, 2011), that every state in America offers some form of dual enrollment and/or dual credit programs at the high school level (Mann & Peters, 2011). According to Kronholz (2011), dual enrollment promises to speed students “through college into the workforce” which reduces college cost for both parents and the taxpayers (p. 26).

Research shows one component consistent throughout the topic of dual enrollment is to provide a smooth transition from high school into college by helping students acquire necessary academic and soft skills needed to be successful in college (Andrews, 2004; Fleischman & Heppen, 2009; Karp & Hughes, 2008a). These programs are designed to increase awareness of the demands of postsecondary education, assist students with preparation for college-level coursework, and to help facilitate a smooth and seamless transition between high school and college (Hebert, 2001; Karp & Hughes, 2008a).

Transition from High School to College

Since the 1990s, school systems have worked diligently to improve instructional content and practice through Comprehensive School Reform Programs which included America’s Choice, Talent Development High Schools, and No Child Left Behind (Fleischman & Heppen, 2009). While Talent Development High Schools and America’s Choice programs include “career academy” components to better prepare students for life beyond high school (Quint, 2006),

research has shown that state policy makers are looking more and more to the dual enrollment program to accelerate learning and to bridge the transition from high school to college (Andrews, 2004; Fleischman & Heppen, 2009; Karp & Hughes, 2008a).

There seems to be a sense of urgency to develop relationships between school systems and colleges to better understand the needs and demands associated with college expectations (Fleischman & Heppen, 2009). By aligning the high school content and pedagogy with college expectations, the students become better positioned to succeed in and beyond college (Fleischman & Heppen, 2009; Karp & Hughes, 2008a). Success is broader than the college credit earned; students gain confidence in themselves academically, socially, and personally after completion of as little as one dual enrollment class (Karp & Hughes, 2008a).

Nationally, the number of high school graduates going to community college directly out of high school is 63.5 percent. The number of high school graduates going to community college directly out of high school in Tennessee is 61.6 percent (NCHEMS, 2013). At the target community college within the Tennessee Board of Regents (TBR) system, programs are designed to teach students about the demands of postsecondary education, assist students with preparation for college-level coursework, and to help facilitate a smooth and seamless transition between high school and college (Hebert, 2001; Karp & Hughes, 2008a).

There are a number of studies that examine reasons that students, parents, high schools, school systems, and colleges promote dual enrollment as a benefit (Andrews, 2001; Bailey et al., 2003; Boswell, 2001; Hoffman, Vargas, & Santos, 2009). According to Johnson and Brophy (2006), dual enrollment provides an opportunity for motivated and interested students to earn college credit while in high school. Research also shows a significant cost savings to those students. One study out of Washington State reported their dual enrollment program helped

lower the cost of college and reduced the tax burden of taxpayers by \$23.1 million in tuition (Johnson & Brophy, 2006). Much of the cost savings revealed in research is based on no cost tuition, lower cost tuition, dual enrollment scholarships, and savings due to speed of completion (Johnson & Brophy, 2006; Karp et al., 2004).

There are very few studies that examine the relationship between dual enrollment participants' and non-dual enrollment participants' college outcomes (Jordan et al., 2006; Karp & Hughes, 2008a). There is very little quantitative research-based evidence to support or refute the effectiveness of the programs (Karp & Hughes, 2008a) especially at a time when many states are experiencing financial crises and programs are being cut. Without such critical information, it is difficult for high school and college administrators, parents, students, and policy makers to determine the effectiveness of dual enrollment course offerings in the high schools and justify funding.

Financial Benefits of Dual Enrollment

A good education has become increasingly expensive in the United States, and the cost of college continues to rise to the point that it could become out of reach for families (McCauley, 2013). According to the U. S. Department of Education, tuition has steadily increased over the last 25 years. Research of the current literature, 2001-2013, shows that dual enrollment programs are designed to provide financial assistance to qualified high school students in pursuit of postsecondary study at an eligible public or private institution while receiving dual high school and college credit from successfully completed courses (Karp & Hughes, 2008a). Research also indicates that some programs offer financial assistance in the form of discounted or free tuition and fees to qualified high school students in pursuit of postsecondary study at an eligible public

or private institution while receiving dual high school and college credit from successfully completed courses (An, 2013; Karp & Hughes, 2008a).

This financial assistance comes in different forms. Some states, through legislative efforts, can offer dual enrollment programs free (e.g., Florida) or discounted (e.g., Texas and Utah) for both tuition and fees for students (An, 2013). Other states (e.g., Indiana) have worked out an arrangement with local colleges to waive dual enrollment tuition (Kronholz, 2011). Tennessee offers financial assistance to qualified high school students through the Dual Enrollment Grant Program. There are a number of specific requirements the student must meet to be eligible for the Dual Enrollment Grant in the State of Tennessee. Among those are: student must be classified as a junior or senior, apply for the grant before high school graduation, and meet the college eligibility requirements. The total grant monies a student can earn each semester is \$600 (\$1,200 per academic year) (TSAC, 2013).

There are few studies that examine a relationship between dual enrollment and non-dual enrollment college outcomes (Jordan et al., 2006; Karp & Hughes, 2008a). Currently there is very little quantitative research-based evidence to support or refute the effectiveness of the program (Karp & Hughes, 2008b) at a time when many states are experiencing financial crises and programs are being cut. Without such critical information, it is difficult for high school and college administrators, parents, students, and policy makers to determine the effectiveness of course offerings in the high schools and justify funding.

Dual enrollment is designed to provide students with a less expensive way to take college level courses and earn college credits while in high school (An, 2013). According to Hughes (2010), there is very little quantitative research about dual enrollment programs. Karp and

Hughes (2008b) reported that despite the popularity of dual enrollment, not much is known about its effectiveness for increasing student's college success.

Dual enrollment has grown in popularity among high school systems and colleges (Karp & Hughes, 2008b), but why should students be encouraged to participate in dual enrollment as a junior and senior in high school? In today's economic times, the opportunity to earn college credit prior to high school graduation offers potential savings to parents, students and the state (Johnson & Brophy, 2006). Research also indicated that dual enrollment academically prepares students for college classes and sets the stage for a more confident student once in the college environment (Hughes, Rodriguez, Edwards, & Belfield, 2012).

College Readiness

In today's economy, our nation is focused on college and career readiness (Hughes et al., 2012). High schools and colleges have multiple interventions in place to prepare students for college level courses. College readiness is defined as a level of preparation a student needs in order to enroll and succeed, without remediation, in a credit-bearing general education course at a postsecondary institution (ACT, 2013). Seventy percent of all community college students take at least one remedial course (Clayton & Rodriguez, 2012) which leads to paying more for their education than the thirty percent that require no remedial courses. Research shows that students who test into one or more developmental education courses are less likely to complete college (Attewell, Lavin, Domina, & Levey, 2006; Bailey, 2009; Jenkins, Jaggars, & Roksa, 2009; Kolajo, 2004). The key goal for developmental education courses is to improve students' skills before they begin college level courses. Dual enrollment is among the strategies utilized to help students avoid developmental education (Zachry & Schneider, 2010).

A previous study completed in California revealed that six years after enrolling in community college, nearly 70 percent of the degree seeking students had completed neither a certificate, degree, nor transferred to a four year college (Hughes et al., 2012). According to ACT college readiness standards, the benchmark scores are based on an analysis of course rigor and performance in the high schools that reflect subject-area tests minimum scores as a 50 percent chance of obtaining a B or higher in a college course or a 75 percent chance of a C or better (ACT, 2013). In the recently published National study conducted by ACT (ACT, 2013), *The Condition of College and Career Readiness 2012* findings reveal that academic performance is slightly better than 2011. The ACT's College Readiness Benchmarks as quoted in the *ACT Profile Report-National: Graduating Class 2012*, indicate that nearly 75 percent of seniors graduating from high school in 2012 scored in the percentage to require one or more developmental or remedial classes (ACT, 2013). These data confirm the need for programs that support the transition to and success in college (Contreras, 2011).

Since the 1990s school systems have worked diligently to improve instructional content and practice through Comprehensive School Reform Programs which included America's Choice, Talent Development High Schools, and No Child Left Behind (Fleischman & Heppen, 2009). While Talent Development High Schools and America's Choice programs include "career academy" components to better prepare students for life beyond high school (Quint, 2006), research has shown that state policymakers are looking more and more to the dual enrollment program to accelerate learning and to bridge the transition from high school to college (Andrews, 2004; Fleischman & Heppen, 2009; Karp & Hughes, 2008a).

Statistics reveal that about 40 percent of the traditional-aged first time freshmen entering college test into at least one developmental course (ACT, 2013). With this staggering number,

there seems to be a need to develop stronger relationships between school systems and colleges to better understand the need and demands associated with college expectations (Fleischman & Heppen, 2009). By aligning the high school content and pedagogy with college expectations, students become better positioned to succeed in and beyond college (Fleischman & Heppen, 2009; Karp & Hughes, 2008b). Research shows that students are also better positioned to succeed in college after successful completion of only one dual enrollment class. This success could be attributed to the fact that students gained confidence in themselves academically, socially, and personally after completing a college level class (Karp & Hughes, 2008a).

Nationally the number of high school graduates going to community college directly out of high school is 63.5 percent. The number of high school graduates going to community college directly out of high school in Tennessee is 61.6 percent (NCHEMS, 2013). At one community college within the Tennessee Board of Regents (TBR) system, dual enrollment programs are designed to teach students about the demands of postsecondary education, to assist students with preparation for college level coursework, and to help facilitate a smooth and seamless transition between high school and college (Hebert, 2001; Karp & Hughes, 2008b).

There are a number of studies that examine the reasons students, parents, high schools, school systems, and colleges look to dual enrollment for assistance in the transition to college (Andrews, 2001; Bailey et al., 2003; Boswell, 2001; Hoffman et al., 2009). According to Johnson and Brophy (2006), dual enrollment provides an opportunity for motivated and interested students to earn college credit in high school. Research also shows a significant cost savings to those students. Johnson and Brophy (2006) went on to illustrate one study out of Washington State that reported their dual enrollment program helped lower the cost of college and reduced the tax burden of taxpayers by \$23.1 million in tuition.

Research indicates one component of dual enrollment is to provide a smooth transition from high school into college by helping students acquire necessary academic and soft skills needed to be successful in college (Andrews, 2004; Fleischman & Heppen, 2009; Karp & Hughes, 2008b). A recent article revealed there is more to student success than passing grades. College readiness goes beyond grades to include the non-cognitive components of success such as positive self-image regarding academic performance, ability to set goals, good support system, and experiencing success in the classroom (Sommerfeld, 2011). Dual enrollment programs were designed to address a number of issues students face when transitioning to college. In addition to some of the benefits already addressed, dual enrollment increases awareness of the demands of postsecondary education, assists students with preparation for college-level coursework, and helps to facilitate a smooth and seamless transition between high school and college (Hebert, 2001; Karp & Hughes, 2008b).

Currently, there is very little research using quantifying data to determine whether dual enrollment programs help students be more successful in college (Karp & Hughes, 2008a) and therefore, persist through to completion. Research indicates the need for programs that promote retention and graduation. The latest state profile data that were posted in the NCHEMS Information Center (NCHEMS, 2013) stated that only 26.2 percent of the first-time freshmen entering college complete an associate degree in three years. According to the Tennessee Higher Education Commission (THEC, 2011), the target community college's fall-to-fall retention rate was 59.2 percent in 2011.

Karp and Hughes (2008a) reported that despite the popularity of dual enrollment, not much is known about its effectiveness for increasing students' college success. All 50 states permitted community colleges to use state funds to provide developmental education, but several

states provided no funding designated specifically for such instruction. In 40 states part of the costs for developmental education was paid by the students, and local institutions subsidized developmental programs with their own funds in at least a third of the states (Jenkins & Boswell, 2002).

Bailey (2009) quotes statistics from the *2008 Strong American Schools* study that calculated the annual cost of remediation at \$1.9 to \$2.3 billion at community colleges. Many researchers have concluded that the large cost of developmental education was wasteful, but others such as Long (2005) suggested the price of not offering developmental studies programs was even more costly because low educational levels had been associated with high unemployment, dependency on government programs, crime, and incarceration. Because of these differences of opinion, the answer to the question about the feasibility of allotting so many financial resources in support of developmental education remains inconclusive.

Summary

This chapter provided a review of the related literature from 2001 to 2013 concerning the dual enrollment program and the potential benefits of the program. This review of literature revealed that dual enrollment provides multiple opportunities for students to experience academic success, transition from high school to college, financial assistance, and has improved college readiness for students leaving high school and entering college. According to Hughes (2010), there is very little research out there about dual enrollment programs. Hughes along with coauthor Karp report that despite the popularity of dual enrollment, not much is known about its effectiveness for increasing student's college success (2008b).

CHAPTER 3

METHODOLOGY

Population/Sample

The population for this sample consisted of high school graduates graduating from high schools within the five county service area that participated in the dual enrollment program through the target community college. Population consisted of the aggregate number of students identified from the target community college's Banner Student Information System.

The entire dual enrollment population was used to answer Research Question 1. For the remainder of the research questions, only students who entered the community college immediately following high school graduation were included in the study. For research questions 2-5, the population of this study consisted of only students graduating from participating high schools in the community college service area in the Academic Year (AY) AY2006, AY2007, AY2008, and AY2009 and included only those students who were enrolled at the target community college.

The study was an *ex post facto* analysis using archived institutional data, and the researcher reported the findings from data as to whether students did or did not complete their associate degree in three years.

Design

This research focused on the success rates of the dual enrollment program when measured against the program goals of matriculating students through college at an accelerated pace over fellow students who did not participate in dual enrollment. The research design used a quantitative methods approach to comprehensively investigate dual enrollment success. The study used *ex post facto*, comparative design (Donnelly & Trochim, 2005) to “explore possible causal relationships among variables that cannot be manipulated by researcher” (McMillan & Schumacher, 2010, p. 23). Both groups were very similar. One group was classified as having participated in the dual enrollment program and the comparison group was classified as not having participated in the dual enrollment program (Donnelly & Trochim, 2005).

Institutional data were extracted from the Banner Student Information System using specific data points for developing the database structure (Donnelly & Trochim, 2005). Data points identified were in the nature of: demographic, ethnicity, high school location, academic year of high school graduation, academic year of entering community college, number of dual enrolled credit hours earned through dual enrollment prior to high school graduation, high school completion date and college completion date, withdrawal date, final high school GPA and final college GPA, and final number of credit hours earned in college. To ensure the validity of the study, the researcher used students' ACT standardized composite scores to control for academic ability when appropriate.

The research questions and hypotheses were designed to address the overarching goal for the study. The following research questions were selected that guided the study.

1. Is there a statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college?
 - Research question one utilized the chi-square test of independence (two-way contingency table) to measure if there is a statistical difference between the percentages of the two groups of students attending the target community college.
2. Is there a statistical difference in college graduation success rate of students who graduated from high school with earned college credit through dual enrollment and those students who graduated from high school without earned college credit through dual enrollment at the community college?
 - Research question two utilized the chi-square test of independence (two-way contingency table) to measure if there is a statistical difference between graduation success rates of the two groups.
3. Is there a statistical difference in the percentage of student retention from first and second year of dual enrolled and non-dual enrolled students that did not return to college after the first year?
 - Research question three utilized the chi-square test of independence (two-way contingency table) to measure if there is a statistical difference between the percentages of the two groups of students retained at the target community college after the first year.
4. Is there a statistical difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years?

- Research question four utilized the chi-square test of independence (two-way contingency table) to measure if there is a statistical difference between the two groups of students who graduated within three years.
5. Is there a statistical difference in the speed of completion of dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry?
- Research question five utilized a *t* test to assess whether the means of the speed of completion of dual and non-dual enrolled students are statistically different from each other. The researcher used an alpha level of .05 (Donnelly & Trochim, 2005).

Hypotheses for RQ2-4 were assessed using a chi-square test for independent samples to evaluate the difference between the two categorical values of dual and non-dual enrolled students. The hypothesis for RQ5 was assessed using a *t* test to assess whether the means of the speed of completion are statistically different.

Variables Analysis

The dependent variables in this study were dual enrollment participants (RQ1), graduation success rates (RQ2), retention from first to second year (RQ3), percentage of students who graduated within three years (RQ4), and the speed of completion (RQ5). The level of the dependent variable was nominal and was categorized by “yes” equals one and “no” equals two (Appendix A). The independent variables were nominal and categorical and consisted of enrollment status, location of the high school attended, gender, and ethnicity. There were numerous extraneous variables pertaining to this study:

- socioeconomic status

- academic field of study
- financial classification status to include:
 - dependent or independent
 - qualified for the “Educate and Grow” scholarship
 - financial aid recipient status
- number of dual enrollment college credit hours earned prior to entering college
- ACT score upon entering college
- final high school GPA
- final college GPA

Instrument

The study employed an *ex post facto* non-experimental quantitative research design to examine the links between the variables without manipulation by the researcher (McMillan & Schumacher, 2010). The researcher used a comparative non-experimental model that was designed to investigate the differences between two groups of college students without direct control of conditions. Students were not randomly selected because the study used census data for students who entered the target community college with earned college credit on their transcripts that they earned through the community college’s dual enrollment program prior to high school graduation and those students who entered the community college without earned college credit before graduating from high school.

Census data represented first-time freshmen who enrolled at the community college in the summer or fall of 2006, 2007, 2008, and 2009 immediately following high school graduation. The study was a comparison of college graduation success rates of dual enrollment and non-dual

enrollment students at the community college. This study was limited to only students who attended high schools in the target community college service area. To evaluate the success of the program, the study focused on the following variables: dual enrollment participant, non-dual enrollment participant, enrollment in remedial and developmental courses (as determined by ACT score), College GPA, High School GPA, graduate from community college within two years, and graduate from community college within three years.

Procedure

The first steps in the process of collecting data were to gather appropriate approvals from the president of the target college (Appendix B) and the Institutional Review Boards. This study used institutional data located in the target community college's Banner student records database to compare graduation rates for dual enrollment and non-dual enrollment high school students. Only students graduating from high school between December and June in the academic years of 2005-06, 2006-07, 2007-08, and 2008-09 and entering target community college as full-time students in the summer or fall semesters of 2006, 2007, 2008, and 2009 were followed for the three year period to determine if they graduated early or on time by the end of Spring (May) or Summer (August) semesters of 2009, 2010, 2011, and 2012.

Data Analysis

Descriptive and inferential statistical methods were used to analyze the research questions. Research questions one, two, three, and four was analyzed using a chi-square to test the graduation success rates between both, dual enrolled and non-dual enrolled student groups (McMillan & Schumacher, 2010; Patten, 2009). To answer research question five, the researcher

used a *t* test to compare the means of the two groups in regards to gender and GPA of both sets of data, dual enrolled and non-dual enrolled students (Patten, 2009). The data was analyzed by SPSS version 21.

Data from the community college were analyzed using descriptive statistics, *t* test, and Chi-Square. The researcher used chi-square to measure and compare the difference between the two groups as well as compare gender and school success within city schools and county schools (Dane, 2011; Hinkle, Wiersma, & Jurs, 2003; Urdan, 2005). The researcher used a *t* test to assess whether the means of the speed of completion of dual and non-dual enrolled students were statistically different from each other, and a chi-square test for independent samples to evaluate the difference between the two categorical values of dual and non-dual enrolled students.

CHAPTER 4

RESULTS AND ANALYSIS

Introduction

Currently, statistics indicate that on average it takes a student three years to complete an associate degree (ACT, 2013; DOE, 2012; NCHEMS, 2013; THEC, 2011); therefore many states are looking for programs that will increase retention and completion. Dual enrollment programs continue to grow in popularity, but there is very little quantitative research about its effectiveness. The lack of data makes it difficult to conduct studies on the effectiveness of dual enrollment as associated with students. With many states experiencing financial crises and programs being cut, now is a good time to examine the effectiveness of dual enrollment success (Fleischman & Heppen, 2009; Karp & Hughes, 2008a).

The purpose of this study was to examine the current dual enrollment program of a local community college to compare college graduation success rates, retention, and the speed of completion of dual enrollment and non-dual enrollment students. The population consisted of 5,332 high school graduates who enrolled in a specific community college located in upper Northeast Tennessee during 2006, 2007, 2008, and 2009. Of the total population, 2,798 were females, 2,534 were males, 1,113 were dual enrollment participants, and 4,219 were non-dual enrolled students. Table 4.1 shows the demographic profile of the population.

Table 4.1

Demographics of Population

	Dual Enrolled		Non-Dual Enrolled		Total	
	<i>N</i>	%	<i>N</i>	%	<i>n</i>	%
Gender						
Male	452	40.6	2082	49.3	2534	47.5
Female	661	59.4	2137	50.7	2798	52.5
Total	1113	100.0	4219	100.0	5332	100.0
Ethnicity						
African American	1	.1	103	2.4	104	1.9
American Indian	2	.2	7	.2	9	.2
Asian	2	.2	13	.3	15	.3
Hispanic	6	.5	66	1.6	72	1.4
Native Hawaiian	0	0.0	3	.1	3	.1
White	393	35.3	2759	65.4	3152	59.1
Other	7	.6	64	1.5	71	1.3
Unknown	702	63.1	1204	28.5	1906	35.7
Total	1113	100.0	4219	100.0	5332	100.0

Five research questions were developed to direct the study, and five corresponding hypotheses were tested.

Research Question 1

Is there a statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college? The total number of dual enrolled participants was 1,113. Research question 1 divided the total dual enrolled students into two groups. Group 1 consisted of dual enrolled

students attending the target community college (496) and group 2 consisted of those dual enrolled students not attending the target community college (617). Figure 4.1 illustrates the percentage of the total dual enrolled population that entered the target community college after high school was 44.6 (N=496) and the percentage of students who did not attend the target community college was 55.4 (N=617).

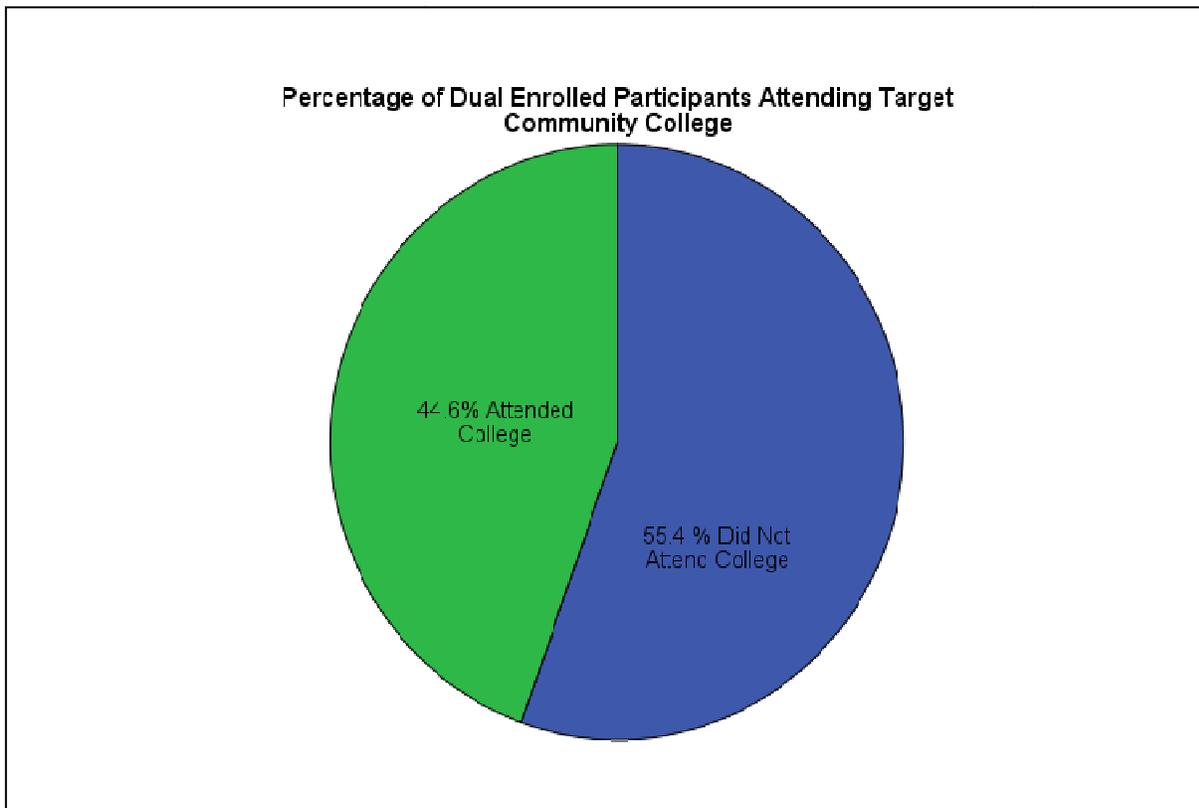


Figure 4.1 Percentage of Participants Attending Target Community College

The total number of dual enrolled participants numbered 1,113 and only 496 of those participants attended the target community college. The researcher took this one step further to assess if among those 496 dual enrolled students there was any significant difference between male and females attending the target community college.

Ho₁: There is no significant difference between male and female dual enrollment participants and whether or not they attended the target community college.

The Chi Square test was used to test the hypothesis and evaluate whether or not there was a difference in the percentage of male and female dual enrolled students who attended the target community college after high school graduation. There were no violations of the assumptions of Chi Square: there were no cells with an expected count of less than five and the minimum expected count was greater than one. As illustrated by Table 4.2, the Chi Square test was not significant, Pearson's $\chi^2 (1) = 1.341, p = .247$. Therefore, the null hypothesis was retained because there was no significant difference between male and female dual enrollment participants and whether or not they attended the target community college.

Table 4.2

Chi-Square Tests for Ho1

	Value	Df	Asymp. Sig. (2-sided)	Exact. (2-sided)	Exact. (2-sided)
Pearson Chi-Square	1.341 ^b	1	.247		
Continuity Correction ^a	1.203	1	.273		
Likelihood Ratio	1.343	1	.247		
Fisher's Exact Test				.269	.136
N of Valid of Cases	1113				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 201.43.

The total dual enrolled population was 1,113 and the female to male ratio was 59.1 percent (661 female) to 40.6 percent (452 male). Of the 1,113 dual enrolled students, 496 enrolled in college immediately following high school graduation (304 females; 192 males). The

data revealed a difference of 18.5 percent between females to males in the total population. Table 4.3 shows that 46.0% (304) of the total 661 female dual enrolled population attended the target community college, and 42.5% (192) of the total 452 male dual enrolled population attended the target community college after high school graduation. This shows a difference of only 3.5 percentage points between female (46.0%) and males (42.5%) attending the target community college. The Chi Square test showed no significance ($\chi^2 (1) = 1.341, p = .247$) therefore the null hypothesis was retained because there was no significant difference between male and female dual enrollment participants and whether or not they attended the target community college. Even though there was a difference of 3.5 percentage points, this difference was determined to be statistically significant between male and female dual enrollment participants and whether or not they attended the target community college. Even though there was a difference of 3.5 percentage points, this difference was determined not to be statistically significant between male and female dual enrollment participants and whether or not they attended the target community college.

Table 4.3

Crosstabulated Table for Student Retention by Type of Enrollment

	Female		Male	
	n	%	n	%
Gender				
Attended	304	46.0	192	42.5
Not Attended	357	54.0	260	57.5
Total	661	100.0	452	100.0

Not Significant at $\alpha = 0.05$

Research Question 2

Is there a statistical difference in college graduation success rate of students who graduated from high school with earned college credit through dual enrollment and those students who graduated from high school without earned college credit through dual enrollment at the community college?

Ho₂: There is no significant difference in college graduation success rate between students who enter the community college with earned college credit through dual enrollment and students entering community college without earned college credit through dual enrollment.

The Chi Square test was used to evaluate whether or not there was a difference in the college graduation success rates between students who enter the community college with earned college credit through dual enrollment and students entering community college without earned college credit through dual enrollment. There were no violations of the assumptions of Chi Square: there were no cells with an expected count of less than five and the minimum expected count was greater than one. As illustrated by Table 4.4, the Chi Square test was significant, Pearson's $\chi^2 (1) = 30.48, p < .001$. Therefore, the null hypothesis was rejected. However, the strength of the relationship, as measured by Phi, was weak (.08). A Phi of 0 means no relationship between the dual enrolled and non-dual enrolled enrollment type and .08 is very close to 0, but the weak relationship shows significance in that it revealed that 10% more dual enrolled students graduated from college than non-dual enrolled students at the target community college.

Table 4.4

Chi-Square Tests for Ho2

	Value	Df	Asymp. Sig. (2-sided)	Exact. (2-sided)	Exact. (2-sided)
Pearson Chi-Square	30.475 ^b	1	.000		
Continuity Correction ^a	29.806	1	.000		
Likelihood Ratio	27.800	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	30.469	1	.000		
N of Valid of Cases	4699				

c. Computed only for a 2x2 table

d. 0 cells (.0%) have expected count less than 5. The minimum expected count is 92.68.

As illustrated in Table 4.4, the Chi Square test for RQ2 revealed significance ($\chi^2 (1) = 30.48, p < .001$), therefore the hypothesis that there was no significant difference in the college graduation success rate between students who enter the community college with earned college credit through dual enrollment and students entering community college without earned college credit through dual enrollment was rejected. However, the strength of the relationship, as measured by Phi, was weak (.08). Table 4.5 shows that 27.8% of the students who were dual enrolled graduated from the target community college while 17.6% of the non-dual enrolled students graduated from college, a difference of 10 percentage points.

Table 4.5

Crosstabulated Table for Graduation Success by Type of Enrollment

		Dual Enrolled		Non-Dual Enrolled	
		<i>N</i>	%	<i>n</i>	%
Graduated					
	Yes	138	27.8	740	17.6
	No	358	72.2	3463	82.4
	Total	496	100.0	4203	100.0

*Significant at $\alpha = 0.05$

Of the total number of cases studied for RQ2 (5,332), only the 4,699 subjects who entered the target community college were included. These subjects were 4,203 non-dual enrolled and 496 dual enrolled students. Findings show that of the total 4,699 students entering the college, 358 (72.2%) of the 496 dual enrolled students and 3,463 (82.4%) of the 4,203 non-dual enrolled population did not graduate. The total graduates were 878 (740 non-dual enrolled; 138 dual enrolled) and non-graduates were 3,821 (3,463 out of the 4,203 non-dual enrolled and 358 out of 496 dual enrolled). Results reveal a 10% difference between both dual enrolled and non-dual enrolled in both categories of graduates (27.8%, 17.6%) and non-graduates (72.2%, 82.4%).

Research Question 3

Is there a statistical difference in the percentage of student retention from first and second year of dual enrolled and non-dual enrolled students that did not return to college after the first year?

Ho₃: There is no significant difference in retention from first to second year returning students for dual enrolled students as opposed to non-dual enrolled students.

The Chi Square test was used to evaluate whether or not there was a difference in student retention from first and second year of dual enrolled and non-dual enrolled students that did not return to college after the first year. There were no violations of the assumptions of Chi Square. There were no cells with an expected count of less than five and the minimum expected count was greater than one. As illustrated by Table 4.6, findings of the Chi Square test was significant, Pearson's $\chi^2 (1) = 41.18, p < .001$. Therefore, the null hypothesis as stated there was no significant difference in retention from first to second year returning students for dual enrolled students as opposed to non-dual enrolled students was rejected. The strength of the relationship, as measured by Phi, was weak (.09).

Table 4.6

Chi-Square Tests for Ho3

	Value	Df	Asymp. Sig. (2-sided)	Exact. (2-sided)	Exact. (2-sided)
Pearson Chi-Square	41.184 ^b	1	.000		
Continuity Correction ^a	40.573	1	.000		
Likelihood Ratio	42.369	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	41.175	1	.000		
N of Valid of Cases	4699				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 223.25.

As we see in Table 4.6, the Chi Square test was significant ($\chi^2 (1) = 41.18, p < .001$), therefore the null hypothesis was rejected because there was a significant difference in retention

from first to second year returning students for dual enrolled students as opposed to non-dual enrolled students. Table 4.7 shows the difference between the percentages of the two groups. There were 68.5% of the dual enrolled students that returned to college the second year while 53.4% of the non-dual enrolled students returned to college the second year. This shows a difference of 15 percentage points.

Table 4.7

Crosstabulated Table for Student Retention by Type of Enrollment

		Dual Enrolled		Non-Dual Enrolled	
		<i>N</i>	<i>%</i>	<i>n</i>	<i>%</i>
Retention					
	Yes	340	68.5	2244	53.4
	No	156	31.5	1959	46.6
	Total	496	100.0	4203	100.0

*Significant at $\alpha = 0.05$

Of the 4,699 students that entered the target community college, 496 were dual enrolled and 4,203 were non-dual enrolled students. Findings reveal a significant difference between the two groups. The 2nd year retention for the dual enrolled students was 68.5% (340 of the 496) and the retention for non-dual enrolled students was 53.4% (2,244 of the 4,203) a difference of 15 percentage points.

Research Question 4

Is there a statistical difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years?

Ho₄: There is no significant difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years.

The Chi Square test was used to evaluate whether or not there was a difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years. There were no violations of the assumptions of Chi Square: there were no cells with an expected count of less than five and the minimum expected count was greater than one. Table 4.8 illustrates that the Chi Square test was statistically significant, Pearson's $\chi^2 (1) = 33.79, p < .001$. There is significance between the percentage of dual enrolled and non-dual enrolled students who graduated within three years. Therefore, the null hypothesis that there was no significant difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years was rejected. The strength of the relationship, as measured by Phi, showed a weak but definite relationship (.196). A Phi of 0 means no relationship between the percentage of dual enrolled and non-dual enrolled who graduated within three years and .196 indicates a definite relationship. Data revealed that 27% more dual enrolled students graduated within three years from college than non-dual enrolled students at the target community college.

Table 4.8

Chi-Square Tests for Ho4

	Value	Df	Asymp. Sig. (2-sided)	Exact. (2-sided)	Exact. (2-sided)
Pearson Chi-Square	33.790 ^b	1	.000		
Continuity Correction ^a	32.713	1	.000		
Likelihood Ratio	36.039	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	33.751	1	.000		
N of Valid of Cases	878				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 61.14.

As illustrated in Table 4.8, the Chi Square ($\chi^2 (1) = 33.79, p < .001$) showed a significant increase between the percentage of dual enrolled and non-dual enrolled students who graduated within three years and therefore, the null hypothesis was rejected. Table 4.9 shows the differences in percentages between the two groups. There were 78.3% of the dual enrolled students graduated within three years, while 51.5% of the non-dual enrolled students graduated from college within three years of their entry, a difference of almost 27 percentage points.

Table 4.9

Crosstabulated Table for Graduates within 3 Years by Enrollment Type

	Dual Enrolled		Non-Dual Enrolled		Total	
	<i>N</i>	%	<i>n</i>	%	<i>n</i>	%
Graduated Within 3 Years						
Yes	108	78.3	381	51.5	489	55.7
No	30	21.7	359	48.5	389	44.3
Total	138	100.0	740	100.0	878	100.0

*Significant at $\alpha = 0.05$

Only students who graduated within the 3-year graduation timeframe were assessed in RQ4. A total of 878 cases were studied, 138 dual enrolled and 740 were non-dual enrolled. Findings show a significant difference between the two groups. The 3-year graduation success rate for the dual enrolled students was 78.3% (108 of the 138), while the 3-year graduation success rate for the non-dual enrolled students was 51.5% (381 of the 740).

Research Question 5

Is there a statistical difference in the speed of completion of dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry?

Ho₅: Among students who graduated within three years, there is no difference in the speed of completion between dual enrolled and non-dual enrolled students completing an associate degree within three years of their entry.

To assess this question, speed of completion was measured by the number of terms students were enrolled. Of the total 878 students who graduated, RQ5 assessed only the 489 students who graduated within the three year time frame. A *t* test for independent samples was conducted to

evaluate whether or not there was a difference between non-dual enrolled and dual enrolled students and the number of terms students were enrolled at the target community college to complete their degrees. The analysis was conducted using only those students who graduated within three years. The Levene's Test for Equality of Variances was not significant indicating equal variances could be assumed, $F(1, 487) = .08, p = .783$. Therefore, the t test which assumes equal variances was used.

The t test was significant, $t(487) = 3.51, p < .001$. Therefore, the null hypothesis was rejected. As illustrated by Table 4.10, there was a statistically significant difference between non-dual enrolled students and dual enrolled students who graduated within three years and the number of terms to graduation. However, the effect size, as measured by η^2 , was small (.02). That is, only 2% of the variance in the number of terms was accounted for by students' enrollment status (dual enrolled and non-dual enrolled).

Table 4.10
Independent Samples Test for Ho5

		Levene's Test of Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of Diff. Lower Upper	
Terms	Equal variance assumed	.076	.783	3.507	487	.000	.4547	.1297	.2000	.7095
	Equal variances not assumed			3.451	168.548	.001	.4547	.1318	.1946	.7148

Although the t test was statistically significant, the actual difference between the two graduation means was small because of the small effect size (.02). Statistical significance is determined by the size of the difference between the group averages (McMillan & Schumacher, 2010) measured by the η^2 (.02), therefore it was concluded there was no practical significance.

The t test was used to assess RQ5 in order to compare the means of the two groups (dual and non-dual enrolled students). Of the 489 students completing their degrees within the 3-year graduation time frame, findings show that dual enrolled students (138) completed degrees only a half semester quicker than the non-dual enrolled students (381). Figure 4.2 illustrates that dual enrolled students completed associate degrees in about 5 semesters, while non-dual enrolled students completed associate degrees in about 5 ½ semesters. As shown in Figure 4.2, on average, it took non-dual enrolled students ($M = 5.54$, $SD = 1.18$) a half semester longer to graduate than dual enrolled students ($M = 5.08$, $SD = 1.22$).

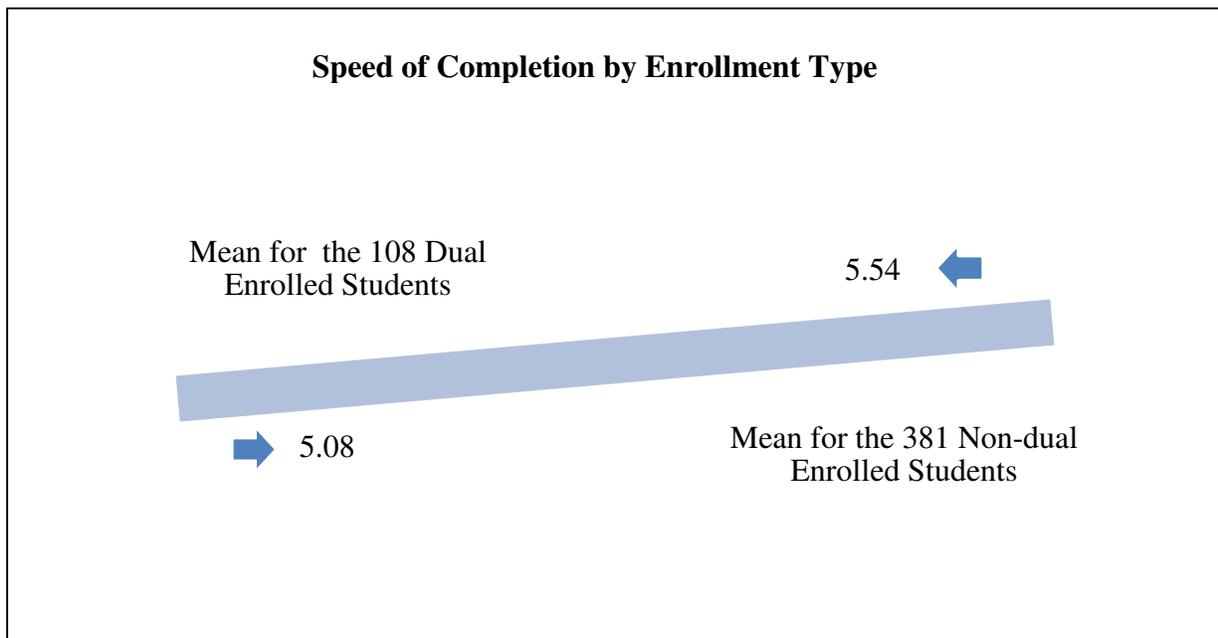


Figure 4.2 Means for Number of Terms to Completion by Enrollment Type

Summary

The study examined five research questions and five hypotheses. Research question 1 assessed if there was a statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college? To completely assess research question 1, researcher divided the total dual enrolled students into two groups: dual enrolled students attending the target community college (496), and dual enrolled students not attending the target community college (617). Findings showed the percentage of the total dual enrolled population that entered the target community college after high school was 44.6 (N=496) and the percentage of students who did not attend the target community college was 55.4 (N=617). The Chi Square test was used to test the hypothesis and evaluate whether or not there was a difference in the percentage of male and female dual enrolled students who attended the target community college after high school graduation. The Chi Square test showed no significance, Pearson's $\chi^2 (1) = 1.341, p = .247$. Therefore, the null hypothesis was retained. Data revealed a difference of only 3.5 percentage points between female (46.0%) and males (42.5%) attending the target community college.

Research question 2 utilized the Chi Square test to evaluate whether or not there was a difference in the college graduation rates between students who enter the community college with earned college credit through dual enrollment and students entering community college without earned college credit through dual enrollment. The Chi Square test was significant, Pearson's $\chi^2 (1) = 30.48, p < .001$. Findings showed a significant difference between the two groups. There were 27.8% (138 out of 496) of the students who were dual enrolled graduated

from the target community college while 17.6% (740 out of 3463) of the non-dual enrolled students graduated from college, a difference of 10 percentage points.

Research question 3 utilized the Chi Square test to evaluate whether or not there was a difference in student retention from first and second year of dual enrolled and non-dual enrolled students that did not return to college after the first year. The Chi Square test was significant, Pearson's $\chi^2 (1) = 41.18, p < .001$. Findings showed a significant difference between the two groups. There were 68.5% (340 of the 496) of the dual enrolled students returned to college while 53.4% (2,244 of the 4,203) of the non-dual enrolled students returned to college the second year a difference of 15 percentage points.

Research question 4 utilized the Chi Square test to evaluate whether or not there was a difference in the percentage of dual enrolled and non-dual enrolled students who graduated within three years. The Chi Square test was statistically significant, Pearson's $\chi^2 (1) = 33.79, p < .001$. Findings showed a significant difference between the two groups. The 3-year graduation success rate for the dual enrolled students was 78.3% (108 of the 138), while the success rate for the non-dual enrolled students was 51.5% (381 of the 740). This illustrated that 78.3% of the dual enrolled students graduated within three years, while 51.5% of the non-dual enrolled students graduated from college within three years of their entry, a difference of almost 27 percentage points.

Research question 5 assessed speed of completion which was measured by the number of terms students were enrolled. A *t* test for independent samples was conducted to evaluate whether or not there was a difference between non-dual enrolled and dual enrolled students and the number of terms students were enrolled at the target community college to complete their degrees. On average, it took non-dual enrolled students ($M = 5.54, SD = 1.18$) a half semester

longer to graduate than dual enrolled students ($M = 5.08$, $SD = 1.22$). There was a statistically significant difference between non-dual enrolled students and dual enrolled students who graduated within three years and the number of terms to graduation.

CHAPTER 5

DISCUSSION AND CONCLUSION

Objectives of the Study

The purpose of this study was to compare the college success rates of dual enrollment and non-dual enrollment participation at the community college as measured by various factors. The researcher explored the differences (if any) of students' participation in a dual-enrollment program to assess retention from first year to second year, graduation within three years, and the speed of completion at the target community college. The analysis focused on descriptive statistics, Chi Square, and a *t*-test. A summary, conclusions, implications, and recommendations are detailed in the following sections.

Summary of the Findings

A review of the literature was conducted on the effectiveness of the dual enrollment programs in colleges and universities. The review revealed that dual enrollment programs such as the one studied are experiencing a steady growth across the country.

The findings presented as a part of this research provide an encouraging, though not definitive, picture of the potential positive impact of dual enrollment participation on student success. The researcher examined differences between the two groups on a variety of outcomes using quantitative statistical methods and there was a significant difference in graduation success for dual enrolled participants when compared to their counterparts (non-dual enrolled students).

Based on the results of this study, dual enrollment participation may have has the potential to advance students more successfully into the college experience.

Findings of the Study

A review of pertinent literature was conducted on the effectiveness of dual enrollment programs throughout the country which brought out the need for data to assist in determining the overall success of dual enrollment. The purpose of this study was to examine the current dual enrollment program of a local community college in Northeast Tennessee to compare college graduation success rates, retention, and the speed of completion of dual enrollment and non-dual enrollment students. In this study, data were gathered and analyzed to investigate whether dual enrollment participants were experiencing greater college success (as determined by enrollment status: completion of degree, and graduation rate as measured by semesters attended).

The two grouping used in this analysis were 1) those students who participated in the dual enrollment program while attending high schools within the community college service area in the Academic Year (AY) AY2006, AY2007, AY2008, and AY2009 and 2) those students who entered the target community college from the same high schools who had not participated in the dual enrollment program during those academic years.

Five research questions guided the study and chi-square tests for independent samples and *t* test were used to determine the differences in college success among those who participated in dual enrollment programs and those who did not. The following sections review each of the five research questions and provide conclusions as they relate to each question.

Research question 1 was addressed to determine the percentage of dual and non-dual enrolled students who attended the target community college. Among the total 5332 students,

only 1,113 were included in research question 1 because of their status of dual enrolled only. The results indicate that 44.6% of the dual enrolled students attended the target community college and 55.4% did not attend. A two-way contingency table analysis indicated there was not a significant difference between male (42.5%) and females (46.0%) attending the community college, $\chi^2 (1, N=1,113) = 1.341, p = .247$. The data revealed a difference of only 3.5 percentage points between male and females attending the college. This data results could be a baseline for future study leading to statistical difference in the percentage of dual enrollment participants attending the target community college and those dual enrollment participants who did not attend the target community college.

Research question 2 focused on determining if there was a difference in college graduation success rates between dual enrolled and non-dual enrolled participants. The question was addressed by sorting the 4,699 students into two groups. Group 1 contained students who entered the target community college with earned college credit (dual enrolled=496) and group 2 consisted of students who entered the community college with no earned college credit (non-dual enrolled=4203). Data revealed that of the 496 dual enrolled students, 27.8% (138) demonstrated success through college graduation and of the 4203 non-dual enrolled students, 17.6% (740) were successful in completing their associates degrees, $\chi^2 (1, N=4,699) = 30.48, p < .001$.

Similarly, research question 3 focused on determining if there was a difference in the student retention percentages between dual and non-dual enrolled students from the first year to the second year of college. The question was addressed by sorting the 4,699 students into two groups. Group 1 contained students who entered the target community college with earned college credit (dual enrolled=496) and group 2 consisted of students who entered the community college with no earned college credit (non-dual enrolled=4203). Data revealed that of the 496

dual enrolled students, 68.5% (340) returned the second year of college and of the 4203 non-dual enrolled students, 53.4% (2,244) returned the second year of college, $\chi^2 (1, N=4,699) = 41.18, p < .001$. This reveals that 15% more dual enrolled students were retained than non-dual enrolled students.

Research question 4 was addressed to determine if there was a difference in the 3-year graduation rate. Among the total 5332 students, this question assessed only the 878 students who completed an associate's degree. The population (878) was grouped according to their status of dual enrollment participants (138) and non-dual enrollment participants (740). Each group was tracked in order to determine the 3-year graduation rate which indicated a total of 489 students completed their degrees within the three years. A two-way contingency table analysis indicated there was a significant difference between the two groups. The data revealed a difference of almost 27 percentage points between the 108 dual enrolled participants (78.3%) and the 381 non-dual enrolled students (51.5%) that graduated in the 3-year time frame, $\chi^2 (1, N=878) = 33.79, p < .001$.

Research question 5 focused on determining if there was a difference in the speed of completion for dual enrolled and non-dual enrolled students earning an associate degree in the 3-year time frame. To address this question, speed of completion was measured by the number of terms students were enrolled. As in research question 4, of the total 878 students earning an associate's degree, this question assessed only the 489 students completing their degrees in the 3-year time frame. A *t* test was conducted to evaluate whether or not there was a difference between non-dual enrolled and dual enrolled students and the number of terms students were enrolled in the target community college. The findings indicated that the dual enrolled students (109) completed their degrees only a half semester quicker than the non-dual enrolled students

(381), $t(487) = 3.51, p < .001$. While this half of a semester might not show a significant importance, further study could reveal very important findings as to the cause of dual enrolled students completing associate degrees only half a semester earlier than non-dual enrolled students.

Conclusions

Previous research has focused on an array of factors related to the subject, but the question about the effectiveness of dual enrollment has not yet been definitively answered. Several conclusions were drawn based on the analysis of the data relevant to this study.

- 1) Students in the study who entered college with earned college credit through the dual enrollment program were more likely to graduate within the three year time frame as opposed to the students who entered college without earned college credit through the dual enrollment program.
- 2) This study concludes that students who were dual enrolled were more likely to return to college the second year as opposed to the non-dual enrolled students.
- 3) Students in the study who entered college with earned college credit through dual enrollment graduated at a greater speed than students entering college without earned college credit.

Implications of the Study

The findings of this study lead to several recommendations for practice. These recommendations may have particular relevance for state and local partners of the dual enrollment program. Leaders at the local school systems in Tennessee and at the college level

must continue to study the benefits and rewards of the dual enrollment program to better educate the public on the benefits of the program.

Law makers at the federal and state levels need to explore funding opportunities for the dual enrollment programs. Currently, scholarship opportunities are limited for dual enrolled students. The Dual Enrollment Grant award amount is up to \$300 per semester for one (1) course. If a dual enrollment student takes an additional course per semester with a total semester amount not to exceed \$600 (\$1,200 per academic year), the student must meet the Hope Scholarship criteria at the time of high school dual enrollment. Students who receive the Dual Enrollment Grant amount for more than four (4) dual enrollment courses over the junior and senior years will have the amount reduced from their HOPE Scholarship on a dollar for dollar basis (TSAC, 2013). This amount assists in lowering the cost to students and families. Through measures such as establishing laws, rules and regulations, and budgeting processes, lawmakers can have an enormous impact on promoting affordable education for high school students.

The findings of this study may have implications for the target community college as the institution strives to increase retention and graduation rates of its students. Because the institution is committed to increasing retention and graduation rates, the college is encouraged to review their dual enrollment programs and initiatives to identify possible areas the program may increase their retention and graduation rates therefore fostering greater student success.

Recommendations for Further Study

This study was not intended to be an all-encompassing research study on the dual enrollment program offered at a specific community college. Because this study was conducted at a specific community college, the findings of the study may not be generalizable to other

collegiate institutions or other community colleges that provide dual enrollment programs.

However, the findings of the study, either all or part, may have relevance to other community colleges that provide dual enrollment programs.

With the increased cost of education, dual enrollment is more affordable than traditional college after high school. In the state of Tennessee, the high school student must earn a composite score of 19 on the ACT to qualify for the dual enrollment program. Further research may identify a need for a stronger outreach emphasis to high schools to encourage a higher level of participation in dual enrollment. One important way the community college can address this issue is to continue researching the effectiveness of dual enrollment programs.

Several recommendations for additional research can be made as a result of this study.

The following are suggested:

- 1) Research to identify high school students that are academically underprepared and therefore do not qualify for dual enrollment.
- 2) Research to investigate persistence to graduation for both dual and non-dual enrolled students.
- 3) Research to determine if students who participated in the dual enrollment program at the target college enrolled in an institution of higher learning other than the target community college.
- 4) Currently, students must have earned a composite score of 19 on the ACT to be eligible for the dual enrollment program at the target community college. Further research to determine the programs and services established in the high schools to target underprepared students and to identify appropriate programs and services to remediate

high school juniors with ACT scores less than 19, therefore opening the door for those students to utilize the dual enrollment program.

- 5) Research to identify academic majors that may contribute to a longer stay at the community college.
- 6) Research to identify strategies that will contribute to an increase in dual enrolled student college enrollment after high school graduation.
- 7) Research to determine the high school student perception regarding the value of dual enrollment at the community college.
- 8) Research to determine the financial cost and total savings to both the state and the student.

It was beyond the scope of this research to track whether students enrolled at other colleges either locally or elsewhere. There could be a number of reasons pointing to why only 44.6% attended the target community college. As we learned in the literature review, when students begin their college careers taking full course loads, they can quickly continue along the fast track to degree completion (Adelman, 2006), perhaps it is the fact that dual enrollment participants were more familiar with the rigors and demands of college that made them somewhat more comfortable attempting a four year institution over a community college. Also for further study, it would be helpful to know the amount of time it takes to complete the more rigorous majors at the target community college.

As previous studies have suggested, allowing students to participate in a dual enrollment program may increase the likelihood that students initially enroll full time (Karp et al., 2007). Although the difference between dual enrolled and non-dual enrolled students in this study was

slight, dual enrollment participation should still be noted as having the potential to increase the number of credit course hours attempted by community college freshmen.

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APPENDIX A
ANALYSIS OF VARIABLES

Identification and Analysis of Variables

Characteristics of the participants/study

	Variable Labels	Levels of the Variable	Scale of Measurement
Dependent Variable(s)	Dual enrolled participants	1 = Yes 2 = No	Nominal
	Graduation success rate	1 = Yes 2 = No	Nominal
	Student retention	1 = Yes 2 = No	Nominal
	Students who graduated within three years	1 = Yes 2 = No	Nominal
	Speed of completion	1 = Yes 2 = No	Nominal
Independent Variables	Enrollment status	1 = Yes 2 = No	Nominal
	High school location	1 = City 2 = County	Nominal
	Gender	1 = Female 2 = Male	Categorical
	Ethnicity	1 = White 2 = Black or African American 3 = Asian 4 = American Indian 5 = Alaskan Native 6 = Native Hawaiian or Other Pacific Islander	Categorical
Extraneous Variables	Socioeconomic status	1=Lower class 2=Middle class 3=Upper class	Ordinal
	Academic field of study	1=University Parallel 2=Business 3=Health Related Professions 4=Technology 5=Certificate	Nominal
	Reside with parents	1=Yes 2=No	Nominal
	Number of entry level credits	1=6 credit hours 2=9 credit hours 3=12 credit hours 4=15 credit hours 5=18 credit hours 6=21 credit hours 7=24 credit hours	Nominal
	Financial aid	1=Yes, received tuition reimbursement or financial aid 2=No, did not receive tuition reimbursement or financial aid	Nominal
	Educate and Grow Scholarship	1=Yes 2=No	Nominal

Extraneous Variables (continued)	ACT score entering college	Minimal 19	Interval
	Final high school GPA		Interval/Continuous Data
	Final college GPA		Interval/Continuous Data
	College graduation	0=no graduate 1=AY2008 2=AY2009 3=AY2010 4=AY2011 5=AY2012	Nominal

APPENDIX B

PERMISSION LETTER TO PRESIDENT OF TARGET COMMUNITY COLLEGE

June 18, 2013

Dr. Janice Gilliam, President
Northeast State Community College
2425 Highway 75
Blountville, Tennessee 37617-0246

Dear Dr. Gilliam:

As a doctoral student of University of Tennessee-Chattanooga, I am currently working on the proposal of my dissertation. I am specifically interested in the success of high school students who participated in the dual enrollment program and then immediately enrolled at your institution. It is my intent to conduct a quantitative comparison study in graduation rates of dual enrollment and non-dual enrollment students. I am confident the conclusions of the research will provide valuable information to your institution as well as to the area school systems with which you have dual enrollment agreements.

Please consider this correspondence as an official request to extract and review student records from the Banner – Student Information System for my dissertation. I would like to study the data of students who enrolled at your institution fall 2006, 2007, 2008, and 2009 following high school graduation. To evaluate the impact of participation in dual enrollment courses on subsequent college graduation rates, I would like to focus on the following variables: graduation rates between dual enrollment and non-dual enrollment students, semester completion patterns, college grade-point averages, as well as other demographic variables. I have attached a copy of the research questions for your review.

I appreciate your willingness to assist in this study. Please be assured that all records will be kept under lock and key and managed in accordance with the Family Educational Rights and Privacy Act (FERPA). I will be happy to share the results of the research with you and the institution. If you have questions or need additional information, please contact me at (423) 943-1336 or pvw854@mocs.utc.edu.

Approved by:

Sincerely,

Office of the President

Kathy Thacker, Doctoral Student
Leadership and Learning
University of TN-Chattanooga

Vice President for Academic Affairs

Vice President for Student Affairs

Office of Institutional Effectiveness

VITA

KATHY THACKER

Kathy Thacker was born in Haysi, a small town in Southwest Virginia. She married immediately after high school in 1976, and she and her husband have two adult children. She chose to be a stay-at-home mom until her husband retired from the Marine Corps in 1992, and began her college career in 1993. She earned her bachelor's degree in General Studies and master's degree in Counseling from East Tennessee State University. She earned her Doctor of Education in Learning and Leadership from the University of Tennessee Chattanooga.

Kathy worked as a secretary and Executive Aid at East Tennessee State University from 1993 to 2004 and transitions out of the secretarial field to the administrative field taking on multiple roles as Program Coordinator at Virginia Intermont College, Assistant Registrar at Milligan College, Counselor at Piedmont Technical College, and Director for the Kingsport Center for Higher Education at Northeast State Community College.

Kathy's job required her to work with the dual enrollment program at her college, but found there was very little research on the effectiveness of the programs. So when she began her doctoral program in the fall of 2010, she immediately started reading and searching out previous data for what would later become her dissertation topic. The research her dissertation on comparing college success rates of dual enrollment verses non-dual enrollment students at the community college.

Kathy continues to research dual enrollment as it pertains to retention and completion along with the overall motivations and benefits.