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A Study of Community College Students Who Participated in a Dual-Enrollment Program Prior
to High School Graduation

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education

by

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December 2008

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Keywords: Accelerated Learning, Community College, Concurrent Enrollment, Dual
Enrollment, Early Entrance

ABSTRACT

A Study of Community College Students Who Participated in a Dual-Enrollment Program Prior
to High School Graduation

by

April Boling Sell

The purpose of this study was to examine the effects of dual-enrollment participation on students' postsecondary achievement as measured by various factors. The researcher explored an approach to learning that allows students to navigate the invisible barriers between high school and college. The population consisted of 901 students in a community college in northeast Tennessee during the fall of 2007 following high school graduation the previous academic year. Data gathered from dual-enrollment participants were compared to data of peers of comparable ability level who chose not to participate in the program.

The major findings of the study included the following: dual-enrollment participants were (a) slightly more likely to enroll full time rather than part time, (b) significantly less likely to be enrolled in remedial and developmental courses, (c) no more likely to complete the fall semester, (d) slightly more likely to complete the spring semester, (e) more likely to showcase a slightly higher fall semester grade-point average (GPA), and (f) no more likely to have a higher spring semester GPA.

DEDICATION

At the completion of this journey, the solitary name listed on the diploma will be mine; however, my closest family and friends have shared in the highest moments of triumph and lowest moments of despair related to completion of this task. Without their unwavering encouragement and support, I would never have made it this far. I know that these individuals will continue to share in moments like these for a lifetime.

To my husband, Daniel: Words cannot express the gratitude I have for you and your role in completion of this task. You seemed instinctively to know what to say or do that would allow me to take the next step in this journey. I hope that I am always as willing to allow you to follow your dreams.

To my little boy, Bralynn: Although I know you will never remember what the past few semesters have been like, I will always think fondly of the times you sat quietly at my feet “working on school stuff” as I attempted to complete this study. When my frustration level was at its highest, a quick play break or refreshing walk outside with you was all I needed to regain perspective.

To the soon-to-be newest addition to the Sell family: Completing the last few milestones of this program expecting a second child has certainly helped me to focus on the finish line. Knowing my date of completion needed to precede your own date of arrival has provided for me the necessary motivation to finish the last portion of this journey. I hope that completing this task at this point in my life will allow me to focus on what is most important--my family.

To my parents, Ronnie and Barbara, and my sisters, Melissa and Angela: Your names certainly deserve a line on the diploma next to my own. Your willingness to baby sit and take on other responsibilities while I attended class or focused on my research is appreciated greatly. Without such supportive and involved family members, I would have had no chance of making it on my own in this venture or in life in general.

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First, I recognize the contributions and sacrifices made by my family. When I initially mentioned beginning this endeavor, each of you offered support and encouragement. I am not sure you realized 2 years ago how much of my focus and time this program would require. If you ever had any doubts about my completion of the project, you certainly never voiced them. Instead, I was surrounded by heartfelt encouragement throughout the entire process.

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CHAPTER 1

INTRODUCTION

The American public educational system prides itself as being innovative and responsive to changes in resources, expectations, and societal norms. As a direct consequence, at any given moment, administrators and policy makers at all levels (prekindergarten through college) can be seen working tirelessly to align schools and colleges to better represent the realities of the current economic and societal state of our nation (Reindl, 2006). A historical review of public education will show novel approaches to a myriad of problems and concerns over the past few decades. One problem that has been brought to the forefront in recent years is the need to blur the lines between secondary and postsecondary institutions and to work to prepare better all students for success in today's colleges and universities.

Current economic conditions suggest postsecondary training is a necessity for students who hope to remain competitive in a global economy (Bond & Whitney, 2004; Callan, Finney, Kirst, Usdan, & Venezia, 2006; Knowledge Works Foundation, 2007; National Commission on the High School Senior Year, 2001; Smith, 2007; Western Interstate Commission for Higher Education, 2006; Woodrow Wilson National Fellowship Foundation, 2001). Because postsecondary training of some sort will be an obvious necessity for students to compete in the global market place, American educators and policy makers can either take action and better prepare the future workforce or allow the breaches in the educational pipeline to have a detrimental effect on all citizens (Callan et al.; Pennington, 2004).

Administrators of school systems and postsecondary institutions across the country have decided to take action. One innovative approach has been the implementation of accelerated learning programs such as the opportunity for high school students to earn simultaneously high school and college credit--to be enrolled dually or concurrently. This 21st century approach to learning is one of the few options available to allow students to navigate the invisible barriers

between high school and college and prepare themselves better for their future success (Knowledge Works Foundation, 2007).

Statement of the Problem

Despite the attractiveness and expansion of dual-enrollment programs for high school students, there is little quantitative research-based evidence to support or refute the effectiveness of their implementation (Hoffman, 2005; Jordan, Cavalluzzo, & Corallo, 2006; Karp, Clacagno, Hughes, Jeong, & Bailey, 2007; Lerner & Brand, 2006; Reindl, 2006). Because accelerated learning programs are a relatively new educational phenomenon, states are not required to report data to a national database, and several states find tracking students between kindergarten through 12th grade and postsecondary systems a daunting task (Knowledge Works Foundation, 2007; Waitts, Setzer, & Lewis, 2005). For this reason, educators and policy makers are unable to answer key questions regarding the programs--one of the most important being the likelihood that dual-enrollment participation leads to greater success in the postsecondary setting (Hoffman; Knowledge Works Foundation). Without such critical information, it is difficult for administrators, parents, students, and policy makers to determine the effectiveness and necessity of such concurrent course offerings to high school students.

Lerner and Brand (2006) found insufficient information in even the “good” research in the field because most data collected and maintained are qualitative and report only the experiences and feelings of the students, educators, and administrators who have participated in accelerated learning options. All stakeholders need additional quantitative information that provides a detailed analysis of the advantages of program participation for the students, parents, secondary schools, postsecondary institutions, and communities (Western Interstate Commission for Higher Education, 2006). The target community college in this study is no different. Administrators and policy makers desire quantitative information regarding the program’s likelihood to benefit participating students positively.

This lack of evidence-based research is of extreme importance to educators and administrators specifically in the state of Tennessee. According to the Tennessee State Board of Education (2007) "Master Plan: FY 2008-2012" (2007), the vision of the state system is to prepare all Tennessee children for a successful college experience. Achievement of this lofty and commendable goal requires that institutions across the state provide a rigorous and relevant high school curriculum that will prepare students to successfully transit from high school into the postsecondary realm or the workforce.

Although there is little documented quantitative proof, programs such as dual-enrollment opportunities are believed to help create lifelong learners and critical thinkers. Because the phenomenon has gained widespread support, in 2005 Tennessee state legislators implemented a policy change that allowed students to use lottery scholarships to pay tuition for dual-enrollment courses (Karp, 2007). As states are passing legislation and state-level policies increasingly (Western Interstate Commission for Higher Education, 2006), it is of paramount importance for policy makers to have access to data that corroborate or dispute the advantages of implementing and supporting such programs in high schools across the country. The purpose of this study was to examine the effects of dual-enrollment participation on students' postsecondary achievement as measured by various factors.

Research Questions

The researcher investigated the following questions as they related to the success of postsecondary community college students who earned college credit through the institution's dual-enrollment program.

1. Is there a difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time)?
2. Among full-time students enrolled in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled)?

3. Among the students who were initially enrolled full time in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester)?
4. Among the full-time students who completed the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester)?
5. Is there a difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?
6. Is there a difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?

Based on the research questions, the following hypotheses were explored:

Ho1: Of students who enrolled fall semester in the target community college, there is no difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time).

Ho2: Among students enrolled in the fall semester full time, there is no difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled).

Ho3: Among students enrolled full time in the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester).

- Ho4: Among full-time students who completed the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester).
- Ho5: There is no difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.
- Ho6: There is no difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.

Significance of the Study

Those who work in public education can attest that budgets and resources are constantly under strain. Administrators wish to implement only change that can be supported by evidence-based programs that are data driven (McMillan & Schumacher, 2006). The limited number of studies concerning quantitative research at the target community college addressing the likelihood that participation in a dual-credit program leads to greater postsecondary academic success is a problem that requires immediate attention. The conclusions drawn from this research are intended to assist institutional leaders in secondary and postsecondary institutions when making decisions about implementing or sustaining accelerated learning programs.

Based on the data collected, policy makers might be able to consult more appropriate data-driven research. Likewise, the data collected and analyzed as part of this research project might help local school system practitioners determine if a dual-enrollment program is an effective accelerated learning option for their students. Furthermore, the research should also assist parents and students who are contemplating enrollment in a dual-credit course. Finally, the data presented and conclusions drawn could greatly assist those individuals who serve on the

frontline of the dual-enrollment battlefield-- instructors who are responsible for filling seats in a college level course taught to high school students.

Definitions of Terms

Accelerated learning options for high school students vary greatly from one school system to the next, and these learning opportunities have distinctive characteristics and qualities. The most common forms of accelerated learning are defined briefly for the reader to clarify any confusion about the type of program studied and reported in this research.

1. *Advanced Placement (AP)*: This program is one of the oldest and most easily recognized programs for accelerated high school learning. College Board AP courses offer students a rigorous and demanding curriculum most often in the four core areas-- English, social studies, math, and science (Western Interstate Commission for Higher Education, 2006). To receive college credit for an AP course, students must take and pass a standard examination at the end of the course (Gehring, 2001). However, the acceptable score varies depending upon state legislation or postsecondary institution policy (Western Interstate Commission for Higher Education).
2. *The International Baccalaureate (IB) diploma*: This program offers innovative curricula. This program is similar to the more common AP courses and allows students to earn college credit after successfully receiving a minimum score on a difficult examination. Systems that promote the IB diploma maintain that students who complete the rigorous coursework are more attractive to postsecondary institutions because they appear more motivated and ambitious (Western Interstate Commission for Higher Education).
3. *Tech-Prep*: A less common but equally important accelerated learning option is Tech-Prep. Most states define Tech-Prep as a program that is designed to allow a student to graduate from high school and a postsecondary program simultaneously. These students follow a curriculum that will lead to an associate's degree, occupational

- degree, or 2-year certificate as students also meet the requirements for high school graduation (Western Interstate Commission for Higher Education).
4. *Early or middle college high schools*: These are unique arrangements between high schools and postsecondary institutions that offer college level classes on the high school campus. The postsecondary institution controls the curricula and standards, but the courses are typically taught by a qualified teacher employed by the secondary institution ("Postsecondary Options: Concurrent/Dual Enrollment," 2001).
 5. *College Level Examination Program (CLEP)*: This program allows students to test out of postsecondary courses without any participation in the course itself. The CLEP test is usually given to students before registering for postsecondary courses, and a successful minimum score allows students to earn credit for beginning level coursework based solely on prior knowledge ("Postsecondary Options: Concurrent/Dual Enrollment").
 6. *Dual-concurrent enrollment programs*: These options allow students (most often high school juniors and seniors) the opportunity to earn secondary and postsecondary credit for participation in one course (Andrews, 2004).

Delimitations and Limitations

The population consisted of students following high school graduation who were admitted as college freshmen to the target community college in northeast Tennessee in the fall of 2007. The college is one of 45 institutions in the Tennessee Board of Regents system that enrolls more than 80% of all students attending Tennessee public institutions. The main campus is located in a northeastern Tennessee County, and the college maintains three additional extension campuses. Through these facilities, the college services 10 Tennessee counties ("Community College Institutional Fact Book," 2006).

The target community college is a member of the Regional P-16 Council. This initiative is a statewide movement to link all areas of public education in order to improve the lives of

individuals within a 10-county area. As a part of the Regional P-16 Council participation, the target community college is working to complete steps outlined in the strategic plan that will further develop the college's attempts to link secondary and postsecondary education. As a part of this plan, administrators and educators work with 10 area school systems to offer dual-enrollment opportunities to promising 11th- and 12th-grade students (Community College Office of Evening and Distance Education, 2008).

The community college has expanded dual-enrollment offerings for three of the school systems served. These particular systems have partnered with the college to provide the opportunity for qualified students to earn a high school diploma while simultaneously earning an associate's degree. Students follow a prescribed and intensive course of study for the freshman and sophomore years of high school, taking all required courses on the secondary school's campus as a part of the regular school day. Students then spend their junior and senior years enrolled in college courses. Some courses are dual enrollment and fulfill the requirements for both high school and college graduation (typically courses in English, history, and math). For other courses, students receive only college credit (freshman experience, introduction to speech, etc.). These unique opportunities allow students to get a jumpstart on college level learning while still enrolled in a public secondary school (Community College Office of Evening and Distance Education, 2008).

Like many accelerated learning programs across the country, the college's dual-enrollment courses require the student to be academically successful prior to participation. The program is available only to 11th- and 12th-grade students from state-approved high schools who have distinguished themselves during the previous 2 years of high school. For this reason, it can be assumed that these students will be more likely to be successful in the postsecondary setting than in a randomly selected group. With this in mind, the researcher (when appropriate) has controlled for academic ability by using ACT scores. The ACT is a national college admissions examination that consists of subject tests in four core areas: English, mathematics, reading, and science. The results of this test are accepted as a standard admissions screening by all 4-year

colleges and universities in the United States (ACT, 2008). The validity of this study is restricted to the community college from which the data were collected; however, because the college offers a program very similar to concurrent enrollment courses across the nation, the results could be somewhat generalized to a larger population but should be interpreted with caution.

Overview of the Study

This study is organized into five chapters. Chapter 1 included a brief introduction, statement of the problem, research questions, definitions of terms, delimitations and limitations, and this overview of the study. Chapter 2 presents a review of the literature from 1999-2008 related to high school students earning early college credit. This chapter includes sections related to the high school senior year, dual-enrollment program characteristics and growth, successful models, establishing a program, benefits for students, benefits for institutions, criticisms of dual enrollment, and a summary. Chapter 3 clarifies the research methods of the study including the population, design, data collection, methodology, and data analysis. Chapter 4 presents the findings of the study, and Chapter 5 consists of the conclusions and recommendations for future research and practice.

CHAPTER 2

REVIEW OF THE LITERATURE

Offering accelerated learning opportunities to high school students is a promising, yet surprisingly little-studied, trend. To some administrators, parents, and students, college level learning in high school offers the undeniable opportunity to participate in more rigorous and challenging coursework and hasten the time required to obtain postsecondary training, certificates, and degrees. Others, however, challenge the effectiveness and appropriateness of rushing students from the kindergarten through 12th grade arena into a much more mature and demanding postsecondary setting. A review of pertinent literature related to dual-enrollment programs in operation across the country shows that the phenomenon, which is growing in popularity, offers some promising potential benefits but is not without criticism.

High School Senior Year

“Senioritis” is certainly not a new phenomenon. Undoubtedly, 17- and 18-year-olds have suffered from this mysterious illness for decades. Parents, students, and educators in communities across the country expect this “short-term disease... [to] incapacitate young people in terms of academic growth” sometime during the final year of high school (Western Interstate Commission for Higher Education, 2001, p. 28). It is so common that the senior slump has become accepted as an anticipated and undeniable part of the culture in most American high schools (Kirst, 2001). Students often view their senior year (the second semester in particular) as a reward for having endured the previous 12 years of public education (Conley, 2001). Many students take less than a full load of classes and focus their attention on anything other than their academic schoolwork (Conley, 2001).

Some have argued that this predictable behavior is to be expected and even accepted as time seems to stand still and students are encouraged to relax and enjoy their last moments of

freedom before tackling the issues and responsibilities of adulthood (Western Interstate Commission for Higher Education, 2001). Many students from the valedictorian to the solid D student said they viewed most of the senior year as a time they have “earned for nonacademic pursuits” (Kirst, 2001, p. viii). Other students reported that they have been encouraged by parents, teachers, and others to relax and merely enjoy this special time in their lives (Kantrowitz & Wingert, 2000).

Strauss (2006) described “senioritis” as a “sense of do-nothingness” (§ 6), a time when seniors spend most of their final year of high school “engaged in activities that not only fail to support learning but may actually undermine it” (Western Interstate Commission for Higher Education, 2001, p. 16). For some, the senior year can become an endless parade of parties and part-time work (Kirst, 2001; National Commission on the High School Senior Year, 2001). Some students reported skipping classes “because the atmosphere encouraged them to consider the senior year a farewell tour of adolescence and school” (Western Interstate Commission for Higher Education, 2001, pp. 16-17).

One reason many seniors noted that the high school senior year does not matter is because colleges and universities oftentimes only consider work completed through the junior year when making decisions about admission into their institutions or programs (Gehring, 2001). In fact, most of those students who will be attending a college or university have already met the requirements or been accepted into college early in the fall of their senior year and feel they now have permission to breeze through the final 2 semesters (Andrews, 2004; Chmelynski, 2004; Kirst, 2001; National Commission on the High School Senior Year, 2001). Gehring reported that some students consider the final year of public education as a “tedious countdown to graduation” (§ 1). However, according to a report released by the American Association of State Colleges and Universities (2002), “The nation faces a deeply troubling future unless we transform the lost opportunity of the senior year” (p. 3).

Whereas students, parents, educators, lawmakers, and community members may expect and even accept this temporary condition of “senioritis,” there has been some recent attention

given to strategies that offer solutions to improve and enhance the final year of high school. One promising option that seems to engage students the entire senior year is an accelerated learning program such as dual enrollment. These programs offer a promising answer to the national concern about what to do with the senior year (Andrews, 2003; Colton, 2006), and in recent years, numerous school districts have turned to dual-credit courses to engage students throughout the senior year (Andrews & Davis, 2003). This approach allows high school students to take college courses and to earn college credit while still enrolled in high school (Bailey & Karp, 2003; Chamberlain, 2005; Gehring, 2001; Hoffman & Robins, 2005). Being enrolled in a dual-credit program allows students to “[shrug] off the symptoms of ‘senioritis’... [and] make for a more efficient use of student’s final years of high school” (Gehring, ¶ 4).

Program Characteristics and Growth

The idea to allow students to combine preparation received during the final years of public education with the first couple of years of postsecondary work is not new. In fact, as early as the 1930s, school districts in California, Kansas, Missouri, Oklahoma, and Mississippi were advocating a “6-4-4 plan, that placed grades 7 through 10 in junior high school and grades 11 through 14 in junior college” (Kisker, 2006, ¶ 3). Obviously, educators and administrators across the country have seen the potential benefits of allowing students to combine learning opportunities for decades. The dual-enrollment program itself dates back to the 1970s but began to grow in popularity during the mid-1980s (American Association of State Colleges and Universities, 2002). By the mid-1980s, states across the nation became more and more interested in the promise of dual-enrollment programs to offer opportunities for gifted students to earn college credits while still enrolled in high school (Hoffman & Robins, 2005). “Early-college-entrance programs generally arose because educators perceived the need for an accelerated academic program” for the most capable students (Sethna, Wickstrom, Boothe, & Stanley, 2001, ¶ 4).

Dual-credit programs in operation across the nation are quite diverse (Hoffman, 2005; Johnstone & Genio, 2001; Karp et al., 2007; Knowledge Works Foundation, 2007; Western Interstate Commission for Higher Education, 2006). Some colleges send full- or part-time faculty members to high school campuses to instruct only high school-aged students. In other instances, the courses are taught on high school campuses by qualified public school teachers who serve as adjunct faculty members for the college or university. Of the approximately 1.2 million students enrolled in dual-credit courses in the 2002-03 academic school year, 74% were receiving instruction at the campus of the participating high school (Waitts et al., 2005). Some courses are taught solely on the college campus, and students commute and join other college students for instruction. Nearly 23% of all dual-enrollment participants in 2002-03 received instruction in this manner (Waitts et al.). Other institutions deliver instruction as a type of distance learning offered by college faculty members. This seems to be the least likely delivery of instruction method with less than 4% of the 2002-03 dual-credit participants receiving instruction as a distance learning option (Waitts et al.).

With such diversification of location for the courses, it is no surprise that eligibility requirements and target populations also vary greatly. Some programs are regulated by state policy and legislation whereas others are controlled by guidelines and mutual agreements unique to the two participating institutions. Nearly all institutions still use academic gatekeepers, such as the student's high school grade-point average or ACT score, to screen applicants for participation (Hoffman, 2005). While most programs target the highly motivated and academically successful students, several are designed to benefit students who otherwise might have failed to graduate from high school (Karp et al., 2007).

A significant distinguishing factor of various institutions that offer accelerated learning is the funding of such programs. Some states offer tuition reimbursement or scholarship dollars to help students and parents with the cost of attending college; in some cases, this is a year or so earlier than what parents might have been expecting. However, it is far more common that students and parents are fully responsible for the cost of the college courses. In fact, Kleiner and

Lewis (2005) noted that 64% of the institutions offering dual-enrollment programs in 2002-03 reported that the learner was responsible for funding. Occasionally, public school districts work in collaboration with other funding sources to help ease the cost of participation in the program (Kleiner & Lewis).

Although the concept of combined credit courses has been supported by many educators across the country for decades, researchers still cannot agree on common terminology for the process of receiving credit for high school and college courses simultaneously. Burns and Lewis (2000) maintained that dual-enrollment programs are complicated to define because virtually every state has institutions that claim to offer various types of these programs. Colleges and universities have identified the programs by using such terms as dual credit, dual enrollment, concurrent enrollment, and credit-based transition programs (Bailey & Karp, 2003; Johnstone & Del Genio, 2001; Kirst, 2001; Plucker, Chien, & Zaman, 2006; Schuetz, 2001). According to the Tennessee Board of Regents (2001) policy guidelines, “Dual enrollment is the enrollment of a high school student in one or more specified college courses for which the student will be awarded both high school and college credit” (n. p.). Regardless of the title, the outcomes remain the same--high school students earn early college credits.

However, the organization of the programs can vary greatly. According to Burns and Lewis (2000), some programs might be relatively small, involving cooperation between just one high school and one postsecondary institution. In contrast, other accelerated learning programs could be quite large, involving cooperation between one postsecondary institution and many schools in numerous districts (Burns & Lewis). Most of the dual-enrollment programs are arranged by the secondary schools that will be participating and a technical or community college. Andrews (2004) maintained, “This [arrangement] is logical considering that community and technical colleges are strategically and ideally located to reach students throughout the states they serve” (p. 417). In fact, “Community colleges in over 40 states have laws, administrative guidelines, and local policies in place to ensure that dual-credit programs meet the required standards for transfer to colleges and universities” (Andrews & Davis, 2003, ¶ 6). Furthermore,

all 50 states have claimed that they promote accelerated learning programs (Adelman, 1999; Burns & Lewis, 2000; Chamberlain, 2005). Likewise, the National Commission on the High School Senior Year (2001) advocated that such “dual-enrollment options with local colleges and technical institutes should be encouraged” (p. 32).

Although a common program description might not exist, it is undeniable that dual-credit programs have experienced considerable growth over the past few years (Andrews, 2004; Johnstone & Del Genio, 2001; Karp et al., 2007). In fact, 5,400 high school students in the state of Tennessee took advantage of the dual-enrollment grant program during its first year of implementation (Tennessee Higher Education Commission, 2007). Perhaps community colleges themselves have been the direct beneficiary of the increased interest in such programs. “Because most community colleges encourage high school students to co-enroll in college classes for credit, dual enrollment is one of the fastest growing services offered by community colleges” (Burns & Lewis, 2000, ¶ 1).

Successful Models

All 50 states offer some type of accelerated learning options; however, an examination of all established and successful programs is not feasible and is beyond the scope of this literature review. An examination of four long-standing state supported programs in Florida, New York, Ohio, and Washington provides an overview of some of the most flourishing accelerated learning options across the country.

The state of Florida has a long-standing accelerated learning program that is strongly supported by state policy makers (Hoffman, 2005). According to state legislation, eligible students must be offered the chance to participate in a dual-enrollment program, and the state provides funding that ensures the courses are available to students at little or no cost (Lerner & Brand, 2006). Policy makers have established as the purposes of Florida’s dual-enrollment program the ability to expand the high school curricula offerings, the opportunity to broaden the

depth of the high school curriculum, and the chance to hasten the time toward degree completion (Hoffman).

Because the state has one of the most renowned data-sharing systems in the nation, Florida has more access to data concerning the long-term effects of dual-enrollment participation than does any other state (Callan et al., 2006; Hoffman, 2005). Students who have participated in this accelerated learning option have shown promising results such as an increased likelihood to graduate from high school, to enroll in a 4-year institution, to remain enrolled in college 2 years after high school graduation, and to earn higher college grade-point averages (Karp et al., 2007).

New York City's public university system operates an easily recognizable and often studied accelerated learning program known as *College Now*. Every 2- and 4-year institution in the public university system is involved; over a 5-year span, 113,796 students participated through 300 high schools (Karp et al., 2007). The curriculum offered as a part of this program is modified to meet the needs of high school students, and this flourishing program is offered free of charge to qualified seniors (Bailey, Hughes, & Karp, 2002). *College Now* offers both credit and noncredit courses that include the opportunity for students to participate in arts and theatre activities offered during the summer months. Proponents of this accelerated learning opportunity have maintained that participation in the *College Now* accelerated learning option allows students the chance to mingle with college faculty members and familiarize themselves with the college culture (Hoffman, 2005). *College Now* begins working with students as early as their freshman year; after 4 years of structured participation in the program, high school seniors have participated in activities that have gone well beyond college preparation and transition and have instead been infused into the high school experience (Bailey & Karp, 2003).

In 1989, the state of Ohio established the Post Secondary Enrollment Options (PSEO) policy that gave 11th- and 12th-grade students the chance to participate in dual-enrollment learning opportunities across the state. Between 1998 and 2004, over 55,000 students in the state earned high school and college credit simultaneously. Ohio is one of only six states to allow dual-enrollment participation for qualified 9th and 10th graders. Unlike other programs, Ohio's

PSEO policy requires much more communication and counseling for potential candidates and families. As required by law, qualified counselors must meet with each potential student and his or her parent or guardian to discuss issues related to program participation including but not limited to the benefits and risks of the program and the potential impact of participation on the student's high school GPA. Those students who decide to get a jumpstart on college can do so without having to pay for fees, tuition, or textbooks (Knowledge Works Foundation, 2007).

Preliminary data reporting on the PSEO program does show promising results. For the 2002-2003 school year, nearly 71% of PSEO students enrolled in Ohio public colleges following high school graduation compared to only 58.7% of their nonparticipating counterparts. Likewise, PSEO participants hastened college graduation with an average 2.7 years for associate's degree completion (compared to 3.8 for all students) and 3.8 years for bachelor's degrees (opposed to 4.3 years for all students) (Knowledge Works Foundation, 2007).

Ohio's PSEO statewide dual-enrollment policy is similar to state statues in Colorado, Michigan, Minnesota, and Iowa and not only encourages dual-enrollment participation but also supports the students on many levels while completing the program (Knowledge Works Foundation, 2007).

Washington operates a program that was created in 1990 as part of a law designed to enlarge educational opportunities for students. *Running Start* allows 11th and 12th graders to dually enroll in one of the participating colleges or universities. In essence, this program allows students the opportunity to leave high school behind and enroll full time in college coursework that will also fulfill the requirements for high school graduation (Bailey & Karp, 2003). This exceptional program operates with no state-mandated academic restrictions that would limit participation for learners; instead, individual technical schools, colleges, and universities establish appropriate admission requirements (State Board for Community and Technical Colleges, 2006). The State Board for Community and Technical Colleges reported numerous positive outcomes for students who have participated in the program, and the success of the

Running Start dual-enrollment program has served as a model for other institutions and legislatures across the country (Lerner & Brand, 2006).

As early college-level learning programs continue to grow in popularity, educational leaders and practitioners across the country will scrutinize established programs such as those previously discussed to provide guidance and insight about successful implementation. Programs such as those in Florida, New York, Ohio, and Washington provide valuable insight regarding implementation and maintenance of accelerated learning options.

Establishing a Program

A review of the available literature concerning accelerated learning options revealed a number of crucial features of thriving and flourishing programs across the country. For those administrators and policy makers interested in establishing an accelerated learning program, the following features will make success a greater possibility.

First and foremost is the need to establish a common understanding regarding what need the program will fulfill (Jordan et al., 2006). In order for a program and participants to experience success, students, parents, teachers, and administrators must have a clear understanding regarding the purpose of the program (North Carolina Education Cabinet, 2006).

Previously, dual-enrollment programs were designed to benefit the academically gifted; however, a change in the demands of the current workplace has required many programs to reconsider their purpose (Knowledge Works Foundation, 2007). If the program's purpose is to allow all students early access to college, then the program's prerequisite requirements must reflect that purpose; if the purpose is to reduce high school drop-out rates and increase high school graduation rates, then the program's prerequisite requirements must directly reflect that purpose (Jordan et al., 2006). By identifying the purpose of the program early in the developmental stage, administrators can then have a clear understanding of the targeted program's population.

Once a need for the program has been established, administrators should work to identify the possible benefits for both participating institutions. Motives for school district participation could likely include increasing rigor of the curriculum and expanding postsecondary opportunities to nontraditional students to name a few (Jordan et al., 2006). Colleges and universities may be interested in recruiting students and increasing collaboration with the secondary schools (Jordan et al.). Identifying the potential benefits of program participation will make it easier to sell the program and secure the support of top administrators from both institutions.

Successful programs must also meet the funding challenge early in the developmental stage (Jordan et al., 2006; North Carolina Education Cabinet, 2006). Because the funding of programs varies across the country, it is essential to determine which institution will bear the financial burden for program implementation. For some institutions, state legislation will play a direct role in determining this particular program feature. Some states require that the high school carry the financial burden; others require the institutions to share the burden; still others require the student to take full financial responsibility (Bailey & Karp, 2003).

After clearly establishing a purpose, identifying possible benefits of program participation, and determining a funding formula, potential accelerated learning sites can then focus on the more detailed aspects of program implementation. Those institutions willing to spend some time in the research and development stage will find program implementation and maintenance a more manageable issue.

Benefits for Students

Any program that is put into practice in today's public kindergarten through 12th grade system must show the potential to positively impact or benefit the students. Administrators and educators are under constant pressure to implement initiatives that promise potential gain for those most directly affected--the learners themselves. Accelerated learning programs offer positive returns on an institution's efforts to collaborate with the postsecondary sector. Likewise,

such programs offer students the chance to dually enroll in college coursework during their junior or senior years of high school.

Academic Preparation

Although nearly three-quarters of all American high school graduates are entering a community college or university within 2 years of graduation, hundreds of thousands drop out long before college graduation because they are “utterly unprepared when they arrive” (Kleiman, 2001, ¶ 3). Considering this lack of academic preparation, “It is hardly surprising that about one third of students arrive at postsecondary educational institutions unprepared for college level work, many requiring remedial courses on campus” (National Commission on the High School Senior Year, 2001, p. 23). The Woodrow Wilson National Fellowship Foundation (2001) found:

Inadequate academic preparation is a major reason why only about half of those who enroll on a 4-year campus receive a degree within 6 years,... [and] it helps explain why more than one-quarter of 4-year-college freshmen and close to half of those in community colleges do not return for a 2nd year. (p. 23)

Likewise, data collected by Horn and Kojaku (2001) revealed that 3 years after entrance into a university, only 62% of students who took less rigorous courses in high school had remained continuously enrolled; in contrast, 87% of those who reported having completed a rigorous secondary education had persisted continuously through 3 years of postsecondary work. In light of this information, perhaps the greatest (and most obvious) benefit of allowing high school students to enroll in college courses is the advanced academic preparation the students will receive.

Many scholars have argued that the strongest predictor of bachelor’s degree completion is the intensity and quality of a student’s high school curriculum (Adelman, 1999). In fact, the Woodrow Wilson National Fellowship Foundation (2001) advocated that every senior should be taking college level courses and that all high school students should experience a demanding curriculum. Enrollment in a dual-credit course could help to increase the intensity and rigor of the senior year for students who might otherwise not have pursued a meaningful curriculum

(Jordan et al., 2006). Some dual-enrollment students might find the coursework more engaging because college professors are generally viewed as experts in the fields they are teaching (Chandler, 2006; Pennington, 2004; Western Interstate Commission for Higher Education, 2006). Furthermore, The American Association of State Colleges and Universities (2002) found:

Dual-enrollment programs provide a natural opportunity for university faculty to take an interest in what high school students are learning, and to ensure that high school graduates leave their respective institutions prepared to meet the challenges of a college curriculum. (p. 9)

Being enrolled in a college-level course helps to provide a more demanding high school curriculum for participating students (American Institutes for Research, 2007; Bailey & Karp, 2003). Accelerated learning options provide students with exposure to new and different material rather than merely a repeat of previously covered curricula (Western Interstate Commission for Higher Education, 2006). Additionally, a 2006 study of dual-enrollment students in Kentucky revealed that participation in early college level learning does have a positive effect on students' college grade-point averages (Kentucky Council on Postsecondary Education, 2006). Such promising postsecondary academic benefits make accelerated learning options a viable choice for thousands of students each year.

Emotional Preparation

In addition to the advanced academic preparation received by students who take dual-credit courses, students are also given extra time to emotionally prepare themselves for college. Dual-enrollment courses, at their best, allow students to acquaint themselves with the stressful demands of college while still being supported by parents, teachers, and counselors in an environment that is familiar to them (American Institutes for Research, 2007; Hoffman & Robins, 2005). By enrolling early in a college program, the experience could help to “allay the fears of first-generation college goers and their families that college will be too difficult or the environment unwelcoming” (Hoffman & Robins, 2005, p. 6).

Some educators viewed accelerated learning opportunities as a successful transition strategy (Jordan et al, 2006; Karp et al., 2007; Knowledge Works Foundation, 2007; Pennington, 2004; Western Interstate Commission for Higher Education, 2006). As students become accustomed to the differences in the level of coursework and the teaching methods of college instructors, they still have people who are close to them to offer the additional encouragement necessary for their success. For some students, the transition to college coursework and to the college environment is made much easier by enrollment in dual-credit courses (American Association of State Colleges and Universities, 2002; Burns & Lewis, 2000).

Students who are strong academically might not experience success in college because they are not emotionally prepared or mature enough to handle the demands of college. For example, Bailey and Karp (2003) found that students who do not persist in college might have a difficult time because they are overwhelmed and unfocused. Early enrollment in college credit earning courses could help these students develop traits to cope better with stress and remain focused on their academic pursuits. According to Bailey and Karp (2003), “By actually participating in college classes, students develop a clear idea about whether or not they are prepared” (p. 3). Dual-enrollment courses allow high school students time to hone their skills in time management, test taking, communication, note-taking, and studying methods (American Association of State Colleges and Universities, 2002; Chandler, 2006; Hoffman & Robins, 2005; Koszoru & Bolton, 2005). Such programs may further enable participating students to acquire the behaviors and attitudes necessary for success when later enrolled in a full-time degree-seeking college program (Western Interstate Commission for Higher Education, 2006). Participation in college level learning while in high school better prepares students because it clarifies acceptable standards and allows students time to fine tune traits necessary for success at a postsecondary institution (American Association of State Colleges and Universities; Bailey et al., 2003; Chandler, 2006; Hoffman & Robins, 2005; Jordan et al., 2006; Koszoru & Bolton; Lerner & Brand, 2006; Pennington, 2004).

Furthermore, some students are drawn more to accelerated classes because of the focused learning environment they provide. Students who opt to enroll in early college-level learning courses are generally better behaved and the class experiences fewer behavioral or disciplinary distractions (Western Interstate Commission for Higher Education, 2006). For those who are serious about the learning experience, such accelerated learning options could be a refreshing break from the traditional high school classroom that often have unmotivated, disengaged, and disruptive teenagers in attendance.

Advantages of Dual-Enrollment Programs

Financial Advantages

In addition to the advanced academic and emotional preparation students can receive by enrolling in dual-credit courses in their junior or senior years, they could also benefit financially. The increased cost of a college education has caused many students and parents to consider participating in dual-credit courses (Bailey et al., 2002). Data collected from dual-enrollment participants in Florida showed that dual-enrollment participants earned more college credits 3 years after high school graduation than did their nonparticipant counterparts (Karp et al., 2007).

Likewise, a review of records for Ohio students who participated in the state's postsecondary enrollment options revealed that participants did on average earn their college degrees quicker than did nonparticipants (Knowledge Works Foundation, 2007). Students who make faster progress toward degree completion might save money in the long run. Because dual-enrollment courses are a direct result of an agreement between high schools and colleges and universities and because some credit-based transition programs are direct initiatives of state departments of education, enrolling in college during the senior year of high school could significantly reduce the overall cost of seeking a postsecondary degree (Bailey et al., 2002; Hoffman, 2005; Johnstone & Del Genio, 2001; Jordan et al., 2006; Knowledge Works Foundation).

Some high school districts are willing to cover the costs of the college courses because they “consider it [accelerated learning] part of the high school experience” (American Association of State Colleges and Universities, 2002, p. 4). In Virginia, the *Senior Year Plus* program has been used as a way to combat “senioritis” and better prepare students for college or work. Students in this state can earn up to 15 college credits while still attending high school, and the program “covers the cost of tuition for up to a semester’s worth of courses” (Chmelynski, 2004, ¶ 1).

New York’s *College Now* program offers the same monetary benefit for high school seniors. Seniors enrolled in dual-credit courses through the *College Now* program can take up to six credits per semester free of charge (Bailey et al., 2002). Likewise, youth in Wisconsin and Michigan can enroll in postsecondary courses for which the student’s school district covers tuition (Bailey et al.; Colton, 2006). Credit-based transition programs in Indiana allow students to pay less per credit hour for high school seniors who are enrolled in a dual-credit course than do college students taking the same number of credit hours (Plucker et al., 2006). In addition, Robertson (2005) reported high schools and colleges in North Carolina “share the funding burden for dually enrolled students” (¶ 19).

The State Board for Community and Technical Colleges in the state of Washington (2006) reported that an estimated \$71.3 million dollars was saved by students, parents, and taxpayers during the 2005-06 school year because of the state’s dual-enrollment program. By enrolling early in college courses, families could potentially save thousands of dollars (Hoffman & Robins, 2005; Plucker et al., 2006; State Board for Community and Technical Colleges, 2006).

In addition to the money directly saved on college tuition, students could also save money because dual-enrollment programs might benefit the students by “hastening entry into the better paid, college-trained work force” (Johnstone & Del Genio, 2001, p. 1). Most Americans would agree that some amount of postsecondary education or training is an irrefutable prerequisite for finding reasonably well-paying employment (Bailey & Karp, 2003). When

students are able to earn college credit while at the same time fulfilling the requirements for high school graduation, they could shorten the amount of time required to earn a college degree in some cases by as much as 2 years (Hoffman & Robins, 2005).

Students who work toward an associate's degree or technical certificate while completing the requirements for high school could actually enter the workforce immediately upon high school graduation rather than 2 years later. This shortened amount of time spent in the college classroom allows students the opportunity to join the adult workforce and begin earning a higher salary sooner than if they followed the traditional path (Hoffman & Robins, 2005). In addition, North Carolina's Earn and Learn initiative has used foundation dollars and \$ 2.2 million from the state's budget to strengthen the workforce in emerging, high-demand fields such as health care and technology (Hoffman, 2005).

Enrollment in dual-credit courses offers many economical benefits not only for the students and parents but for taxpayers as well. Taxpayer dollars that support secondary and postsecondary institutions benefit greatly when students spend fewer hours in school and enter the workforce with more training and experience than would be available without dual-enrollment participation (Harrison, Earnest, Grehan, & Wallace, 2006).

Benefits for Underachieving Students

A historical review of dual-enrollment programs showed that most early college entrance programs have been aimed at the gifted or higher achieving students (Bailey & Karp, 2003; Hoffman & Robins, 2005; Plucker et al., 2006; Sethna et al., 2006). However, recent researchers have revealed a variety of reasons for allowing students who were traditionally considered non-college bound the same access to dual-credit courses. In fact, The Bill and Melinda Gates Foundation launched the *Early College High School Initiative* in 2002. This program (specifically geared toward students who are underrepresented in postsecondary institutions) has grown dramatically over the years and has been offering promising results for typically low-achieving students (American Institutes for Research, 2007). Enrolling students who have been

unsuccessful in high school and who are not prepared for college in a dual-credit course their junior or senior year might seem foolish to some. Obviously, if students have been unsuccessful in high school, some stakeholders might fail to see how enrolling students in college even earlier will help. Nonetheless, there has been a significant amount of research that supports credit-earning programs that target at-risk students (American Institutes for Research, 2007; Bailey & Karp, 2003; Karp et al., 2007; Lords, 2000; Smith, 2007). In fact, states such as Maine and Virginia have taken decisive steps to develop dual-enrollment programs designed precisely for those students who are least likely to attend college and experience success at the postsecondary level (Hoffman, 2005).

Many high school students whose parents did not attend college might see it as an opportunity that is out of reach for them. Exposing these students early to college programs and courses could “demystify college and show students that other young people like them can have success in college” (Bailey & Karp, 2003, p. 3). According to a report released by the National Commission on the High School Senior Year (2001):

In the age of agriculture, postsecondary education was a pipe dream for most Americans. In the industrial age it was the birthright of only a few. By the space age, it became common sense for many. Today, it is common sense for all. (p. 17)

Students who traditionally might have been discouraged by parents and teachers could experience and benefit greatly from the feeling of success they often experience in these dual-enrollment courses and might begin to view themselves as being college bound (American Institutes for Research, 2007; Lords, 2000; Smith, 2007). In addition, allowing students access to college credit in a course offered at the student’s high school during the regular school day could allow traditionally unsuccessful students the chance to explore potential career opportunities they might not otherwise have considered (Plucker et al., 2006). Furthermore, early success in a college level course could increase the student’s chances of remaining enrolled when he or she does enter college full time in the future (American Association of State Colleges and Universities, 2002; Bailey & Karp, 2003; Johnstone & Del Genio, 2001; Knowledge Works Foundation, 2007).

Researchers have also suggested that the high expectations held for the traditionally non-college bound students as a result of accelerated learning participation could in fact increase the student's own internal motivation (American Institutes for Research, 2007; Johnstone & Del Genio, 2001; Pennington, 2004). This argument is extremely relevant and important when dealing with underachieving students. Many educators have maintained that the students identified as underachieving are capable of success at a much higher level but are not motivated to perform because they are bored or see little relationship between the required high school course work and their limited futures (Lords, 2000). Often, at risk students do not see the need of even attending high school on a regular basis (Burns & Lewis, 2000). Simply being exposed to the college environment could spark a newfound interest in academics for the underachieving students. Psychological and motivational factors are of paramount importance for students who are not traditionally considered college-bound (Bailey & Karp, 2003). Enrollment in a dual-credit course might push students to a higher level of performance and motivate otherwise unsuccessful and unmotivated students to succeed (Gehring, 2001; Karp et al., 2007).

A promising side effect of this newfound interest and higher level of performance might be a decrease in the high school dropout rate of at-risk students (American Association of State Colleges and Universities, 2002; Burns & Lewis, 2000). By getting the colleges more involved, the high schools could focus their attention toward students who have been less academically successful (Bailey & Karp, 2003). Enrollment in college-level courses during the high school senior year may help nonthriving students to develop a new sense of purpose (Western Interstate Commission for Higher Education, 2001) and can potentially increase student motivation (Bailey et al., 2002; Jordan et al., 2006). In a recently published study of the positive impact of dual-enrollment participation of students in Florida, participation in the program did increase the students' likelihood of earning a high school diploma (Karp et al., 2007). Proponents of accelerated learning opportunities have argued that institutions should further investigate and implement programs that benefit all students not just those who are highly motivated or have previously been academically successful.

Benefits for Institutions

Both secondary and postsecondary institutions are concerned with the potential positive impact accelerated learning program participation has to offer students; however, they must be equally focused on the program's ability to positively impact the schools. Dual-enrollment programs are sometimes linguistically difficult and financially straining to implement and maintain. However, they must offer optimistic outcomes for both sectors to encourage program participation.

Increased Collaboration and Communication

Dual-credit programs offer promising benefits not only for the students who are enrolled but also for the high schools and colleges that participate. Successful dual-enrollment programs “share several characteristics, including an emphasis on collaboration and a strong sense of connectedness among both institutions” (Plucker et al., 2006, ¶ 1). High schools and colleges, teachers and instructors, and principals and administrators in the secondary and postsecondary schools must see themselves as being part of a common venture to ensure the success of any accelerated learning program (National Commission on the High School Senior Year, 2001). Merely having the opportunity to work together with other educators can open up the lines of communication and increase future collaboration.

At the very least, dual-credit options demystify the varying sectors of public education (Bailey & Karp, 2003; Knowledge Works Foundation, 2007; Lerner & Brand, 2006; Robertson, 2005). Historically, the American educational system has operated with three distinct levels—elementary, secondary, and postsecondary (Western Interstate Commission for Higher Education, 2001).

Adelman (2006) painted a chaotic image of passengers stepping robotically on moving sidewalks. Students stumble from one section of the educational system to the next assured that the moving sidewalk will be waiting but merely staggering onto the path without much consideration or preparation. Collaborative initiatives such as accelerated learning options

“attempt to provide better connections and pathways between high schools and colleges” (Colton, 2006, ¶ 5). Accelerated learning programs are often appealing options for secondary and postsecondary institutions because they reflect the goals of the current trend of strengthening the relationship between both sectors (Karp et al., 2007). Pennington (2004) called for a restructuring of the relationship linking the nation’s secondary and postsecondary institutions--a new arrangement that works to assure all students have a chance to participate in a postsecondary program of some sort. When structured and maintained properly, accelerated learning programs, such as dual enrollment, can offer the opportunity for such a restructuring of the present disconnected kindergarten through 12th grade and postsecondary systems (American Association of State Colleges and Universities, 2002).

Advantages for Secondary Schools

Dual-enrollment programs could offer a range of advantages for the participating high schools. Programs that allow students to leave the high school campus to attend classes on the college campus might relieve some of the overcrowding conditions commonly found on American high school campuses (Hoffman & Robins, 2005).

In addition, the exposure to college courses and college-level learners could benefit high school students. Seeing students in class because they want to be there not because they are part of a particular group or clique might relieve some students who have reservations about college life because of some negative high school experiences (Lords, 2000).

The high school curriculum also benefits greatly when dual-credit courses are offered as an option. In high schools that allow dual enrollment, there is much greater potential “to lessen the duplication between the high school and college curricula” (Johnstone & Del Genio, 2001, p. 3). Indeed, “Syracuse University in New York began its program, Project Advance, in 1973, largely to address the duplication of curriculum between the last 2 years of high school and the first 2 years of college” (Gehring, 2001, ¶ 16). Additionally, dual-enrollment programs allow students to take advantage of courses that their high schools might be unable to provide

(Adelman, 1999). Because of recent budgetary issues, high schools are forced often to limit the courses that they offer. The fine arts, such as music and drama, unfortunately, are frequently the first courses to be cut (Bailey et al., 2002). Educators at colleges and universities could work with local high schools to supplement the curriculum and further benefit the students and themselves. Furthermore, dual enrollment allows high schools to expand vocational course offerings that could additionally benefit students. Accelerated learning programs that make use of resources on local college campuses might offer technical courses that require costly equipment without having to invest money from an already strapped budget (Karp et al., 2007). Such courses could provide students the opportunity to participate in programs that were previously considered out of reach by the local kindergarten- through 12th-grade educational system and administrators.

Dual-enrollment programs could also help assure that the legislative mandate requiring secondary educators to be highly qualified in the area they teach is met by struggling school systems. Pennington (2004) reported that over 50% of the nation's highly qualified educators plan to retire in the next decade. Encouraging more dual-enrollment courses allows students and high school administrators access to highly qualified professors who are experts in their fields.

Benefits for Colleges and Universities

Not only do arranged dual-credit programs benefit the secondary schools but colleges and universities stand to gain from participating in dual-enrollment programs as well. The American Association of State Colleges and Universities (2002) encouraged institutions to “take the lead in administering dual-enrollment courses... Such programs can generate revenue and increase enrollments, as students who start a degree at an institution may be more likely to complete the degree at that institution” (p. 1). Dual-credit opportunities offer new avenues for “recruitment and retention at the college and university level” (American Association of State Colleges and Universities, p. 5). Students might be more likely to continue a program with a university or college with which they have had a positive past dual-credit learning experience.

As an added bonus, a dual-enrollment program could increase the college or university's visibility in the area it serves (American Association of State Colleges and Universities, 2002; Bailey et al., 2002; Daun-Barnett & Garrett, 2004; Johnstone & Del Genio, 2001; Koszoru & Bolton, 2005; Western Interstate Commission for Higher Education, 2006). Students who might not have considered attending a particular college could enroll as a result of their dual-enrollment experience in high school (Western Interstate Commission for Higher Education). In addition, research into the positive effects of participation in Florida revealed a positive correlation between involvement in a dual-enrollment course and subsequent enrollment as a full-time rather than part-time student (Karp et al., 2007).

According to Adelman (2006), students who do not immediately enroll in postsecondary learning options are less likely to complete a degree program. Accelerated learning options encourage students to continue their education on a fast track. This side effect might be of particular interest to the community colleges. "Dual-enrollment programs can attract top high school students who otherwise might not have considered a community college" (American Association of State Colleges and Universities, 2002, p. 5). Furthermore, programs that allow high school seniors to enroll in college level courses "can serve as an excellent admissions recruitment tool, and can aid community colleges in attracting better-prepared students" (Peterson, 2003, ¶ 6). By simply allowing high school students to enroll concurrently in college courses, colleges and universities could profit in various ways.

Additionally, colleges and universities stand to benefit from dual-enrollment programs when such courses are taught on the high school campus. In systems that allow qualified high school employees to instruct dual-enrollment classes, colleges and universities could benefit from the money saved on teachers' salaries. High school teachers who conduct college level courses are often paid as adjunct professors rather than as full-time employees (Bailey et al., 2002). Such a difference in the pay scale of adjunct versus full-time college faculty could save the postsecondary institution thousands of dollars with each accelerated learning course offering.

Criticisms of Dual Enrollment

Although early college level learning seems to offer countless positive benefits for all stakeholders, accelerated learning opportunities do not stand without some critics who argue against the rapid growth and implementation of such programs. While very few individuals would oppose a more rigorous high school curriculum or more seamless transition from the kindergarten through 12th grade to the postsecondary sector, many researchers have failed to agree that dual-enrollment programs offer such promising effects. In order to foster successful accelerated learning opportunities, policy makers and practitioners must address the concerns and criticisms of dual-enrollment programs.

A common criticism of dual-enrollment programs has been the issue of credibility and quality. Some skeptics have argued that courses taught as part of a dual-enrollment program on a high school campus are not equally as rigorous as the same course taught to traditional college students on the institution's campus (Gehring, 2001; Reindl, 2006). According to Bailey et al. (2002), doubters fear that programs that do not require students to attend classes on the college campus could all too often only be high school courses for which students earn college credit. Universities are also reasonably concerned about the common, and all too often, interruptions at the typical high school setting (Catron, 2001).

As dual-enrollment programs gain popularity and extend their reach beyond those highly motivated and high achieving participants of the past, college and university administrators are particularly concerned about the quality of credits earned through concurrent enrollment (Daun-Barnett & Garrett, 2004). Because of these concerns, the South Dakota Board of Regents in 2000 chose not to recognize or accept credit earned as a result of dual-enrollment coursework (Gehring, 2001). Likewise, The University of Virginia has maintained that college level courses taught in the high school setting could not possibly be comparable to courses taught on the college campus (Catron, 2001). For these reasons, many colleges and universities are second guessing college credits earned by high school students.

Furthermore, cynics fail to see the value of early college-level learning because students often encounter difficulties when transferring credit. In some cases, dual-enrollment participation does not accelerate degree attainment because of a problem with transferability (Knowledge Works Foundation, 2007; Pennington, 2004). Because most programs are a direct result of articulation between the participating high school and community college, issues do not often arise regarding transferability immediately following program participation. Problems, however, occur repeatedly as students attempt to transfer credit from the participating community college to a 4-year institution (Burns & Lewis, 2000). Catron (2001) reported that students sometimes experience difficulty with credit transfer because they misunderstand the transferability issue, and she suggested that administrators at the secondary and postsecondary institution must take action to early clarify any question about transferability.

Additionally, opponents have questioned the maturity of the learners and the value of the experience of accelerated learning participation. According to Dougan (2005), some critics have fundamentally opposed the prospect of high school aged children being enrolled simultaneously with adult learners. Dougan reported that younger, under prepared, and less mature students could rarely fully participate in the college level learning that often relies upon life's lessons and the individual insights of students to complete the experience fully. Furthermore, critics of the program have questioned the concept of college-level learning in high school. Johnstone and Del Genio (2001) expressed the belief that participation in these programs does not substitute for the true college experience. To these researchers, learning that is considered college level requires more than mere mastery of a preset college curriculum.

Finally, some stakeholders have questioned the cost effectiveness of concurrent enrollment programs. Practitioners and administrators have questioned the implementation of accelerated learning options because financing by the local school districts could become an enormous hurdle (Knowledge Works Foundation, 2007; Reindl, 2006). Some public school administrators have been hesitant to support such accelerated learning programs because it has been insinuated that such programs could threaten per-pupil funding from the state department

(Daun-Barnett & Garrett, 2004). Bailey et al. (2002) on the other hand, pointed out some states permit both institutions to count concurrently enrolled students into the funding policy.

According to Dougan (2005), some legislators and taxpayers are reasonably upset that two separate institutions may be receiving funding for the same student who is earning credit for a single course. In essence, it seems that states are paying twice for the education of a select few (Dougan; Western Interstate Commission for Higher Education, 2006). Gehring (2001) reported that dual-enrollment programs across the nation have become a money making scheme for some postsecondary institutions. Because of these issues, some states such as Colorado have limited the number of credits per high school student for which the college can accept state reimbursement (Bailey et al.).

As is the case with nearly any educational initiative, accelerated learning proponents can hardly expect these programs to be supported and welcomed by all. Instead, practitioners and policy makers should work to scrutinize data regarding the effectiveness of such programs and be prepared to address the concerns and criticisms of those who fail to see the value of awarding early college credit.

Summary

Administrators, parents, and teachers must reevaluate the way students are prepared for life after high school. “It is time to ask whether American society considers the senior year to be an extended farewell to adolescence or an integral part of preparation for life” (Western Interstate Commission for Higher Education, 2001, p. 19). Although there are numerous initiatives and programs designed to improve the high school senior year, one approach that seems attractive to educators, parents, and students is a credit-based transition program that permits and promotes allowing students to earn college credit while still attending high school. Such accelerated learning programs help to “convert ‘senioritis’ into a preparation for life in the 21st century” (National Commission on the High School Senior Year, 2001, p. 13). Perhaps Bailey and Karp (2003) summed it up best:

At a time when educators and policy makers are discouraged with high schools and convinced that some postsecondary education is a necessity for everyone, these programs [accelerated learning options] evoke a powerful image in which disengaged high school students are pulled into college by setting high expectations and providing them with concrete information about what college is like, where they stand in terms of college preparation, and what they need to be successful in college. (p. 20)

Participation in a dual-enrollment program could offer positive benefits for all involved and appears to be a promising option for making better use of the final couple of years of a student's publicly supported and mandated secondary education. If the American education system hopes to meet the needs of today's students and prepare them for success later in life, educators, administrators, and policy makers must work to implement programs and initiatives that will give students the tools they need to seamlessly glide from one sector of public education into the next (Pennington, 2004).

CHAPTER 3

RESEARCH METHODS

The purpose of this study was to examine the effects of dual-enrollment participation on students' postsecondary achievement as measured by various factors. The target community college began allowing high school juniors and seniors to earn early college credit in 1987. The program has since grown to include 10 area school systems that have comprehensive articulation agreements with the college that allow students to participate in early college-level learning. This chapter addressed the research methods used in this study. It is organized into the following sections: population, design, data collection, methodology, and data analysis.

Population

The population for this study consisted of recent high school graduates who enrolled at the target community college in the fall of 2007. The population was divided into two groups--those students who earned early college credit and students who entered college with no postsecondary credit. To better control for academic ability in the sample, only those students who entered college immediately following high school graduation were studied. Of the first-time freshmen who enrolled at the community college in the fall of 2007, 901 students had graduated from high school the previous academic year. Students who did not attend college in the academic year following high school graduation and those with records missing critical information were excluded from the study. Therefore, the population of this study consisted of 65 student records with college credit on the transcripts prior to high school graduation and 836 student records containing no college credit before graduating from secondary school.

Students who entered college in 2007 with college credit on their transcripts had attended 1 of 10 local school systems that have a formal agreement with the target community college.

The college most often offers dual-enrollment credit for the core courses including English, mathematics, and history.

Design

The design of this research focused on the impact, if any, of participation in early college level learning on students' subsequent postsecondary success. Records were obtained for all first-time freshmen who enrolled at the community college in the fall of 2007 following high school graduation the previous academic year. To ensure the validity of the study, the researcher used students' ACT standardized composite scores to control for academic ability when appropriate. To evaluate the impact of participation in dual-credit courses, the investigation focused on the following variables: initial enrollment status (full time or part time), enrollment in remedial and developmental courses, completion of the fall and spring semesters, and college grade-point averages for the fall and spring semesters. These indicators were selected as a way to identify and compare postsecondary success of those who did and did not participate in an accelerated learning program.

The following research questions were selected to guide the study:

1. Is there a difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time)?
2. Among full-time students enrolled in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled)?
3. Among the students who were initially enrolled full time in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester)?

4. Among the full-time students who completed the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester)?
5. Is there a difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?
6. Is there a difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?

Data Collection

The data analyzed in this research were collected from the target community college. The college uses the Tennessee Board of Regents' software program called Student Information System (SIS) to maintain student information. Once data were obtained by the researcher, such information was retained on a personal computer and was further evaluated using version 15 of the Statistical Package for the Social Sciences (SPSS) computer software program.

Records were collected for first-time freshmen who enrolled at the community college in the fall of 2007. Information was collected only on those students who had graduated from high school the previous academic year. Although demographic information was collected and reported, student confidentiality was maintained strictly because information was classified by student identification number rather than name or social security number. Based on the extracted data, students were assigned to two groups; group one was comprised of those students who had earned college credit through the target community college's dual-enrollment program prior to high school graduation; group two included individuals who had not participated in the dual-enrollment program.

The following information was collected from the community college: gender, race, high school graduation date, ACT standardized composite score, status of participation in a dual-

enrollment course, college grade-point average for the fall and spring semesters, number of college course hours registered for in fall and spring semesters, number of remedial and developmental courses hours registered for in the fall semester, and reenrollment patterns.

Methodology

Typically, institutions collect and retain qualitative information about their own individual programs. Whereas these data might record and summarize student and instructor attitudes and feelings about the accelerated learning experience, they rarely explore participation as an indicator of success in postsecondary work (Lerner & Brand, 2006). The results of this study should answer numerous questions regarding the efficacy and value of the dual-enrollment program at the target community college using precise quantitative methods.

The study employed a nonexperimental quantitative research design to examine the links between the variables without any direct manipulation by the researcher (McMillan & Schumacher, 2006). The researcher followed the comparative nonexperimental model and sought to investigate the differences between two groups of college students with no direct control of the conditions.

Before taking any action to complete this study, the researcher obtained written permission from the president of the target community college to extract SIS data and work with employees in the Office of Planning, Research, and Assessment. After permission was granted, the president arranged for a meeting with the dean of distance education who is responsible for overseeing the dual-enrollment program. Following numerous conversations with the dean of distance education and the vice-president for Planning, Research, and Assessment, research questions were developed and null hypotheses formulated.

Stated in the null form, the hypotheses outlined below were investigated in this study:

Ho1: Of students who enrolled fall semester in the target community college, there is no difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time).

- Ho2: Among students enrolled in the fall semester full time, there is no difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled).
- Ho3: Among students enrolled full time in the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester).
- Ho4: Among full-time students who completed the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester).
- Ho5: There is no difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.
- Ho6: There is no difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.

Data Analysis

Analysis of the data began with descriptive statistics that provided an overview of the population. SPSS version 15 was used to analyze the collected college academic records. Inferential statistics were then employed to determine the differences, if any, among the variables and the perceived effects of participation in dual-enrollment programs. The inferential statistics included chi-square and analysis of covariance (ANCOVA). (Research questions 1-4 were analyzed using chi-square and questions 5 and 6 were analyzed using ANCOVA.)

Chi-square test for independent samples was used with the first four research questions to determine if there was a difference between two categorical values (Pallant, 2007). Using ANCOVA allowed the researcher to explore the differences between students who had earned early college credit and those who had not while controlling for academic ability by using the student's composite ACT score. ANCOVA was the preferable statistical analysis because the researcher was unable to assign students randomly but had to use existing groups (Pallant). In this study, students were assigned to groups after examination of student records to identify whether students had or had not participated in the dual-enrollment program.

Some critics of accelerated learning argue that dual-enrollment participants appear more successful in college as a direct result of the target group for participating in the program that most often included the most intellectually talented or gifted students. Most programs (including the one examined as a result of this research) do require some degree of academic success prior to participation. Using ANCOVA allowed the researcher to control for previous academic ability and to adjust statistically for the initial group differences (McMillan & Schumacher, 2006). The researcher used student records to evaluate whether accelerated learning participation was related to college success.

College records for students who enrolled at the target community college in the fall of 2007 following high school graduation the previous academic year were evaluated. All statistical analysis was evaluated using a predetermined alpha level of 0.05. This preset alpha is the acceptable level for research conducted in social sciences field and was used to verify statistical significance. However, to evaluate the strength of a program completely, one must look beyond obtaining statistical significance (Pallant, 2007). To assure that the research also has practical significance and can prove valuable to practitioners and policy makers, (when possible) effect size was calculated and reported.

The statistical procedures employed and the specific findings are discussed further in Chapter 4.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

Because of recent budget cuts, educators and administrators at all levels (preschool through postsecondary) are under more pressure than ever to implement and sustain only those programs that are firmly grounded in substantial evidence. Programs that lack proof of effectiveness are scrutinized and are always in jeopardy of funding cuts or elimination. Dual-enrollment programs are certainly no exception. The purpose of this study was to examine the effects of dual-enrollment participation on students' postsecondary achievement as measured by various factors. The study focused on whether students who had participated in the dual-enrollment program were more likely to enroll full time rather than part time, less likely to be enrolled in remedial and developmental courses, more likely to complete the fall and spring semesters, and more likely to earn higher college grade-point averages for the fall and spring semesters.

The study's population consisted of 901 college freshman who enrolled in the target community college in the fall of 2007 following high school graduation the preceding academic year. The population was divided into two groups--students who earned college credit prior to high school graduation through the target college's dual-enrollment program and those who entered community college with no credit for college course work. The study focused only on those students who had enrolled in college following high school graduation the previous academic year and excluded the records of students missing vital information such as an ACT score. Students enrolling in college who had participated in the dual-enrollment program numbered 65 and comprised 7.2% of the study's population; those without college credit numbered 836 and comprised 92.8% of the study's population. (The researcher was aware that the interpretation of the data could be skewed because of the sample size; however, the findings of the study should still provide valuable information about the subsequent success of dual-enrollment participants).

Six research questions were selected to guide the investigation, and the data gathered were used to test six null hypotheses. The Statistical Package for the Social Sciences (SPSS) computer program was used to analyze the data. Table 1 shows the demographic profile of the population.

Table 1

Demographics of Population

	Dual Enrollment		Nondual Enrollment		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Gender						
Male	21	32.3	390	46.7	411	45.6
Female	<u>44</u>	<u>67.7</u>	<u>446</u>	<u>53.3</u>	<u>490</u>	<u>54.4</u>
Total	65	100.0	836	100.0	901	100.0
Ethnicity						
African American	0	0.0	44	5.3	44	4.9
Alaskan Native	0	0.0	2	.2	2	.2
Asian	0	0.0	2	.2	2	.2
Hispanic	3	4.6	16	1.9	19	2.1
White	<u>62</u>	<u>95.4</u>	<u>772</u>	<u>92.3</u>	<u>834</u>	<u>92.6</u>
Total	65	100.0	836	99.9	901	100.0
Degree Program						
Assoc. of Applied Science	8	12.3	96	11.5	104	11.5
Assoc. of Arts	8	12.3	80	9.6	88	9.8
Assoc. of Science	34	52.3	520	62.2	554	61.5
Undeclared	<u>15</u>	<u>23.1</u>	<u>140</u>	<u>16.7</u>	<u>155</u>	<u>17.2</u>
Total	65	100.0	836	100.0	901	100.0

Analysis of Research Questions

Research Question #1

Is there a difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time)? To answer this research question, a 2 by 2 crosstabulated table and the chi-square test was utilized.

Ho1: Of students who enrolled fall semester in the target community college, there is no difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time).

Dual-enrollment participants and their nonparticipating counterparts were further categorized into two groups based upon the number of college credit hours students had registered for in the fall semester of 2007. Students who were taking 12 or more college credit hours were categorized as full-time students. Those registering for fewer than 12 college credit hours were classified as part-time students. The grouping variable for this research question was the student's participation (or lack thereof) in a dual-enrollment program: (a) students who did participate in a dual-enrollment program prior to high school graduation and (b) students who entered college without participating in a dual-credit course. The frequencies and accompanying percentages of the two groups are shown in Table 2.

Table 2

Crosstabulated Table for Dual Enrollment and Nondual Enrollment by Fall Enrollment Status

	Dual Enrollment		Nondual Enrollment		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Enrollment Status						
Part Time	3	4.6	55	6.6	58	6.4
Full Time	<u>62</u>	<u>95.4</u>	<u>781</u>	<u>93.4</u>	<u>843</u>	<u>93.6</u>
Total	65	100.0	836	100.0	901	100.0

A chi-square test for independent samples was used to evaluate the difference between dual-enrollment participation and subsequent college enrollment status (part time versus full time). However, there was a violation of one of the assumptions of chi-square concerning the minimum expected cell frequency. An assumption of chi-square is that no more than 20% of the cells have an expected frequency of less than 5 (Pallant, 2007). For this analysis, 25% of the cells had an expected frequency of less than 5. Because of this violation, the null hypothesis was not tested. However, as shown in Table 2, the overwhelming majority of all the students at the target community college were enrolled as full-time students (12 or more college course hours) in the fall semester following high school graduation. Those students who had participated in a dual-enrollment program did enroll at a slightly higher percentage (95.4% as compared to 93.4%). Even though the difference between the two groups is negligible, it is still noteworthy.

The bar chart in Figure 1 further illustrates the slight percentage differences of the two groups of students (dual enrollment- and nondual-enrollment participants).

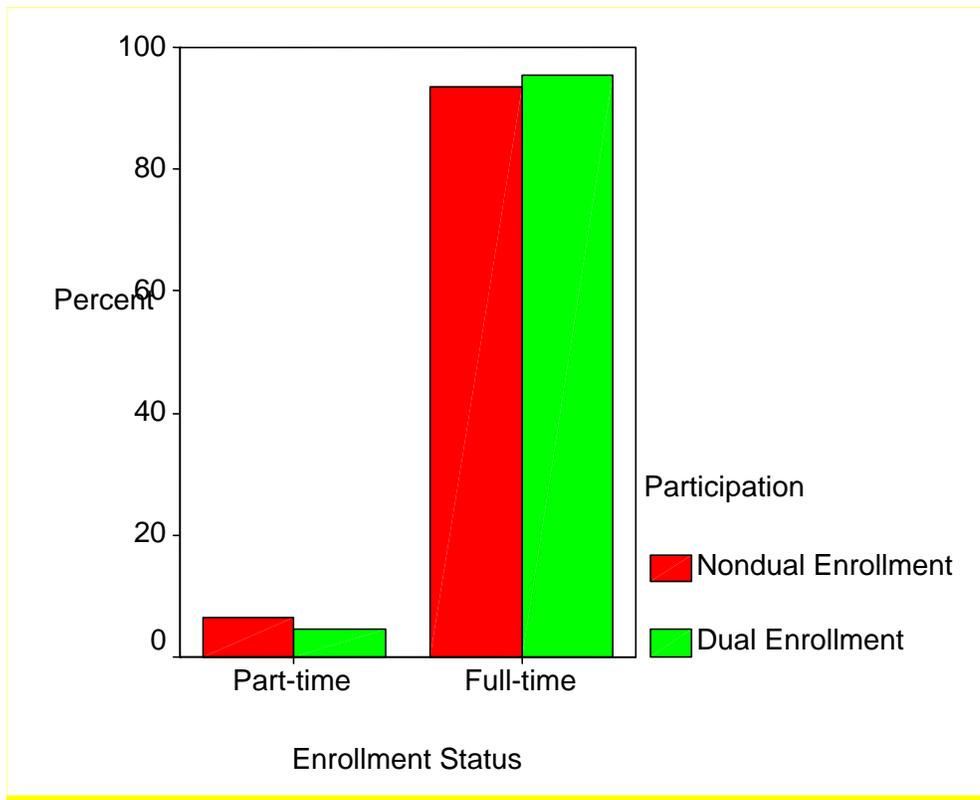


Figure 1. Bar Graph for Dual Enrollment and Nondual Enrollment by Enrollment Status

For the remaining research questions, only those students who scored at least 19 on the ACT composite test were included in the analyses.

Research Question #2

Among full-time students enrolled in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled)? To answer this research question, a 2 by 2 crosstabulated table and the chi-square test was used to test the hypothesis.

Ho2: Among students enrolled in the fall semester full time, there is no difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled).

For this research question, the researcher evaluated the records of 555 students who were enrolled in the fall semester full time and who scored at least 19 on the ACT composite test. The records of the 58 students enrolled only part time, and the records of 288 students who scored below 19 on the ACT composite test were not used as a part of this analysis.

A chi-square test for independent samples was used to evaluate the difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled). The test variable was enrollment in remedial and developmental courses (enrolled versus not enrolled) regardless of the number of remedial and developmental course hours for which the student registered.

The difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester was significant, $\chi^2(1) = 27.04, p < .01$. Therefore, the null hypothesis was rejected. Thus, dual-enrollment participants were significantly less likely to be enrolled in remedial and developmental courses in the fall semester of their college freshman year. The strength of the association as measured

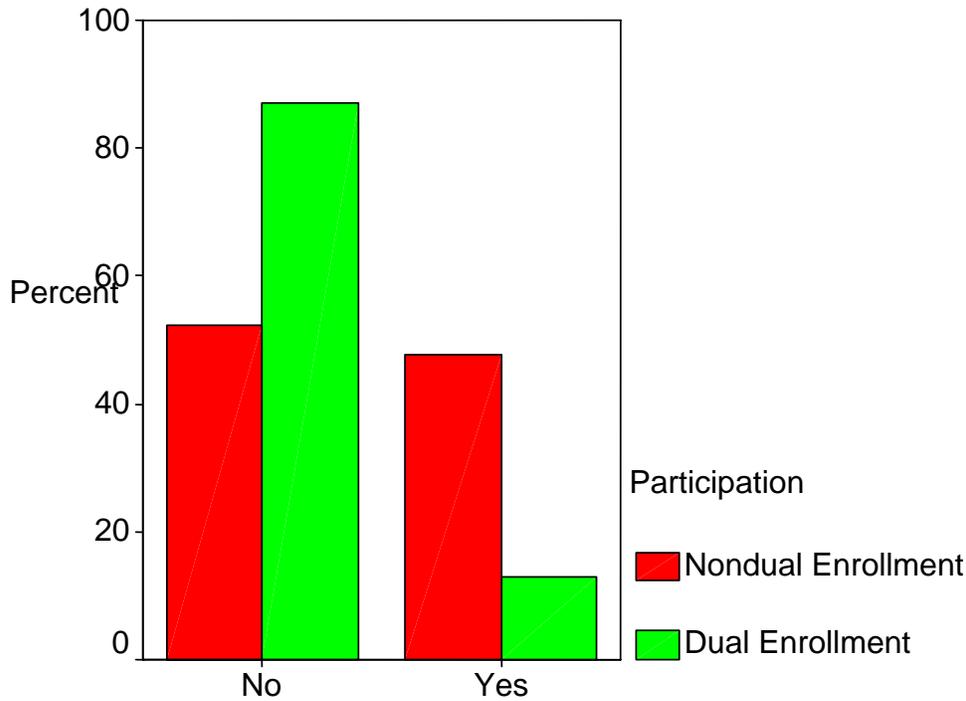
by Phi showed a definite difference between dual enrollment and enrollment in remedial and developmental courses (.22). As shown in Table 3, nearly half (47.7%) of students who had not participated in the dual-enrollment program were enrolled in remedial and developmental courses in the fall compared to only 12.9% of dual-enrollment participants.

Table 3

Crosstabulated Table for Dual Enrollment and Nondual Enrollment by Enrollment in Remedial and Developmental Courses

	Dual Enrollment		Nondual Enrollment		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Remedial & Developmental Course Enrollment						
No	54	87.1	258	52.3	312	56.2
Yes	<u>8</u>	<u>12.9</u>	<u>235</u>	<u>47.7</u>	<u>243</u>	<u>43.8</u>
Total	62	100.0	493	100.0	555	100.0

Figure 2 shows the bar graph for dual enrollment and enrollment in remedial and developmental courses.



Enrollment in Remedial and Developmental Courses

Figure 2. Bar Graph for Dual Enrollment and Nondual Enrollment and Enrollment in Remedial and Developmental Courses

Research Question #3

Among the students who were initially enrolled full time in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester)? To answer this research question, a 2 by 2 crosstabulated table and the chi-square test was used to test the hypothesis.

Ho3: Among students enrolled full time in the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester).

For this research question, the researcher evaluated the records of 555 students who were enrolled in the fall semester full time and who scored at least 19 on the ACT composite test. A chi-square test for independent samples was used to evaluate the difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester).

The difference between dual-enrollment students and nondual-enrollment students in the completion of the semester was not significant, $\chi^2(1) = 2.58, p = .11$. Therefore, the researcher failed to reject the null hypothesis. Thus, dual-enrollment participants were no more likely to complete the fall semester of their college freshman year than were nonparticipants. The strength of the association as measured by Phi was weak (.07). As shown in Table 4, percentages of students completing the fall semester were similar regardless of dual-enrollment participation. However, as shown in Table 4, a higher percentage of dual-enrolled students completed the fall semester (95.2%) compared to nondual-enrolled students (88.4%).

Table 4

Crosstabulated Table for Dual Enrollment and Nondual Enrollment by Completion of the Fall Semester

	Dual Enrollment		Nondual Enrollment		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Completed Fall Semester						
No	3	4.8	57	11.6	60	10.8
Yes	<u>59</u>	<u>95.2</u>	<u>436</u>	<u>88.4</u>	<u>495</u>	<u>89.2</u>
Total	62	100.0	493	100.0	555	100.0

Figure 3 depicts completion of the fall semester for each group (dual-enrollment participants and nondual-enrollment participants).

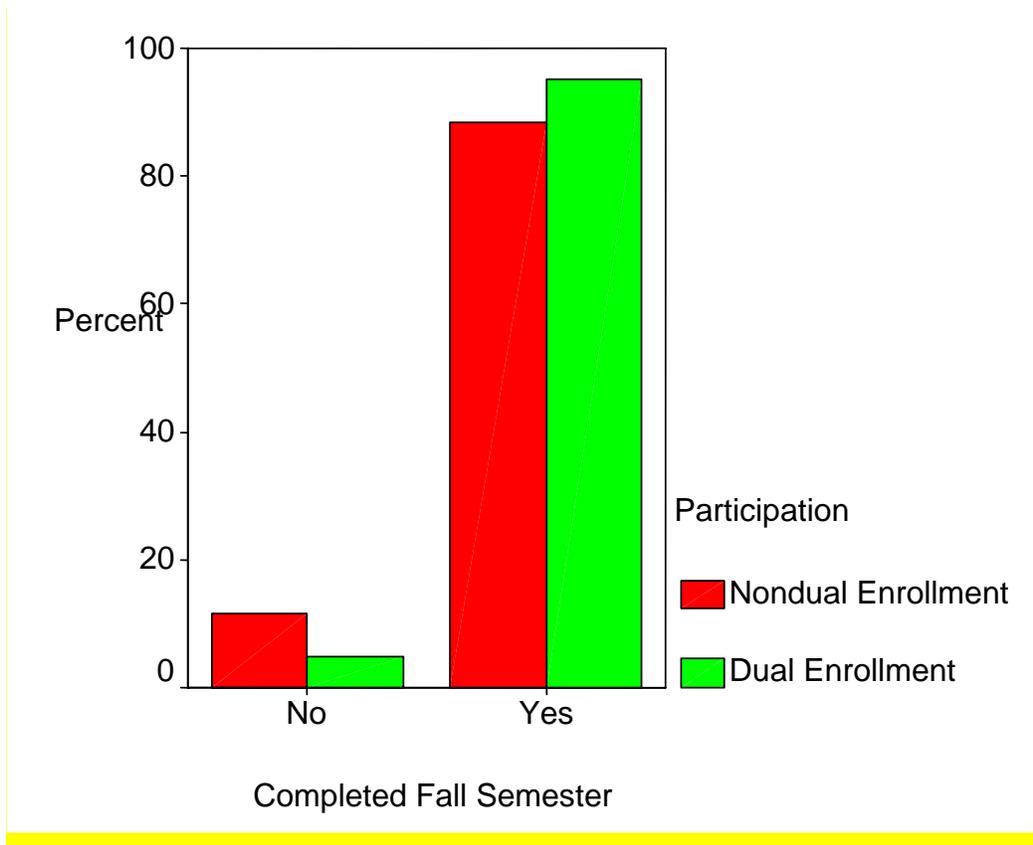


Figure 3. Bar Graph for Dual Enrollment and Nondual Enrollment and Completion of the Fall Semester

Research Question #4

Among the full-time students who completed the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester)? To answer this research question, a 2 by 2 crosstabulated table and the chi-square test was used to test the hypothesis.

Ho4: Among full-time students who completed the fall semester, there is no difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester).

For this research question, the researcher evaluated the records of 495 students who completed the fall semester and who scored at least 19 on the ACT composite test. A chi-square test for independent samples was conducted to evaluate the difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete the semester). The test variable was whether the student completed or did not complete the spring semester, and the grouping variable was, again, whether the student had participated in the dual-enrollment program as a high school student.

The chi-square test was significant, $\chi^2 (1) = 5.75, p = .02$. Consequently, the null hypothesis was rejected. The strength of the association as measured by Phi showed a weak difference (.11) between dual-enrollment students and nondual-enrollment students in the completion of the spring semester. Thus, dual-enrollment participants were somewhat more likely to remain enrolled until May of their college freshman year. As shown in Table 5, a significant number (94.9%) of students who had been dual enrolled completed the spring semester compared to only 82.8% of nondual-enrollment participants who remained enrolled until completion of the spring semester.

Table 5

Crosstabulated Table for Dual Enrollment and Nondual Enrollment by Completion of the Spring Semester

	Dual Enrollment		Nondual Enrollment		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Completed Spring Semester						
No	3	5.1	75	17.2	78	15.8
Yes	<u>56</u>	<u>94.9</u>	<u>361</u>	<u>82.8</u>	<u>417</u>	<u>84.2</u>
Total	59	100.0	436	100.0	495	100.0

Figure 4 depicts the bar graph for dual-enrollment participation and completion of the spring semester.

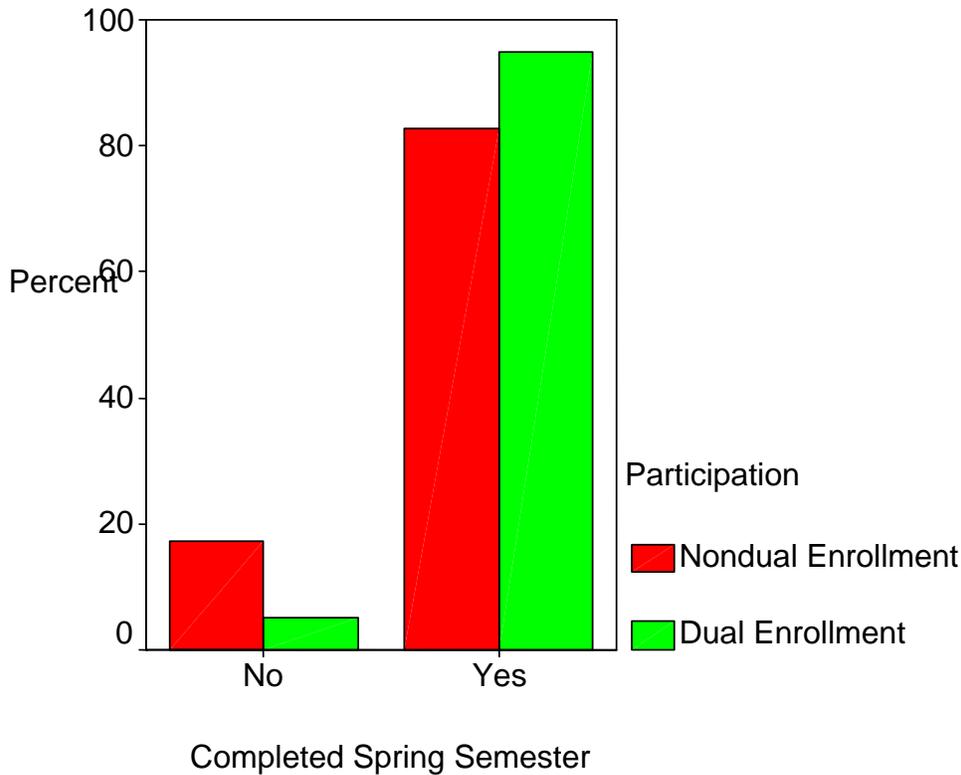


Figure 4. Bar Graph for Dual Enrollment and Nondual Enrollment and Completion of the Spring Semester

The use of ANCOVA in the last two research questions allowed for exploration of the differences between the two groups while controlling statistically for a continuous variable that was suspected to be influencing the scores on the dependent variable (Pallant, 2007). The use of this test allowed SPSS to use regression procedures to remove the variation in the college grade-point averages that may have been because of academic ability (as measured by ACT composite scores). ANCOVA increased the sensitivity of the *F*-test making it more likely that differences between the groups would be detected.

Research Question #5

Is there a difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlling for academic ability using ACT composite scores?

Ho5: There is no difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.

For this research question, the records of 495 full-time students who completed the fall semester were analyzed. The records of the students who did not complete the fall semester and the records of 288 students who scored below 19 on the ACT composite test were not used as a part of this analysis

One assumption of ANCOVA requires that the difference between the covariate (ACT composite scores) and dependent variable (college grade-point averages) for each of the groups (dual-enrollment and nondual-enrollment participants) is the same. A preliminary analysis to evaluate the homogeneity-of-slopes assumption of ANCOVA showed the difference between ACT composite scores and fall grade-point averages did not differ significantly as a function of dual enrollment, $F(1, 491) < .01$, $MSE = .80$, $p = .97$, partial $\eta^2 < .01$.

A one-way between-groups ANCOVA was conducted to compare the differences of fall grade-point averages. The independent variable was dual-enrollment participation, and the dependent variable consisted of fall grade-point averages assessed at the completion of the fall term. Participants' composite ACT scores were used as the covariate in this analysis.

After adjusting for ACT composite scores, the ANCOVA was significant, $F(1, 492) = 9.04$, $MSE = .80$, $p < .01$, and the null hypothesis was rejected. However, the strength of the difference as measured by partial η^2 was weak (.02) with only 2% of the variance in fall grade-point averages accounted for by dual enrollment. The adjusted mean fall grade-point average for

students who were dual enrolled ($M = 2.95$) was higher than the adjusted mean for students who had not been dual enrolled ($M = 2.57$).

Research Question #6

Is there a difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlling for academic ability using ACT composite scores?

Ho6: There is no difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores.

For this research question, the records of 417 full-time students who completed the spring semester were analyzed. The records of the students who did not complete the spring semester and the records of 288 students who scored below 19 on the ACT composite test were not used as a part of this analysis

As discussed with the previous research question, one assumption of ANCOVA requires that the difference between the covariate (ACT composite scores) and dependent variable (college grade-point averages) for each of the groups (dual enrollment and nondual-enrollment participants) is the same. A preliminary analysis to evaluate the homogeneity-of-slopes assumption of ANCOVA showed the difference between ACT composite scores and spring grade-point averages did not differ significantly as a function of dual enrollment, $F(1, 413) = .37$, $MSE = .80$, $p = .54$, partial $\eta^2 < .01$.

A one-way between-groups ANCOVA was conducted to compare the differences of spring grade-point averages. Again, the independent variable was dual-enrollment participation, and the dependent variable consisted of spring grade-point averages assessed at the completion of the spring term. Participants' composite ACT scores were used as the covariate in this analysis.

After adjusting for ACT composite scores, the ANCOVA was not significant, $F(1, 414) = .38$, $MSE = .80$, $p = .54$. The effect size, as measured by partial η^2 was weak ($< .01$). Less than 1% of the variance in spring grade-point averages was accounted for by dual-enrollment status. Although the researcher failed to reject the null hypothesis, dual-enrollment participants did have a slightly higher adjusted mean for the spring college grade-point average ($M = 2.76$ compared to $M = 2.68$).

This chapter presented an analysis of the data. Chapter 5 provides a summary and interpretation of the findings. From the data analysis, conclusions are drawn and implications for current and future educational practices are discussed. In addition, Chapter 5 presents recommendations for future dual-enrollment research.

CHAPTER 5
SUMMARY, CONCLUSIONS, IMPLICATIONS FOR PRACTICE, AND
RECOMMENDATIONS FOR FUTURE RESEARCH

The purpose of this study was to examine the effects of dual-enrollment participation on students' postsecondary achievement as measured by various factors. The researcher explored the differences (if any) of students' participation in a dual-enrollment program to their subsequent first year community college success. The analysis focused on initial enrollment status, remedial and developmental course enrollment, completion of fall and spring semesters, and college grade-point averages for the fall and spring semesters. A summary, conclusions, implications, and recommendations are detailed in the following sections.

Summary

Dual-enrollment programs such as the one studied are experiencing phenomenal growth across the country. Research abounds that details the expansion of such course offerings throughout the nation (American Association of State Colleges and Universities, 2002; Hoffman & Robins, 2005; Johnstone & Genio, 2001; Karp et al., 2007; Knowledge Works Foundation, 2007; Waitts et al., 2005; Western Interstate Commission for Higher Education, 2006). Perhaps such programs are attracting so much interest because, when operated correctly, they directly address two prominent trends in education today: strengthening the rigor and relevance of secondary education and increasing communication and collaboration between secondary and postsecondary sectors (Karp et al., 2007).

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 impacts on a variety of outcomes using quantitative statistical methods and found (as discussed in greater detail in the next section) that dual-enrollment

participation did positively influence college enrollment status, preparation for college-level work, persistence toward semester completion, and college grade-point averages. Based on the results of this study, dual-enrollment participation has the potential to launch young people more successfully into the college experience.

Conclusions

In this study, data were gathered and scrutinized to investigate whether dual-enrollment participants were experiencing greater college success (as determined by enrollment status, remedial and developmental course enrollment, completion of fall and spring semesters, and college grade-point average). The population of the study originally included 901 students who enrolled in the target community college following high school graduation the previous academic year.

The two grouping variables used in this analysis were (a) those students who had participated in the target community college's dual-enrollment program and entered college in the fall of 2007 with college credit on their transcripts and (b) those nonparticipants who entered college in the fall of 2007 with no college credit on their transcripts. Six distinct research questions guided the study and chi-square tests for independent samples and analysis of covariance were used to determine the differences between program participation and college success. The following sections review each of the six research questions and provide conclusions as they relate to each question.

Research Question #1

Is there a difference between dual-enrollment students and nondual-enrollment students in fall semester college enrollment status (part time versus full time)?

As is clear from the results, an overwhelming majority of all first-time, traditional students (following high school graduation the previous academic year) initially enrolled in the target community college as full-time students. In fact, of the 901 records analyzed, 843 (93.6%)

registered for 12 or more hours in the fall of 2007. Of those students, dual-enrollment participants were somewhat (95.4% as compared to 93.4%) more likely to enroll as a full-time students rather than as a part-time students in their 1st semester.

Perhaps it is the fact that dual-enrollment participants are more familiar with the rigors and demands of college that makes them somewhat more comfortable attempting more college credit hours from the beginning. When students begin their college careers taking full course loads, they can quickly continue along the fast track to degree completion (Adelman, 2006). For obvious reasons, enrolling students on a full-time basis is appealing and beneficial to students, parents, and policy makers. As previous studies have also suggested, allowing students to participate in a dual-enrollment program may increase the likelihood that students initially enroll full time (Karp et al., 2007; Kentucky Council on Post-Secondary Education, 2006; State Board for Community and Technical Colleges, 2006). Although the difference 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.

Research Question #2

Among full-time students enrolled in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in enrollment in remedial and developmental courses taken in the fall semester (enrolled versus not enrolled)?

The results of this study did show that there was a definite difference between participation in a dual-enrollment program and enrollment in remedial and developmental courses in the fall semester of the college freshman year. Although nearly half (47.7%) of nondual-enrollment participants enrolled in remedial and developmental courses for the fall 2007 semester, only 12.9% of dual-enrollment participants were forced to begin their college careers with remedial course work. The percentage of nonparticipants requiring remedial and developmental coursework in this study was similar to the findings of The National Commission on the High School Senior Year (2001). As the data clearly show, dual-enrollment participation

has the potential to reduce greatly the number of students requiring remediation during the first semester of their college experience. As suggested by The Woodrow Wilson National Fellowship Foundation (2001), participation in a dual-enrollment program allows young people to determine if they are qualified for college-level work while they still have time to take steps in high school to better prepare themselves.

When students are academically prepared for college by participation in an early college level learning program such as dual enrollment, they do seem to be better prepared to begin their college careers with appropriate college level work.

Research Question #3

Among the students who were initially enrolled full time in the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the semester (completed the semester versus did not complete the semester)?

Research shows that nearly three-quarters of all American high school graduates are entering a community college or university within 2 years of graduation; however, hundreds of thousands drop out long before college graduation, many of whom fail to complete even the first semester (Kleiman, 2001). In fact, The National Center for Public Policy and Higher Education (2004) reported that the timely completion of degree and certificate programs remains one of the weakest aspects of performance of postsecondary institutions. Therefore, colleges and universities across the country are seeking strategies that will increase a student's likelihood of finishing each semester as he or she progresses toward degree completion.

Although dual-enrollment participation may increase the likelihood of full-time enrollment and decrease the likelihood of remedial and developmental course enrollment, participation in a dual-enrollment program in this study did not have a statistically significant impact on completing the fall semester of the college freshman year. However, other researchers have reported a difference in semester completion rates based upon dual-enrollment participation

(Karp et al., 2007; Kentucky Council on Postsecondary Education, 2006; State Board for Community and Technical Colleges, 2006).

Research Question #4

Among the full-time students who completed the fall semester, is there a difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester (completed the semester versus did not complete)?

Whereas dual-enrollment participation might not statistically impact completing the fall semester, there was a weak difference between dual-enrollment students and nondual-enrollment students in the completion of the spring semester. These findings are similar to the findings of other researchers who reported a likelihood of dual-enrollment students to persist in college (Karp et al., 2007; Kentucky Council on Postsecondary Education, 2006; Lerner & Brand, 2006; Pennington, 2004).

Research Question #5

Is there a difference in fall semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?

The analysis of the data did show a significant difference in the fall grade-point averages. The adjusted mean fall grade-point average for students who were dual enrolled ($M= 2.95$) was higher than was the adjusted mean for students who had not been dual enrolled ($M= 2.57$). These findings are similar to data reported in other studies (Hoffman, 2006; Karp et al., 2007, Kentucky Council on Postsecondary Education, 2006; State Board for Community and Technical Colleges, 2006).

Students who experience success in the first college semester are more likely to persevere and continue to college graduation (Karp et al., 2007; State Board for Community and Technical Colleges, 2006). Because degree attainment is the ultimate goal of college attendance, it is

important to note that dual-enrollment programs could help to give students the initial taste of college success that is required to encourage completion of a college program.

Research Question #6

Is there a difference in spring semester college grade-point averages between full-time students who were dual enrolled and full-time students who were not dual enrolled when controlled for academic ability using ACT composite scores?

Although dual-enrollment participation did seem to have a slight impact on the fall grade-point average, the ANCOVA for this research question showed no significant difference in the spring grade-point averages between students who had been dual enrolled and those who had not. Even though the test did not show a significant difference, those students who had participated in the dual-enrollment program did have a slightly higher adjusted mean (2.76 compared to 2.68).

From the findings of this question, it does appear that perhaps the lasting effects of dual-enrollment participation begin to even out as all students become accustomed to the rigors and challenges associated with college level course work. The findings might also be explained by the fact that, at this point in the year, those students who are less prepared did not complete the second semester of their college freshman year. At any rate, it is noteworthy that dual-enrollment participants did continue to showcase an adjusted mean that was to some extent higher than that of nonparticipants.

Implications for Practice

As secondary and postsecondary institutions across the country are pushed to increase collaboration, make better use of resources, and better prepare all students for success beyond the institution walls, it is imperative that educational facilities such as the target community college studied review findings of this research and other studies like it. Parents, students, community members, educators, administrators, and policy makers need to be made aware of the possible

positive impact that programs such as the one studied can have on the future success of college students.

Secondary institutions across the nation might want to investigate further their own dual-enrollment course offerings. As a result of the findings, high school administrators might wish to expand the number of dual-enrollment classes offered or dissolve the academic prerequisites for participation so that more students could benefit from the program.

Likewise, postsecondary institutions might want to consider the same type of action as that discussed for high schools. Findings that point to positive benefits for potential students could, at the very least, encourage additional communication and collaboration between the two sectors of public education.

Furthermore, parents and current high school students might wish to consider seriously participation in a dual-enrollment program such as the one offered at the target community college. In an age that requires some postsecondary training beyond high school for all members of society, it is in the best interest of all involved to seek out opportunities that will increase the likelihood of college success.

The goal of all secondary institutions is to better prepare students for the challenges that lie ahead at the college and university level. Likewise, the purpose of postsecondary institutions is to equip students with the skills and knowledge needed to experience success in the next realm--the workforce. This study makes available quantitative research regarding the differences between dual-enrollment participation and postsecondary success. To make best use of the information discussed, the following strategies (although not an inclusive list) are recommended for practice.

1. The target community college should continue to offer dual-enrollment courses in high schools across the 10-county service area.
2. Local high schools should work with the target community college to increase awareness of the dual-enrollment course offerings and boost enrollment by providing students and parents with valuable information about the potential benefits of

participation. Students from less affluent families may inaccurately assume that college enrollment is not an option because of cost. These students and parents need specific information about and assistance attaining scholarship dollars to cover the cost of dual-enrollment participation.

3. A review of pertinent research findings reveals that dual-enrollment participation can benefit a range of students not just those identified as high achieving or academically successful. For this reason, the target community college should explore the option of expanding dual-enrollment course offerings to students who otherwise might have been labeled as unsuccessful academically.
4. The target community college should begin tracking the secondary and postsecondary success of students who participate in the program. Such data could prove beneficial not only to the target community college but to other institutions as well. It would be beneficial for the target community college to track the matriculation of dual-enrollment participants. Are participants earning dual-credit through the community college and then matriculating directly into a university? If so, why?
5. The target community college and secondary institutions in the area should work to provide additional dual-enrollment course offerings that would allow students to graduate from high school and community college simultaneously.
6. Policy makers across the country should work to adopt policies and guidelines to assure that all students have access to uniformly operated dual-enrollment programs.

Recommendations for Future Research

It is the responsibility of all stakeholders to assure that students have access to quality programs that will enhance their educational experience at the secondary and postsecondary levels. While working to enhance the experience, administrators and policymakers must make budget conscious decisions and implement programs that are firmly grounded in research-driven

data. So that administrators can make such research-based decisions, studies such as this one need to be expanded upon to provide a clearer picture of the true impact of dual-enrollment participation. Suggestions for prospective studies include, but certainly are not limited to, the following:

1. One promising potential benefit of dual-enrollment participation is the likelihood that students may earn degrees in less time. Studies, such as this one, could be further expanded to track students from entrance at the secondary school level to graduation at the university level.
2. Although this study focused merely on quantitative research, a mixed methods approach could provide valuable insight that might otherwise have been missing from the data collection. A study that expands the research methods to include interviews of participants, parents, administrators, and educators could open up a world of possibilities regarding how truly beneficial participation may have been.
3. This study focused on the data from a single community college setting. The study should be expanded to include dual-enrollment participants who begin their college careers at other community colleges and universities across the state and nation.
4. The study did not address the quality of the dual-enrollment program being offered at the different high schools. Because the courses are taught by variously qualified adjunct and faculty members as well as qualified high school educators, it would be interesting to see if the organization of the particular program has any impact on college success. Additional research should be conducted to investigate the impact of different program models on student achievement. Replication of the study should include data and research questions specific to each secondary institution's individual program.
5. A long-term study could be conducted to see if dual-enrollment participants are more successful in the workforce. Are these students more driven in their chosen careers

than are students who have not participated in a dual-enrollment program? Do they enter the workforce sooner as a result of faster degree completion?

6. The focus of this study was dual-enrollment participation on student success. Other studies need to be conducted to explore the possible benefits to both participating institutions.
7. This study did not address the number of dual-enrollment courses taken by participants. Instead, students were simply grouped as participants or nonparticipants. Additional studies should be considered to determine if participation intensity, the number of dual-enrollment courses taken, affects student achievement.
8. Further studies should be conducted at a state level to investigate the matriculation of dual-enrollment participants. Are these students more likely to enroll in the institution from which they earned dual-enrollment credit?

In conclusion, the data collected and analyzed as a part of this research study merely explored the tip of the iceberg when attempting to determine the impact of dual-enrollment participation. From the research findings, it is apparent that dual-enrollment participation does have the potential to impact subsequent collegiate student achievement positively. By being made aware of the potential for positive impact, the target community college (and others like it) might wish to further investigate and study accelerated learning options such as dual enrollment.

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APPENDIX

Permission Letter to President of Target Community College

July 1, 2008

Dr. President, President
Target Community College
Street Address
City, TN Zip

Dear Dr. President:

As a doctoral student at East Tennessee State University, I am currently working on the prospectus of my dissertation. Because I am employed in the kindergarten through 12th grade sector and will be receiving a degree with a concentration in the postsecondary sector, I would like to research a topic that intermingles the two- the enrollment of high school students in college courses. I am specifically interested in the subsequent success of high school students who participated in the dual enrollment program and then immediately enrolled at your institution. A review of pertinent research related to the dual enrollment phenomenon suggests that students who are exposed to the rigors of college during high school experience greater levels of success; however, a very limited number of quantitative studies are available. After having worked in a local school setting, I am familiar with the dual enrollment program operated by your institution. It is therefore my intent, to conduct a quantitative study of the success of dual enrollment participants at the target community college. After speaking briefly with the dual enrollment coordinator, I am confident that the conclusions drawn from this research would provide valuable information to your institution as well as to the area school systems with which you have a dual enrollment arrangement.

Please consider this correspondence as an official request to extract and review student records from the Student Information System for my dissertation. I would like to study the data of students who enrolled at your institution last fall immediately following high school graduation. To evaluate the impact of participation in dual-credit courses on subsequent college success, I would like to focus on the following variables: full versus part-time enrollment, enrollment patterns for remedial and developmental courses, semester completion patterns, and college grade-point averages, as well as other demographic variables. I have attached a draft copy of my research questions for your review.

I appreciate your willingness to assist and please rest assured that all records reviewed will be considered confidential and will be managed in accordance with the Family Educational Rights and Privacy Act. As requested by the program coordinator, I will be happy to share the results of my research with you and your institution. If you have any questions or need additional information, I can be reached at (XXX) xxx-xxxx or [email address].

Approved by:

Sincerely,

Office of Planning, Research, & Assessment

April Sell, Doctoral Student
Educational Leadership & Policy Analysis
East Tennessee State University

Office of the President

Vice President for Student Affairs

VITA

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 English Educator,
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