Dual-enrolled student success in an open enrollment community college

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DUAL ENROLLED STUDENT SUCCESS IN AN OPEN ENROLLMENT COMMUNITY COLLEGE

by

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ABSTRACT

Dual Enrolled Student Success in an Open Enrollment Community College

by

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The study investigated student success in a dual enrollment program at an open enrollment community college. The objective of the analysis was to determine the success of dual enrolled students compared with regularly enrolled community college students. Indicators of student success, including GPA, retention, and remediation, were examined for dual enrolled students.

Results of the study indicated that high school students concurrently enrolled at a community college were similar in many respects to the general college population. Overall, there was a significant difference in the GPA performance between Community College High School (CCHS) students and regularly enrolled college students, with the general college students out performing CCHS student. When GPA performance of the concurrently enrolled high school students was compared with the GPA performance of regularly enrolled first time, first term degree-seeking students, the CCHS students
passed their college classes in a far greater proportion.

A greater percentage of CCHS students were successfully retained in college courses compared with the general student population. A significantly greater proportion of regularly enrolled college students and recently graduated high school students were placed in remedial classes than were students enrolled in the Community College High School program. The majority of CCHS students who were placed in remedial classes are placed into remedial mathematics rather than in English. CCHS students were found to be overwhelmingly oriented toward enrolling in college transfer courses rather than vocational courses.

Research should be conducted to explore the relationship between student characteristics and environmental factors that lead to student success by average and at-risk dual enrolled students. Further research should be conducted to explore institutional characteristics such as having high academic expectations, a clear sense of mission, and providing a caring and supportive environment.
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Finally, my family bore my usual absentminded self-involvement with their constant good cheer and encouragement, and missed no opportunity to remind of the many pleasures of life that do not include scholarly hermitage. They are right, of course.
CHAPTER I

INTRODUCTION

High School-College Articulation

Secondary and higher education cooperation can be traced to the late 1800's, when both secondary schools and colleges began to experience increased enrollment. Martin Trow (1961) has divided the period between 1870 and 1970 into three segments that outline the progression of high school and college relations.

The first segment, between 1870 and 1910, was characterized as a period when a relatively small percentage of the overall population was engaged in either high school or college education. Schools and colleges offered narrow academic programs to a select minority of youth. There was, however, a rapid expansion of secondary and higher education enrollment, especially in the East. It was during this period that issues of articulation between high schools and colleges began to evolve. Curriculum and college entrance requirements were an early focus of heated debates. States soon began to standardize college entrance requirements and develop accreditation organizations (Stoel, 1988). It was also during this period that the College Entrance Examination Board was founded and the National Education Association convened a special committee to address the issues of high school curriculum and college entrance.
A second segment in the development of high school and college relations occurred between 1910 and 1940. This period was characterized by a dramatic increase in high school enrollment driven by the needs of an industrializing America. The enactment of the compulsory school attendance law resulted in increased secondary school enrollments from fifteen percent of youth in 1910 to seventy-five percent in 1940. According to Trow (1961), this period established the importance of the high school diploma for individual occupational success and for the general improvement of society. High school was to provide a universal education for all citizens, to prepare students for life rather than for college.

Following the rapid growth in high school enrollment during the 1940's, the period from 1940 to 1970 was characterized by dramatic increases in higher education enrollment. Enrollment in higher education more than tripled during this time (Trow, 1961). The role of high schools to provide a universal and essentially terminal education for all citizens or prepare everyone for college continued to be the focus of national debate. College entrance requirements, established only a few years earlier, were questioned by secondary schools and a high school system designed primarily to provide a universal and terminal education was expanded to include mass college preparation.

The Carnegie Commission on Higher Education (1973) predicted that the period from 1970 to 2000 would be one in which the majority of high school graduates and non-graduates would be entering some type of postsecondary institution. Indeed, a recent report from the National Center for Educational Statistics indicates that increasing numbers of high school graduates are entering college immediately after completing high school. In 1972, 49% of all high school completers ages 16-24 enrolled in a
two-or four-year college immediately after high school; in 1998, 66 % did so (NCES, 2000). Moreover, the percentage of twelfth graders who aspire to complete a bachelor’s degree has increased from 35% to 56% between 1980 and 1997 and the academic credits earned by high school graduates has increased from 22 credits earned in 1982 to 25 credits in 1998 (NCES, 2000). Academic credits earned by high school graduates is one indicator of high school student orientation toward entering college. The National Center for Educational Statistics further reports that the percentage of high school graduates who took Advanced Placement calculus, calculus, and calculus/analytic geometry doubled from 6% to 12% between 1982 and 1998 and the percentage who took both chemistry and physics increased from 7% to 19% during the same period (NCES, 2000). A further indication that increasing numbers of high school students are oriented toward entering college is the increase in the number of students taking Advanced Placement (AP) exams for which they can earn college credit. Between 1984 and 1997, the number of students who took the AP examinations increased from 50 to 131 students per 1,000 12th graders (NCES, 2000).

The 1973 Carnegie Commission on Higher Education portrayed the period of 1970 through 2000 as a period of increased postsecondary enrollment. This prediction proved to be accurate. The Commission report, Continuity and Discontinuity: Higher Education and the Schools, was the first to articulate the importance of focusing on the intersection of educational entities, particularly during this time of increased pressure to enter some type of postsecondary institution. In order to better support academic achievement, improve access to and preparation for college, and to increase financial
productivity, higher education was encouraged to become an active partner with secondary schools.

**Early College Enrollment**

Early enrollment of high school students in college can be traced to the late 1600's. Throughout early American history, younger than traditional age high school graduates have been admitted to and graduated from selective, private, colleges and universities (Stoel, 1988).

During the 1950's, high-achieving high school students were provided opportunities and incentives to enter higher education early. The Ford Foundation, through the Fund for the Advancement of Education, supported a large number of high-achieving high school students enrolled at twelve universities from 1951 to 1957 (Whitlock, 1978). The Advanced Placement (AP) program was developed during the 1950's as an alternative to early enrollment programs. The Advanced Placement program was designed to increase the opportunities for academically prepared students to accumulate college credits by successfully completing an Advanced Placement course and exam on a high school campus rather than attending a university (Stoel, 1988).

During the 1960's, a number of universities implemented programs to provide an opportunity for gifted students who were academically prepared for college but had not yet completed high school. Programs at the University of Washington, North Texas State University, and University of California were among the various universities to adopt programs to assist accelerated students on a full-time basis (Whitlock, 1978).
Although the history of early college entrance programs mainly concerns selective four-year institutions, community colleges have also been involved with early or concurrent college enrollment. Parnell (1985) reports that by 1985 an overwhelming majority of community colleges were involved in articulation programs with secondary schools. The types of programs commonly include: (a) dual or concurrent enrollment, (b) degree or program coordination, (c) advanced placement, and (d) shared facilities or faculties.

Historically, dual enrollment programs at two- and four-year colleges have been developed and directed toward academically advanced students. It is only recently that the lesser-gifted learner has had the opportunity to take college level courses concurrently with high school courses. The early enrollment of moderate or low achieving high school students in college is one form of high school/college articulation that has been explored as a solution to increased political and financial pressures.

**Access, Transition, and Workforce Preparation**

The development of community college dual credit programs have been influenced by external pressures for improved student access, improved transition to college, and improved workforce preparation. Combined with stagnant or declining enrollments and high dropout rates in secondary schools, these external pressures have contributed to the growing recognition for increased high school-college collaboration. The public perception of low high school proficiency test scores and a growing perception of a workforce that lacks the necessary skills for emerging high tech industries, add impetus for increasing the use of dual credit programs.
Elaine Kuo states:

"The goals of increasing access to higher education and enhancing community economic development continue to be the impetus that sustains relationships between community colleges and external organizations". (Kuo, 1999).

Since 1973, high school-college collaborations developed to improve minority student access to college and to provide a unique learning opportunity for at-risk youth. The Middle College High School model fully houses a high school on a college or university campus. Middle college high schools are designed to help potential dropouts succeed at high school and go on to higher education (Cunningham and Wagonlander, 2000). Dual enrollment in college courses is common and may be combined with internship courses designed to link academics with the world of work. Burns and Lewis (2000) report that South Dakota public schools used dual enrollment as a tool to decrease the dropout rate of their high-risk students. At-risk students often share the perception that there is little practical application of education for a person who does not aspire to go to college. South Dakota utilized dual enrollment to teach vocational skills, to spark and interest in academics, and to teach learning strategies.

Much recent attention has been focused on dual enrollment as a means of simplifying or improving the transition from high school to college for average students who may have difficulty in making the transition to higher education (Orr, 2000; Kirst, 1998). Dual enrollment programs provide average students with an opportunity to learn
job skills and ways to succeed in the workforce (Burns and Lewis, 2000; Orr, 2000; Galloway, 1994). Chatel and Cimochowski (1997) report that many primarily minority districts are developing dual enrollment programs to better prepare minority students for a successful transition into college or the workforce.

Publications critical of secondary education, such as A Nation at Risk, heightened public awareness of a "crisis" in our schools and prompted the development of a number of programs to improve the transition from high school to college (National Commission on Excellence in Education, 1983). Tech Prep, 2+2, and dual credit programs would ease the transition to college, accelerate college completion, and provide for the needs of a skilled workforce. The notion that these programs ought to be directed toward the higher number of "average" students; those who could be directed toward high tech careers that required education beyond high school but did not require four-year degrees, was added to the rationale of improved learning productivity. The potential savings in college tuition appealed to parents, accelerated completion and the "college experience" appealed to students, and the generation of FTE and recruitment of students to college appealed to administrators. What began as an early enrollment option for gifted students entering private universities has become part of the array of K-16 educational reforms that attempt to address a growing number of social, political, and economic problems effecting students and schools.

Much of the impetus for the establishment of dual enrollment programs is provided by general concerns for improved educational productivity. One early area of focus was upon curriculum redundancy. Blanchard (1971) for example, conducted a study in which course outlines from the first two years of a liberal arts college were
examined by high school teachers, and course outlines from high schools in the area were examined by college instructors. Blanchard concluded that there was substantial duplication and that the first two years of the college curriculum included high school courses rearranged into a college course and offered under a new name. This redundant course work is inefficient and reduces learning productivity (Johnson and Mahoney, 1999).

A second aspect of learning productivity concerns high school student motivation and the notion of “senioritis”. Many high school seniors experience a high degree of boredom in their final year of school. The basic requirements for high school graduation and college entrance have usually been met. Students enroll in filler courses; electives used to meet the minimum standards of course work to be completed for graduation, and generally pursue outside employment, social activities, or other activities. In short, the senior, and to a lesser extent the junior, years of high school may be non-challenging and unproductive in terms of student learning. This concern for the lack of motivation and “senioritis” provided the rationale to develop Project Advance, a dual enrollment program developed in 1973 by Syracuse University (Gaines and Wilbur, 1985; Catron, 1998).

Current Trends in Dual Enrollment

There is no doubt that dual enrollment programs are increasing in size and number. In 1998, the association of State Higher Education Executive Officers (SHEEO) conducted a survey of early options programs and practices. Twenty-three of the
thirty-one states that responded indicated that they have programs involving dual high school/college enrollment.

National data on the number of high school students specifically participating in dual enrollment programs is not routinely collected. However, the National Center for Educational Statistics (1997, 1999) reports that the number of students under the age of eighteen who enrolled in public two-year colleges on a part-time basis increased from 96,913 in the fall of 1993 to 123,039 in the fall of 1995. This group of under eighteen, part-time students likely accounts for most students in dual enrollment programs, and as a proportion of all part-time public community college students, this group increased from 2.8% in 1993 to 3.6% in 1995.

Crooks (1998) surveyed members of the State Higher Education Executive Officers and reports that dual enrollment opportunities were possible in all states, while credit validation was practiced in 23 states. Dual enrollment refers to programs whereby the student takes college courses taught by college faculty, and credit validation refers to programs allowing certified high school instructors to teach college courses in high school. Crooks (1998) reports that in 1995-96 a total of 204,790 students pursued college-level learning through dual enrollment and credit validation programs. Sagers (2000) reports that student enrollment in state-funded concurrent enrollment programs in Utah whereby high school students earn college and high school credit simultaneously have increased from 2,425 enrolled in 1987 to 168,912 enrolled in 1998-99. The Oregon Early Options study (1999) indicates that about 6.4% of high school seniors participated in the Oregon dual enrollment program during 1995. The Running Start dual enrollment program in Washington state enrolled approximately 3,350 high school students in
community college classes during 1992-93. During 1998-99 the number of enrolled in the Running Start program increased to 12,355 (Washington State Board for Community and Technical Colleges, 1999). Blair (1999) reports that during 1994-95, Minnesota enrolled about 6,700 juniors and seniors in dual enrollment programs, about 6% of all juniors and seniors.

Twenty-two states reported having statutes specifying the courses and programs for dual enrollment, eligibility requirements for student participation in dual enrollment programs, assessment of dual enrollment programs, institutional assumption of costs for dual enrollment programs, conversion of college credits to high school credit, and other specifications of high school/college collaborations. Approximately ten additional states report similar options supported by permissive language in local school board policy and individual institutions (Oregon University Systems, 1998). The Education Commission of the States (1998) reports twelve states (Colorado, Florida, Georgia, Maine, Massachusetts, Michigan, Minnesota, New Jersey, Ohio, Utah, Washington, and Wisconsin) that have comprehensive dual enrollment programs in which students pay little or no tuition, earn both high school and college credit, and encounter few course restrictions. More limited programs in which restrictions limit tuition, eligible courses, or credit, include: Arizona, Arkansas, Indiana, Iowa, Kansas, Louisiana, and North Dakota. Oregon offers college courses in the high school. Currently, Nevada, Oklahoma, and South Dakota offer permissive language allowing districts the choice of covering tuition costs, reimbursing costs for textbooks, and establishing admissions criteria.

Clearly, the historical trend is toward greater collaboration between secondary and postsecondary institutions. Dual enrollment programs are a major outcome of this
collaboration. While some particular benefits of dual enrollment programs accrue to particular models or types of dual enrollment programs, the following benefits of dual enrollment programs have been noted in the literature:

- acceleration of progress for (high ability, average ability, at-risk, minority) students
- reduced tuition costs
- increased student confidence in their ability to handle college-level academic responsibilities
- improved student workforce skills and transition to work
- relief of high school senior boredom
- productive interaction (improved educational productivity and efficiency) between high schools and colleges and improved high school faculty interaction
- improved high school faculty status and enhanced high school standing
- facilitated student recruitment
- enhanced college-community relations
- social equity.

**Student Eligibility**

States providing for dual enrollment have some means of determining student eligibility. While the specifics of statute and policy vary, all states share some common elements. Most states authorize dual enrollment for high school juniors and seniors who have no comparable courses available in their high school. Oregon recommends limiting dual enrollment to academically well-qualified 12th graders, whereas Indiana and Iowa
permit younger students to participate in dual enrollment programs pending approval of
the local school district. Michigan requires that students pass the high school proficiency
exam prior to participation in dual enrollment. Other states require the attainment of a
minimum high school GPA (Massachusetts), or the recommendation of school personnel
(Nevada), or an acceptable score on a standardized test (Washington).

Statement of the Problem

Among the questions that have been debated in higher education since colleges
began is: Who shall learn? Although this question has focused much current debate upon
issues of access and affordability, the larger, historical question concerns issues of school
and college relationships, including articulation, preparation, and admission.

Thousands of students have been affected by dual enrollment programs and there
is every indication that these programs will continue to grow. There is, however, no
national repository of information documenting student outcomes. Evidence of student
success is often anecdotal and limited to analysis of cohorts within single terms or
academic years. Evidence of programmatic success often focuses upon increased
enrollments, cost benefits, and parental satisfaction.

Historically, early college entrance programs have been intentionally developed
for the academically gifted or well prepared student. It is only recently that concerns for
the development of dual enrollment programs as an early college entrance option have
focused on reform efforts directed toward improving minority access and transition to
college, reducing at-risk and student drop-out populations, providing improved
vocational training for “average” or low level achievers, linking school-based learning
with work-based learning to motivate the non-college bound student, and revitalizing the motivation of the bored student, the high school misfit, and the high ability-low achieving student.

In August of 1995, Dr. Brian Cram, Superintendent of the Clark County School District and Dr. Richard Moore, President of Community College Of Southern Nevada met to discuss several partnerships. Among the partnerships discussed was that of locating a high school on the Community College campus. The rationale for this plan was to improve the low go-to-college rate by improving access for students who might not otherwise be college-bound and improving the transition to college and motivation for learning for average and high achieving students (Merselis, 2001). The result of this collaboration between the Clark County School District and the Community College of Southern Nevada was the establishment of the Community College High School (CCHS).

The goals of the Community College High School are not different from the goals of many other dual enrollment programs. These goals do, however, presume that some criteria will be used to select students for participation in this program. While there is no legislatively mandated criteria for selection to this program in Nevada, a selection process has been developed by the Community College High School based primarily upon the recommendation of school personnel and includes the evaluation of applicants based upon high school attendance, GPA, type of high school classes taken, stanine scores, teacher recommendations, and sample essays (Merselis, 2001). Since the rationale for the CCHS program is to improve access to college for those students who might not otherwise be college-bound, selection of students for this program is not based solely or simply upon high performance in high school. Rather, school personnel must determine
who should be provided with a college experience who might not otherwise enroll in college and would also be successful in completing college classes.

It appears, then, that the Clark County School District has established special admissions criteria based on the assumption that those criteria predict, or at least promote, student success in college courses. The Community College, on the other hand, is an open enrollment institution and does not restrict access to college courses by creating a special and selective admissions procedure. Many college faculty are unaware of admissions criteria for high school dual enrolled students and have expressed concern for the lack of academic and social preparedness of high school students admitted to college classes under an open-door admissions policy (Merselis, 2001).

**Purpose of the Study**

Many school district administrators express the fear that a school hosted on a college campus will entice brighter students away from traditional high schools and will become an elitist school for gifted and college prep students. According to Cunningham and Wagonlader (2000: 48-49) a “town-and-gown” gulf can be prevented by properly selecting students:

“(T)he goal is to select students whose socioeconomic and academic histories parallel those of the host college’s students, enhancing the chances that the college can properly serve the students... .”

This study examined selected variables indicative of student success in a dual enrollment program within an open enrollment, comprehensive community college. Additionally, a second goal was to construct an academic profile of the dual enrolled
high school student and compare this profile with similar Community College students. The results of this study describe dual enrolled student success in an open-admissions, comprehensive community college.

Exploration of student success in the Community College High School program should prove valuable to the District and to the College. Moreover, exploring the relative success of dual enrolled students compared with Community College students would help address the concerns of College faculty with student preparedness. Finally, describing dual enrolled and College students will address the concerns of College administrators to properly serve early admitted students within the college campus environment.

**Significance of the Study**

The dual enrollment of high school students in college classes and high schools hosted on college campuses is a growing means of eliminating barriers between educational levels, thus improving the transition of students to higher education. Most college-high school dual enrollment partnerships have established highly selective admissions criteria for the acceptance of students into dual enrollment programs.

The more quantitative specification of dual enrolled student success over several semesters may lead to a more rigorous evaluation of dual enrollment programs and to greater equity in admissions to dual enrollment programs. Moreover, the results of the study may be used to inform the development of a dual enrollment admissions policy for the Community College High School and for other community college dual enrollment programs.
Research Questions

This study was an ex post facto study that did not test hypotheses logically derived from existent theory. Rather, this study was descriptive and attempted to produce propositions from an analysis of the data. The study was guided by the following research questions:

1. What are the demographic characteristics of dual enrolled students in an open-admissions, comprehensive community college?

2. How do the demographic characteristics of dual enrolled students compare with first time, first term college students in an open-admissions, comprehensive community college?

3. How does student performance of dual enrolled students compare with college students?

4. How does course retention of dual enrolled students compare with college students?

5. How do rates of remediation for dual enrolled students compare with college students?

6. How does the course taking behavior of dual enrolled students compare with the course taking behavior of college students?

Definition of Terms

Dual enrolled student—a high school junior or senior enrolled, either full-time or part-time, in college classes while still enrolled in high school and receiving both high school and college credit for college coursework. Dual enrollment, concurrent
enrollment, and dual credit enrollment are used synonymously in this study.

Articulation-refers to the alignment of courses taught and programs offered at different educational levels to minimize duplication, overlap, and loss of time by students as they move from one educational level to the next.

Community College High School (CCHS)—a dual enrollment program which locates a School District high school at each of the three Community College campuses. The program enrolls high school juniors and seniors from any of the District high schools into the Community College High School and the Community College for college and/or high school credit. The School District pays the college tuition and fees for all dual enrolled participants in the CCHS program. The District also pays the salaries for teachers, principal, and support staff as well as any books, supplies, furniture, and equipment necessary to operate the Community College High School. The District leases office space from the College and the College supplies telephone lines, utilities, and custodial assistance. High school textbooks are supplied by the District and College texts, supplies, and transportation are the responsibility of the students. Licensed high school teachers are hired by the District to teach high school classes. College courses are taught by instructors hired by the College. There is no District/College collaboration in the hiring of or assignment of teachers and/or instructors for this program.

Collaboration- as used in this study, refers to cooperative linkages between higher education entities and secondary education entities which create structural bridges between various levels of educational entities, align curriculum and testing requirements, provide mechanisms for duel/concurrent enrollment, develop effective partnerships which recognize the unique social, political, and economic realities of each partner, and
develop and implement a common agenda supportive of student success.

In loco parentis is a legal doctrine used to justify the authority of a non-parent over a minor in the absence of such supervisory authority by the minor's natural parent. As used in this study, in loco parentis refers to the generalized paternalistic concern for supervision, guidance, and monitoring that education professionals have toward adolescent secondary students.

Student success—college GPA as measured on a scale of 1.00 to 4.0. successful student retention- completed a college level course and received a grade other than “Fail”, “Withdraw”, “Audit”, or “Incomplete”. Student retention rate-ratio of students successfully completing college classes to the total number of students enrolled in those classes. Remediation rate- ratio of students placed in developmental classes.

Outline of Research Methodology

This study examined selected indicators of student success in a dual enrollment program in an open enrollment, comprehensive community college. Additionally, a second goal was to construct an academic profile of the “typical” dual enrolled high school student and compare this profile with similar Community College students. The participants for this study included formerly enrolled dual credit CCHS students, and formerly enrolled Community College students who have not participated in the CCHS program.

Data for the study were collected from the management information system of the Community College and the management information system of the University and Community College System of Nevada. Descriptive statistics including frequency
distribution, mean, median, and mode were utilized in addition to calculating measures of
dispersion, including range, variance, and standard deviation for constructing the profile
of dual enrolled participants and Community College students. Cross tabulations
and chi-square were used to present the initial comparisons and contrasts between the
groups.

Limitations of This Study

The findings of this study cannot be generalized to all dual enrolled students. The
goal of this study was to examine the success of dual enrolled students in an open-
enrollment, comprehensive community college environment. However, in so far as the
variables selected as indicators of dual enrolled students success match indicators of dual
enrolled student success at similar institutions, this study may serve as a base for
evaluating and comparing student success in other open enrollment, comprehensive
college dual enrollment programs. It should also be noted that this study compared the
performance of high school students in their college-level classes only. This study was
not concerned with high school class-level performance.

Community College of Southern Nevada and the Community College High
School were the only institutions involved in this study. The results of the study cannot
be generalized to other community colleges or community college-high school dual
enrollment programs.
CHAPTER II

WHO SHALL LEARN? A BRIEF HISTORY OF SECONDARY-POSTSECONDARY COLLABORATIONS

Among the questions that have been debated in higher education since colleges began is: Who shall learn? While this question has focused much current debate upon issues of access and affordability, the larger, historical question concerns issues of school and college relationships, including articulation, preparation, and admission. Present concerns with student entry into and progress through higher education can be traced to issues of secondary and postsecondary cooperation debated in the late 1800s, when both secondary schools and colleges began to experience increased enrollment.

Secondary-Postsecondary Divergence

Martin Trow (1961) has divided the period between 1870 and 1970 into three segments that characterize the nature of high school and college relations. According to Trow (1961), the first segment, between 1870 and 1910, describes a period when a relatively small percentage of the overall population was engaged in either high school or college education. Snyder (1993) estimates the U.S. population in 1870 to be 39,818,449 and the number of students enrolled in higher education at that time to be about 63,000. High schools developed on an ad hoc basis. Schools and colleges offered narrow
academic programs to a select minority of youth. High schools in the West, where population was sparse, lacked sufficient enrollment to provide a curriculum required to enter college (Stoel, 1988). There was, however, a more rapid expansion of secondary and higher education enrollment in the East. High schools were becoming more prevalent in the East, but they lacked common focus and a uniform curriculum. Moreover, colleges which were by and large, newly established sought to increase enrollment by offering preparatory programs, becoming little more than secondary schools. By 1895, 41% of the students admitted to college came from public high schools, 40% from the preparatory programs offered by the colleges, and 17% from private preparatory schools (Rudolf, 1997).

It was during this period that issues of articulation between high schools and colleges began to evolve. The issues of curriculum and college entrance requirements became a focus of heated debates. As early as 1870, Charles Eliot, President of Harvard suggested that students with superior training in mathematics might substitute that ability for deficiencies in the study of the classics (Cohen, 1998). The high school-college connection became the focus for reconciling the divergent mission of two educational institutions that are both interdependent and attempting to maintain a level of autonomy. As public high schools increased in number and became more preparatory in function, colleges abandoned their preparatory schools. However, public high schools were teaching increasing numbers of students who would not continue on to college. Thus, the high school curriculum had to serve broader purposes than those associated with college preparation (Cohen, 1998). The secondary school curriculum included modern languages, applied science, agriculture, homemaking, and manual training. College admission was
still largely predicated upon a knowledge of Latin and Greek. This obvious discontinuity stems from the fact that higher education in America preceded the development of secondary schools. Had colleges followed the development of secondary schools, the colleges would have likely developed their curriculum as a natural continuation of the curriculum taught to younger students (Cohen, 1998).

States soon realized the lack of articulation between college studies and the developing curriculum of the late-blooming secondary school system (Cohen, 1998). States began to standardize college entrance requirements and develop accreditation organizations (Stoel, 1988). By 1870, Michigan, for example, sought to develop and standardize college entrance requirements which high schools had to meet in order for their graduates to be accepted into the University of Michigan.

New York instituted the New York Regents Exams in 1878 as an attempt to better connect the high school curriculums with college programs. It was also during this period that several states developed organizations of secondary and higher education to examine issues of college preparation and admission. By the 1880s, the Massachusetts Teachers Association passed two resolutions regarding high school and college cooperation; one declared that the lack of cooperation between high schools and colleges was an “evil”, and a second declared that increased cooperation between schools and higher education would be a “good” (Stoel, 1988). As a result of these resolutions, a national panel was established by the National Education Association (NEA) to bring together both secondary and postsecondary educators. This special committee, known as the Committee of Ten, was charged with the task of examining the lack of commonality among secondary school curricula and the state of articulation between secondary
schools and colleges. The Committee of Ten was, however, dominated by higher education representatives who successfully imposed a curriculum upon secondary schools. The Committee included "...college presidents along with the U.S. Commissioner of Education, a college professor, two private school headmasters, and a public high school principal". (Cohen, 1998: pp. 138). The report of the Committee of Ten, issued in 1893, represented the first national attempt to develop a standardized high school curriculum and coordinate secondary and postsecondary education (Stoel, 1988). The report proposed a model high school curriculum which included recommended courses for each of the four secondary school years. High school students would take four years each of Latin, history, English literature and composition, and German or French language. Students would also complete three years of Greek and algebra and geometry; and a year each of physics, chemistry, botany, geography, astronomy and meteorology, and anatomy and physiology (Cohen, 1998). The report further recommended that all subjects were to be taught in the same manner and to the same extent in order to train the powers of observation, memory, expression, and reasoning (Stoel, 1988).

The attempt by the colleges to dictate curriculum to the high schools was not well met by the high schools. By 1890, about half of the states had enacted compulsory attendance laws that affected secondary school attendance. However, only a minority of high school students were graduating and only a few of those graduates were enrolling in college. Given these circumstances, high school principals could not impose a strict college preparatory curriculum upon all students. The argument that schools with a ridged curriculum directed toward subsequent higher education did a disservice to the vast majority of students who would not enroll in college is an argument currently used
to justify the vocationalization of the school curriculum (Carnevale and Gainer, 1988).

The attempts of colleges to impose expectations upon secondary schools resulted in many universities becoming informal high school accreditation agencies. State universities in Michigan, Indiana, Wisconsin, and California became leaders in certifying the quality of high school instruction. Cohen (1998) reports that by the 1900s, nearly two hundred colleges were certifying high schools—a pattern that persisted until the formation of formal accreditation associations.

Much of the debate about the relationship between secondary education and higher education during the late 1800s focused on standard curricula and sequential skill development. William Harper, president of the University of Chicago in 1896, led an effort to re-organize the University into a two-year junior college and a two-year senior college. Gifted or superior students could complete the junior college program while still in high school, and the average student could enter college after the eleventh grade. Harper's "six-four-four" plan did not prove popular in spite of vigorous promotion by Harper and other noted educators of the time (Kintzer, 1996). By 1902 only six high schools had articulation plans and a few colleges offered early admission (Stoel, 1988).

Not all of the innovation stemming from the debates about high school-college articulation occurred in the East. Kintzer (1996) reports that as early as 1907, the University of California, Berkeley started a program to encourage high schools to provide college-level courses. Students could complete up to forty-five units of college course work while in high school and UC, Berkeley would award junior certificates of completion of the first two years at Berkeley to mark the distinction between secondary
and university education. By 1915, fifty students had transferred to Berkeley from five extended high schools (Kintzer, 1996).

In spite of much formal discussion among educators and the development of some innovative regional programs requiring cooperation and articulation among schools and colleges, very little national agreement about admission standards and school-college articulation resulted. Nicholas Murray Butler, president of Columbia University, confessed in 1900 that colleges "...could agree neither on subjects to be offered for admission nor upon topics within these subjects". (Stoel, 1988: p. 16). Stoel (1988) further notes that the principal of Phillips Academy of Andover, a leading college preparatory school, complained about the diversity of college demands. Moreover, the relationship of colleges and secondary schools was confounded by the training received by secondary teachers. By the 1900s, only about 20% of school teachers were college trained and even students entering normal schools graduated with considerably less than a full college education (Cohen, 1998). Colleges were attempting to impose upon high schools, a curriculum in which a majority of teachers had not themselves studied.

The inability of schools and colleges to establish commonality in the high school curriculum led to a meeting of the Association of Colleges and Secondary Schools of the Middle States and Maryland in 1899 where the College Entrance Examination Board was created (Stoel, 1988). The College Entrance Examination Board was to establish a series of examinations that all colleges could use to determine the preparedness of students for admission to college. While the initial acceptance of these tests by colleges was not immediate, higher education institutions, over the next several decades, came to realize...
the advantages for enrollment of having students take a test in a variety of geographic locations for admission to their college.

**Secondary-Postsecondary Convergence**

Martin Trow (1961) describes a second segment in the development of high school and college relations occurring between 1910 and 1940. This period was characterized by a dramatic increase in high school enrollment driven by the needs of an industrializing America. The compulsory school attendance law, established in all states by 1918, resulted in increased secondary school enrollments from fifteen percent of youth in 1910 to seventy-five percent in 1940 (The Carnegie Commission on Higher Education, 1973). According to Trow (1961), this period between 1910 and 1940 established the importance of the high school diploma for individual occupational success and for the general improvement of society. High school was to provide a universal education for all citizens, to prepare students for life rather than for college.

However, as secondary school enrollments expanded in the early 1900s, the demand for access to college also grew. The college preparatory function began to gain acceptance as the dominant mission of the high schools, although much confusion and debate about the proper role of the high school continued to be expressed. An NEA committee report issued in 1911 stated that the dominating positions of the colleges continued to over burden the secondary schools by requiring secondary institutions to prepare all students for life while preparing some students for college (Stoel, 1988). The committee further demanded an open-door policy so that secondary schools might have the same freedom as the colleges claim to provide students with opportunities for
self-realization. By 1918 however, the NEA Committee of Nine on the Articulation of High School and College affirmed college preparation as a high school responsibility (Kintzer, 1996). However, as the percentage of high school students increased and as the number of college students increased, the opportunities for college admission began to diverge (Cohen, 1998). The preparatory curriculum endorsed by the earlier Committee of Ten was adopted by very few schools. The percentage of high school students enrolled in college prep courses, Latin, for example, declined to around 10% by the end of World War II. (Cohen, 1998). As a result, colleges could not count on public secondary schools to supply what they considered to be adequately prepared students. Colleges began to renew their own preparatory programs under the guise of remedial or developmental education. Eastern colleges selected students from private preparatory schools. Other institutions lowered admission standards so that they could maintain enrollment. Many mid-western public colleges admitted as many students as possible, regardless of academic preparation, with the intent of dismissing half of the freshmen before completion of their first year (Cohen, 1998).

The emerging science of psychological measurement became an important element in the cooperative relations between high schools and colleges. The Scholastic Aptitude Test (SAT) was first used in 1926. The development of standardized objective achievement examinations that did not require preparation in terms of specific syllabi provided an opportunity for college enrollment to thousands of students. Institutions such as Harvard, Princeton, and Yale attempted to “nationalize” their enrollments when qualified applicants traditionally drawn from the Northeast were not in abundance during the years of the Great Depression (The Carnegie Commission on Higher Education,
1973). The new SAT requirements meant that colleges could draw students from large numbers of public high schools across the country that did not provide the courses required for passing the traditional essay exams.

Between 1910 and 1940, the comprehensive high school emerged as a uniquely American phenomena. High schools were to provide diverse programs for students with a broad range of interests and abilities. New tests of student ability and a growing awareness that student success in a liberal arts school does not depend upon the study of a particular sequence of courses for a given amount of time allowed for an increased curricular freedom for high schools (The Carnegie Commission on Higher Education, 1973). The NEA in 1918, however, established seven principles of secondary education that became the guiding objectives of the emerging comprehensive high school. These principles were: health, command of fundamental processes, worthy home membership, vocation, citizenship, worthy use of leisure, and ethical character (The Carnegie Commission on Higher Education, 1973). The Commission notes that:

"These objectives were clearly tied to the emergence of a secondary educational system devoted not to traditional college preparation but to mass terminal education in an industrial society committed to democratic values".


The debate about the proper role of the emerging comprehensive high school and the relationship of lower and higher education was further complicated by the emergence of the two-year college. Several prominent nineteenth- and early twentieth-century educators called for higher education to abandon their freshmen and sophomore students and relegate the teaching of these less mature adolescents to new institutions called junior colleges (Cohen and Brawer, 1989). The argument that this new set of institutions should
be developed to relieve higher educational institutions of providing general preparatory education for young students was made in 1851 by Henry Tappan, president of the University of Michigan; in 1859 by William Mitchell, a Trustee of the University of Georgia; and in 1869 by William Folwell, president of the University of Minnesota (Cohen and Brawer, 1989). These noted educators insisted that universities could never achieve the status of true research and professional centers until they divest themselves of lower-division preparatory work. Other educators, including William Rainey Harper, president of the University of Chicago; Edmond James, of the University of Illinois; and David Starr Jordan, president of Stanford, argued that the relationship between universities and secondary schools prevalent in Europe should be emulated in America. That is, higher education would be responsible for higher-order scholarship, and lower educational institutions would provide general education and vocational education to students through age twenty (Cohen and Brawer, 1989).

The development of two-year colleges as downward extensions of higher educational institutions was not the only concept of two-year colleges proposed. There was also a call by educators to develop the two-year college as an upward extension of secondary schools. In 1871, Henry Barnard, the first U.S. commissioner of education, proposed that the schools in the District of Columbia be divided into five sectors, including “Superior and Special Schools”, which would provide a continuation of the studies of secondary school while providing “general literacy and scientific culture” reached in the second year of college (Cohen and Brawer, 1989: p. 10). John W. Burgess, a professor at Columbia College, writing in 1884, proposed that high schools add two or
three years to their curriculum in order to prepare students for university work. (Cohen and Brawer, 1989).

The debate in the 1920s and 1930s about the proper role of the emerging two-year colleges continued to focus on whether the two-year colleges were expanded secondary schools or truncated colleges. Several models were advanced, including the 6-4-4 model touted earlier by William Harper. Harper argued for school districts with three types of institutions: elementary schools with grades 1-6; junior highs with grades 7-10; and combined high schools and junior colleges with grades 11-14 (Cohen and Brawer, 1989). According to Cohen and Brawer (1989), this model would provide for improved curriculum articulation between grades 12 and 13, mitigate the need for separate physical plants, allow for instructors to teach in both the high school and junior college under the same contract, shorten the time to graduation of superior students, extend occupational education from secondary school into higher education, and benefit smaller communities that could not support a stand alone college by appending the college to their existing secondary schools.

**Early Secondary-Postsecondary Collaborations**

Martin Trow (1961) has called the period from 1940 to 1970 the second transformation of the schools, from a system of mass terminal education to a system of mass college preparation. The expansion of higher education from 1940 to 1970 reflected the need for large numbers of professional workers, and colleges broadened curricula to meet a wider range of student abilities and interests.
College enrollments began to grow after World War II as veterans took advantage of GI Bill benefits. The Truman Commission, in 1947, supported the development and growth of community colleges (President's Commission on Higher Education, 1947). In 1948 the Educational Testing Service (ETS) was established, soon becoming the largest testing organization in the country, developing objective tests for college admissions and for assessing student achievement at all levels of education. A second nonprofit testing organization, the American College Testing Program (ACT), was established in 1959 to primarily serve the public institutions in the Middle and Far West. Financial aid scholarship application procedures and policies were standardized through the creation of the College Scholarship Service, and college admissions officers and school counselors joined to create the Association of College Admissions Counselors (ACAC) (The Carnegie Commission on Higher Education, 1973).

The successful launch of the Sputnik satellite in 1957 confirmed for many that the Russians were providing better education, and American secondary education came under strong public criticism. In response to these critics, the late 1950s and 60s saw the development and proliferation of the Advanced Placement Program (AP), encouraging college level courses in the high schools. The National Merit Scholarship Program was developed as a means of identifying academically talented students across the nation. The National Science Foundation (NSF), a multimillion dollar federal effort, funded the development and implementation of new mathematics and science courses, foreign language courses in elementary grades, and inservice teacher education programs (The Carnegie Commission on Higher Education, 1973).
The 1950s and 60s saw college enrollment increase dramatically as the postwar baby-boom children completed high school and sought admission to colleges. Public colleges, and especially community colleges, expanded rapidly in response to the demand for white-collar and other professional workers. The demand for teachers remained high, and normal schools that became teacher colleges now became transformed into more comprehensive state colleges (The Carnegie Commission on Higher Education, 1973).

During the 1950s, high-achieving high school students were provided opportunities and incentives to enter college early. The Ford Foundation, through the Fund for the Advancement of Education, supported a large number of high-achieving high school students enrolled in twelve universities from 1951 to 1957 (Whitlock, 1978). The Advanced Placement Program, developed during the 1950s as an alternative early college enrollment option, was designed to increase the opportunities for academically prepared students to accumulate college credits by successfully completing an advanced placement course and an examination on a high school campus rather than attending a college or university.

During the 1960s, a number of universities implemented programs to provide an opportunity for gifted students who were academically prepared for college but had not yet completed high school. Programs at the University of Washington, North Texas State University, and University of California were among the institutions to adopt programs to assist accelerated students in early college enrollment (Whitlock, 1978).
Secondary-Postsecondary Collaborations: The K-14 System

Although the history of early college entrance programs mainly concerns selective four-year institutions, community colleges have also been involved with early or concurrent college enrollment. Parnell (1985) reports that by 1985 an overwhelming majority of community colleges were involved in articulation programs with secondary schools. The types of programs commonly include: (a) dual or concurrent enrollment, (b) degree or program coordination, (c) advanced placement, and (d) shared facilities or faculties.

Kintzer (1973) described the community college as a "middleman" in higher education and serving as a receiver and feeder of students from and to other educational institutions, including high schools, colleges, and universities. As a matter of public policy, articulation is commonly perceived as a "good", providing the benefits of improved coordination and utilization of existing resources. In spite of this appeal, articulation efforts involving community colleges and high schools have "waxed and waned" (Prager, 1994). In the 1960s, community colleges were most often associated with a K-14 system responding to local and state authorities (Kintzer, 1973). The Higher Education Act of 1972 required the establishment of state commissions for higher education planning and coordination. As a result, community colleges were shifted away from connections with the secondary education sectors. These ties were further weakened by the revolving door nature of open admissions, increasing use of high school credit by examination, and expansion of secondary vocational programs (Kintzer, 1973).
There is the growing recognition that excellence in higher education requires excellence in secondary education (Boyer, 1980). Community colleges have had to

"...move beyond seeing themselves as a product of uncontrollable social forces producing and burdening them with less college-ready students to seeing themselves as change agents working with the schools in ways that help reduce each other's academic marginality" (Prager, 1994: p. 502).

During the 1970s and 80s, there were a number of programs initiated by community colleges and designed to improve student academic preparation, stimulate student interest in liberal arts education, or increase community college enrollments of the academically gifted and talented student (Lieberman, 1985). During this period, community colleges invested in scholarships, honors classes, seminars, accelerated programming, and college-level courses for better prepared high school students (Prager, 1994). During the late 1980s and 90s, community colleges provided similar programs directed toward a more diverse student population.

"In their attempt to reach the disengaged as well as the more engaged students, community colleges and high schools have reached deeper into the student pool for enrollments in dual or joint courses typically taught by college faculty or high school teachers appointed as the college's adjuncts" (Pragar, 1994: 502).

Historically, dual enrollment programs at two- and four-year colleges have been developed and directed toward academically advanced students. It is only recently that the lesser-gifted learner has had the opportunity to take college level courses concurrently with their high school courses. However, little is known about the student outcomes for average ability learners. There is evidence that suggests that low and moderate achieving students "...do no worse and sometimes do better in college settings"
than they did in public school” (Greenberg, 1985). A similar conclusion was reported by Donahue (1993) in a study of the Skagit Valley Community College dual enrolment program. The Oregon study (Oregon University, 1999) indicated that the college-level GPA performance of students who had taken dual credit courses at their high schools was higher than other first-time college freshmen. A University of Washington study (Smith, 1999) revealed that concurrently enrolled students maintained a slightly higher average GPA compared with all other University of Washington students. However, an analysis of the achievement of concurrent enrolled students during the summer of 1991 indicates that concurrent enrolled student achieved a lower average GPA than that of non-participants (Marquez, 1999).

The early enrollment of moderate or low achieving high school students in college is one form of high school/college articulation that has been explored as a solution to increased political and financial pressures. The Carnegie Commission on Higher Education (1973) predicted that the period from 1970 to 2000 would be one in which the majority of high school graduates and non-graduates will enter some type of postsecondary institution. Indeed, the National Center for Educational Statistics reports that increasing numbers of high school graduates are entering college immediately after completing high school. In 1972, 49% of all high school completers ages 16-24 enrolled in a two-or four-year college immediately after high school; in 1998, 66 % did so (NCES, 2000). Moreover, the percentage of twelfth graders who aspire to complete a bachelor’s degree has increased from 35% to 56% between 1980 and 1997 and the academic credits earned by high school graduates has increased from 22 credits earned in 1982 to 25 credits in 1998 (NCES, 2000). Academic credits earned by high school graduates is one
indicator of high school student orientation toward entering college. The National Center for Educational Statistics further reports that the percentage of high school graduates who took Advanced Placement calculus, calculus, and calculus/analytic geometry doubled from 6% to 12% between 1982 and 1998 and the percentage who took both chemistry and physics increased from 7% to 19% during the same period (NCES, 2000). A further indication that increasing numbers of high school students are oriented toward entering college is the increase in the number of students taking Advanced Placement (AP) exams for which they can earn college credit. Between 1984 and 1997, the number of students who took the AP examinations increased from 50 to 131 students per 1,000 12th graders (NCES, 2000).

**Dual Enrollment: Secondary-Postsecondary Congruence**

The 1973 Carnegie Commission on Higher Education description of the 1970s through 2000 as a period of increased postsecondary enrollment proved to be accurate. The Commission report, *Continuity and Discontinuity: Higher Education and the Schools*, was the first to articulate the importance of focusing on the intersection of educational entities, particularly during this time of increased pressure to enter some type of postsecondary institution. In order to better support academic achievement, improve access to and preparation for college, and to increase financial productivity, higher education was encouraged to become an active partner with secondary schools.

The development of community college dual credit programs have been influenced by external pressures for improved student access, improved transition to college, and improved workforce preparation. These external pressures combined with
stagnant or declining community college enrollments, low test scores, and high dropout rates in secondary schools, and a growing perception of a workforce that lacks the necessary skills for emerging high tech industries, have contributed to a growing recognition among community college leaders that they must actively recruit high school students and collaborate with high schools to prepare students to succeed in college.

Elaine Kuo states:

"The goals of increasing access to higher education and enhancing community economic development continue to be the impetus that sustains relationships between community colleges and external organizations". (Kuo, 1999).

Since 1973, high school-college collaborations developed to improve minority student access to college and to provide a unique learning opportunity for at-risk youth. The Middle College High School model fully houses a high school on a college or university campus. Middle college high schools are designed to help potential dropouts succeed at high school and go on to higher education (Cunningham and Wagonlander, 2000). Dual enrollment in college courses is common and may be combined with internship courses designed to link academics with the world of work. Burns and Lewis (2000) report that South Dakota public schools used dual enrollment as a tool to decrease the dropout rate of their high-risk students. At-risk students often share the perception that there is little practical application of education for a person that does not aspire to go to college. South Dakota utilized dual enrollment to teach vocational skills, to spark and interest in academics, and to teach learning strategies.

Much recent attention has been focused on dual enrollment as a means of simplifying or improving the transition from high school to college for average students.
who may have difficulty in making the transition to higher education (Orr, 2000; Kirst, 1998). Dual enrollment programs provide average students with an opportunity to learn job skills and ways to succeed in the workforce (Burns and Lewis, 2000; Galloway, 1994). Chatel and Cimochowski (1997) report that many primarily minority districts are developing dual enrollment programs to better prepare minority students for a successful transition into college or the workforce.

Publications critical of secondary education, such as A Nation at Risk, heightened public awareness of a “crisis” in our schools and prompted the development of a number of programs to improve the transition from high school to college. Tech Prep, 2+2, and dual credit programs would ease the transition to college, accelerate college completion, and provide for the needs of a skilled workforce. The notion that these programs ought to be directed toward the higher number of “average” students: those who could be directed toward high tech careers that required education beyond high school but did not require four-year degrees, was added to the rationale of improved learning productivity. The potential savings in college tuition appealed to parents, accelerated completion and the “college experience” appealed to students, and the generation of FTE and recruitment of students to college appealed to administrators. What began as an early enrollment option for gifted students entering private universities has become part of the array of K-16 educational reforms that attempt to address a growing number of social, political, and economic problems effecting students and schools.

A second aspect of learning productivity concerns high school student motivation and the notion of “senioritis”. Many high school seniors experience a high degree of boredom in their final year of school. The basic requirements for high school graduation
and college entrance have usually been met. Students enroll in filler courses; electives used to meet the minimum standards of course work to be completed for graduation, and generally pursue outside employment, social activities, or other activities. In short, the senior, and to a lesser extent the junior, years of high school may be non-challenging and unproductive in terms of student learning. This concern for the lack of motivation and "senioritis" provided the rationale to develop Project Advance, a dual enrollment program developed in 1973 by Syracuse University (Gaines and Wilbur, 1985; Catron, 1998).

Recently, Michael Kirst (May, 2001) reports that many high school seniors view their final months prior to graduation as an opportunity to enjoy nonacademic activities and pursue less demanding courses. Kirst argues that this senior slump is the rational response of students to discontinuity between K-12 and postsecondary systems and he calls for an improved K-16 educational system. Kirst points to the lack of coherence and sequencing between the curriculum of the senior year of high school and general education courses in college; contradictory assessments and standards in which the content of K-12 achievement tests differ significantly from the content of college placement tests; and the emphasis by administrators, counselors, recruiters, students, and parents on access and admission to college rather than emphasizing the academic preparation needed to complete a postsecondary education. Kirst reports that the consequences of senior slump include: the rising cost of remediation; high drop-out rates; and poor workforce skills. These consequences of discontinuity can be alleviated by strengthening the high school curriculum and linking it to the general education requirements of the first year of college; recognizing achievement levels on K-12
assessments that meet college standards; improving college admission and placement priorities; and assigning responsibilities for K-16 issues to a single entity in each state.

Much of the impetus for the establishment of dual enrollment programs is provided by general concerns for improved educational productivity. One early area of focus was upon curriculum redundancy. Blanchard (1971) for example, conducted a study in which course outlines from the first two years of a liberal arts college were examined by high school teachers, and course outlines from high schools in the area were examined by college instructors. Blanchard concluded that there was substantial duplication and that the first two years of the college curriculum included high school courses rearranged into a college course and offered under a new name. This redundant course work is inefficient and reduces learning productivity (Johnson and Mahoney, 1999).

There is no doubt that dual enrollment programs are increasing in size and number. In 1998, the association of State Higher Education Executive Officers (SHEEO) conducted a survey of early options programs and practices. Twenty-three of the thirty-one states that responded indicated that they have programs involving dual high school/college enrollment.

National data on the number of high school students specifically participating in dual enrollment programs is not routinely collected. However, the National Center for Educational Statistics (1997, 1999) reports that the number of students under the age of eighteen who enrolled in public two-year colleges on a part-time basis increased from 96,913 in the fall of 1993 to 123,039 in the fall of 1995. This group of under eighteen, part-time students likely accounts for most students in dual enrollment programs, and as a
proportion of all part-time public community college students, this group increased from 2.8% in 1993 to 3.6% in 1995.

Crooks (1998) surveyed members of the State Higher Education Executive Officers and reports that dual enrollment opportunities were possible in all states, while credit validation was practiced in 23 states. Dual enrollment refers to programs whereby the student takes college courses taught by college faculty, and credit validation refers to programs allowing certified high school instructors to teach college courses in high school. Crooks (1998) reports that in 1995-96 a total of 204,790 students pursued college-level learning through dual enrollment and credit validation programs. Sagers (2000) reports that student enrollment in state-funded concurrent enrollment programs in Utah whereby high school students earn college and high school credit simultaneously have increased from 2,425 enrolled in 1987 to 168,912 enrolled in 1998-99. The Oregon Early Options study (1999) indicates that about 6.4% of high school seniors participated in the Oregon dual enrollment program during 1995. The Running Start dual enrollment program in Washington state enrolled approximately 3,350 high school students in community college classes during 1992-93. During 1998-99 the number of enrolled in the Running Start program increased to 12,355 (Washington State Board for Community and Technical Colleges, 1999). Blair (1999) reports that during 1994-95, Minnesota enrolled about 6,700 juniors and seniors in dual enrollment programs, about 6% of all juniors and seniors.

Twenty-two states reported having statutes specifying the courses and programs for dual enrollment, eligibility requirements for student participation in dual enrollment programs, assessment of dual enrollment programs, institutional assumption of costs for...
dual enrollment programs, convergence of college credits to high school credit, and other specifications of high school/college collaborations. Approximately ten additional states report similar options supported by permissive language in local school board policy and individual institutions (Oregon University Systems, 1998). The Education Commission of the States (1998) reports twelve states (Colorado, Florida, Georgia, Maine, Massachusetts, Michigan, Minnesota, New Jersey, Ohio, Utah, Washington, and Wisconsin) that have comprehensive dual enrollment programs in which students pay little or no tuition, earn both high school and college credit, and encounter few course restrictions. More limited programs in which restrictions limit tuition, eligible courses, or credit, include: Arizona, Arkansas, Indiana, Iowa, Kansas, Louisiana, and North Dakota. Oregon offers college courses in the high school. Currently, Nevada, Oklahoma, and South Dakota offer permissive language allowing districts the choice of covering tuition costs, reimbursing costs for textbooks, and establishing admissions criteria.

Clearly, the historical trend is toward greater collaboration between secondary and postsecondary institutions. Dual enrollment programs are a major outcome of this collaboration. While some particular benefits of dual enrollment programs accrue to particular models or types of dual enrollment program, the following benefits of dual enrollment programs have been noted in the literature: acceleration of progress for (high ability, average ability, at-risk, minority) students, reduced tuition costs, increased student confidence in their ability to handle college-level academic responsibilities, improved student workforce skills and transition to work, relief of high school senior boredom, productive interaction (improved educational productivity and efficiency) between high schools and colleges, improved high school faculty status, enhanced high
school standing, facilitated student recruitment, grant opportunities, school-college faculty interaction, enhanced college-community relations, and social equity.

States providing for dual enrollment have some means of determining student eligibility. While the specifics of statute and policy vary, all states share some common elements. Most states authorize dual enrollment for high school juniors and seniors who have no comparable courses available in their high school, however, specific admissions policies vary state to state. Oregon, for example, recommends limiting dual enrollment to academically well-qualified 12th graders, whereas Indiana and Iowa permit younger students to participate in dual enrollment programs pending approval of the local school district. Michigan requires that students pass the high school proficiency exam prior to participation in dual enrollment. Other states require the attainment of a minimum high school GPA (Massachusetts), or the recommendation of school personnel (Nevada), or an acceptable score on a standardized test (Washington).

**Dual Enrollment Options**

Wilbur and Chapman (1978) developed four models of dual enrollment programs based on teaching responsibility, course design, and location. Model A involves regular college faculty teaching a specifically designed course on a college or a high school campus. This model is most often used during summer terms by colleges and universities to attract college-ready high school students to the college campus. High school administrators may also use this model to expand summer school course offerings on the high school campus.

In this model, courses are designed and structured specifically to meet the needs
of a particular population. While students may be exposed to a college environment, if the course are offered at a college campus, courses are designed for high school students and there is no classroom interaction between high school and college students. An additional disadvantage of this model is that transportation can be a hardship for low-income students who must commute to the college campus.

Model B provides for regular college courses on the high school or college campus with instruction provided by full-time or part-time faculty. This model provides an opportunity to experience regular college courses and, if on the college campus, a college environment including classroom interaction with college students. This model also provides a college contact, a college or high school counselor or a liaison responsible for college/high school articulation, who can assist students with future higher education pursuits.

Transportation from high school to college can be a disadvantage with this model. Exposure to a more complete college experience, for those who attend classes on the college campus, may also result in situations in which younger students feel out of place with older students, and older college students may resent or feel intimidated by younger students.

Model C provides for specifically designed college classes taught by qualified high school faculty on either the high school or college campus. High school faculty must be qualified to teach as an adjunct instructor at the college level and must complete additional training by college faculty. Instruction of specifically designed courses by high school faculty, especially on the high school campus, is a concern of college administrators responsible for their supervision.
Model D provides for regular college classes taught by qualified high school faculty on the high school or college campus. This model has weaknesses similar to the previous model, although college faculty concerns for course content, expectations, and grading criteria may be reduced if the course is a regular college-level course rather than a specifically designed college course for high school students.

If the courses are taught on the high school campus, students are more fully connected to the high school and do not benefit from a more college oriented experience which would provide students with more realistic expectations of college. Chapman and Holloway (1977), reporting on Project Advance at Syracuse University, indicate that Syracuse University freshmen who completed college-level courses during their senior year of high school exhibited more accurate expectations of college than those of other entering freshmen.

**Dual Enrollment: Examples**

There has been no national study of dual enrollment programs. Information is reported by individual states and most researches that have been conducted are reported as case study descriptions.

The Syracuse Project Advance has been described in the research literature by Gaines and Wilbur (1985). Project Advance has been described as the most successful concurrent enrollment program for academically advanced students. The program was established in 1973 as an attempt to reduce boredom and stimulate motivation among the top fifteen percent of seniors at seven Syracuse area high schools. The program provides
for courses that are adapted by a team of college and high school faculty to the needs of high school students. The adapted college-level courses are taught on the high school campuses by qualified high school instructors. Much of the success of the program has been attributed to the extensive in-service training program received by the high school faculty and conducted and monitored by Syracuse University faculty.

Students must pass an examination developed by Syracuse University in order to receive high school and university credit. As a result of this level of testing, there is little reported difficulty with transferring credit to other four-year institutions. It has been reported that Project Advance graduates who went on to college had low attrition rates, achieved exceptionally high grades, did not seek time-shortened degrees, and recommended that other high school students be given the opportunity to enroll in Project Advance (Mercurio, Schwartz, and Oesterle, 1982).

The LaGuardia Community College Middle College is a concurrent enrollment program established in 1974 as a joint effort between the New York Board of Education and La Guardia Community College. The Middle College focuses upon high-risk high school students with college potential. The College serves other sub-populations, but instruction is designed for drop-out, at-risk students. Students are recruited from local area junior high schools and enter at the ninth and tenth grade levels. Students are not drop-outs, nor are they referred from juvenile retention institutions. Criteria for admission include: long term absences, failure in one or more academic subjects, evidence of some problem, and the ability to profit from the college experience (Lieberman, 1990). The primary focus of the College is on teaching high school courses on a college campus. However, students at the eleventh grade level are provided with the
option of taking tuition free college courses based on their academic ability and maturity. Student readiness for college is determined by a Middle College counselor.

More recently, several states offer dual enrollment incentives for establishing concurrent high school/college enrollment programs. The 1990 Washington legislature created the Running Start program as part of the Learning by Choice law designed to expand educational opportunities for public high school students. The Running Start program initially allowed qualified high school juniors and seniors the opportunity to take college courses at community and technical colleges. However, because community colleges are not local to each school district, the 1994 legislature expanded the program to include Central and Eastern Washington State Universities.

Students enrolled in the Running Start program earn high school credits and as many as two years of college credit simultaneously without paying college tuition, although students must purchase their own books, supplies, and transportation. High schools have requested additional funding to provide for the more extensive counseling required by Running Start students.

The Oregon Early Options Study (1999) reports the following impacts:

- The ability to maintain comprehensive AP programs in high schools is being diminished as students select Running Star courses.

- The Running Start program continues to gain in popularity and 6-7% of Washington juniors and seniors participate in running Start.

- Funding for Running Start was designed to compensate colleges for their costs. Colleges are reimbursed about $75 per credit for academic programs and $95 per credit for vocational programs by K-12 districts. The K-12 districts retain 7% of funds for administration, overhead, and counseling. A portion of the K-12 appropriation per student goes to the community colleges or four-year institutions to cover the costs of college courses taken.

Washington has a second dual enrollment program, the College in the High School
Program, which provides college-level courses to students at high school locations. Courses are taught by high school or college faculty and the program is administered by local high schools and colleges through locally developed agreements.

Colorado implemented a state-mandated college credit options program for high school students as a result of the Postsecondary Enrollment Options Act, passed in 1988. This program provides various options for high school students to take classes offered by higher education institutions and receive both high school and college credit. The Oregon Early Options Study (1999) reports that a student enrolled in high school/college courses concurrently is counted toward the school district enrollment and generates per-pupil operating revenues. School districts pay colleges for those courses that count toward the high school diploma. School districts also reimburse colleges if they have a contractual agreement beyond the Postsecondary Enrollment Options Act.

Minnesota adopted a Postsecondary Enrollment Options Plan as a result of state legislation in 1985. The plan allows junior and senior high school students the opportunity to take college classes at state expense. As a result of the shift of high school students to college, local expenditures for K-12 districts decreased $11.8 million and postsecondary costs increased about $16.3 million in 1993-94 (Oregon Early Options Study, 1999).

Florida has had structures in place to facilitate student acceleration through the postsecondary sector. In 1984, the Florida legislature provided for the financial support for dual enrollment programs so that the school district and the postsecondary institutions
receive FTE funding for each student and students pay no fees for application, tuition, labs, or textbooks.

**Conclusions**

Much of the discontinuity between higher education and secondary schooling stems from the fact that higher education in America preceded the development of secondary schools. Had colleges followed the development of secondary schools, the colleges would have likely developed their curriculum as a natural continuation of the curriculum taught to younger students. Historically, secondary and postsecondary articulation implied that approval authority rested with the superior institution. In a recent report, however, the Pew Higher Education Research Program (1991) questioned why only senior institutions should speak for the collegiate curriculum when community colleges have the greater experience with nontraditional and new majority learners.

The early relationship between secondary and postsecondary educational institutions can be characterized as divergent; essentially separate educational systems with little articulation. Later relationships became more cooperative; the high school curriculum became dominated by college preparation as admission criteria became more standardized. Recent relationships between secondary and postsecondary institutions can be characterized as collaborative. Articulation has become a special case of "collaboration". Collaboration implies a more equal sharing of responsibility than does hierarchical articulation. The emergence of occupational specialization at the high school and community college levels and the growing notion that there are benefits to mutually interdependent secondary and postsecondary systems has resulted in increased
collaborations among high schools, community colleges, and four-year institutions. As
the middleman in education, the community college has been the strongest promoter of
collaborations with high schools. There is a growing discussion of developing a seamless
transition of education from kindergarten to college graduation. It remains to be seen if a
seamless K-16 system will be established based upon these collaborations. The question
of “Who benefits” will no doubt focus future debate.

Chapter III presents the research design and the methodology utilized in this study
with a specific discussion about the data collected, and the data analysis techniques used.
CHAPTER III

RESEARCH METHODOLOGY

This study investigated the student success in a dual enrollment program in an open enrollment, comprehensive community college.

Subjects

The subjects for this study include 845 students who were concurrently enrolled in the Community College High School and the Community College of Southern Nevada during the period from spring 1996 to fall 2000.

Institutional Setting

This study was conducted at the Community College of Southern Nevada. CCSN was selected for study because:

- CCSN has recently instituted dual enrollment, middle college program;

- the acceptance of high school students to the CCHS program is based primarily upon the recommendation of school personnel;

- the criteria for selection of students into the dual enrollment program include social and academic maturity and motivation as key predictors of student success;
there has been no study of the relative success of dual enrolled students compared with regular Community College students;

And there has been no demographic description of CCHS students compared with regular Community College students.

A review of the literature pertinent to dual enrollment suggests that most dual enrollment programs have several goals: early college admission for academically gifted students, improved minority access, improved transition to college for the college-bound, reduction of at-risk and student drop-out populations, improved vocational training for average or low-level achieving students, and revitalizing the motivation of the bored student, the high school misfit, and/or the high-ability low-achieving student. CCHS serves those students who would not otherwise be college bound and requires a level of "maturity and responsibility" that would indicate success in college. Most institutions have developed a formal and specialized admissions policy for dual enrollment based on the assumption that this will predict or promote student success in college. The most common criteria include high GPA and/or high test scores. The selection criteria for admission to CCHS includes a variety of performance measures, including GPA, test scores, writing samples, attendance, and other measures. However, it is not clear how these variables relate to subsequent student success when "average", non-gifted, less motivated, no-traditional students are sought for admission to college.

The Community College of Southern Nevada is a comprehensive, two-year educational institution within the University and Community College System of Nevada. The College was founded as Clark County Community College in 1971. The College offers Associate of Arts, Associate of Science, Associate of Applied Science, Associate
of Business, Associate of General Studies, and Certificates of Achievement in over seventy approved majors. CCSN serves the residents of Clark, Nye, Lincoln, and Esmeralda counties which includes an area of approximately 42,000 square miles and a population of over one million. CCSN has three major campuses. Each campus has a Community College High School providing dual enrollment for selected high school juniors and seniors. CCSN employs over 400 full-time faculty and over 700 part-time faculty to serve over 33,000 students (over 15,000 FTE) enrolled in over 3,000 credit bearing classes.

**Procedure**

The primary source of data used for this study was the Student Information System database maintained by the University and Community College System of Nevada. Additional data were collected from the duplicated and unduplicated student databases maintained by the CCSN Office of Admissions and Records and from data collected by the Community College High School.

**Research Design**

This research employed an ex post facto design that did not test hypotheses but addressed the research questions posed in Chapter One:

1. What are the demographic characteristics of dual enrolled students in an open-admissions, comprehensive community college?
2. How do the demographic characteristics of dual enrolled students compare
with regularly college students in an open-admissions, comprehensive community college?

3. How does student performance of dual enrolled students compare with regularly enrolled college students?

4. How does course retention of dual enrolled students compare with regularly enrolled college students?

5. How do rates of remediation for dual enrolled students compare with regularly enrolled college students?

6. How does the course taking behavior of dual enrolled students compare with the course taking behavior of college students?

The study investigated student success in a dual enrollment program at an open enrollment community college. The objective of the analysis was to determine the success of dual enrolled students compared with regularly enrolled community college students. Indicators of student success, including GPA, retention, and remediation, were examined for dual enrolled students, regularly enrolled students, and first time, first term students. CCSN student records were examined from spring 1996 through fall 2000.
RESULTS OF THE DATA ANALYSIS

Data for the study were collected from UCCSN data bases and CCSN data bases for Spring 1996 through Fall 2000 semesters. Additional data were obtained from CCHS reports and from questionnaire surveys conducted by CCHS. The data were analyzed using frequency distributions and measures of dispersion. In addition, analysis of variance, cross tabulations, and chi-square were utilized wherever appropriate. In the present study, analysis of data was conducted on 845 CCHS students dual enrolled during spring 1996 through fall 2000. This is the total CCHS student population from spring 1996 through fall 2000.

Results of the Research Questions

Research question # 1: What are the demographic characteristics of dual enrolled students in an open-admissions, comprehensive community college?

Of the 845 CCHS students, 70% (592) were female. Thirty-five percent of CCHS students who reported their ethnicity were minority. Students who reported their race/ethnicity as “unknown” were excluded from this analysis. Native Americans were 1.1% (9) of the total CCHS population; 11.5% (91) were Asian; 11.5% (91) were African American; 11% (87) were Hispanic; and 65% (516) were Caucasian. Fifty-one students
reported their ethnicity as "unknown" and were excluded from this analysis. Percentages are based on the total number of students who reported an ethnicity.

Table 1  
CCHS Ethnicity: 1996-2000

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Number</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native American</td>
<td>9</td>
<td>1.1</td>
</tr>
<tr>
<td>Asian</td>
<td>91</td>
<td>11.5</td>
</tr>
<tr>
<td>African American</td>
<td>91</td>
<td>11.5</td>
</tr>
<tr>
<td>Hispanic</td>
<td>87</td>
<td>11.0</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>516</td>
<td>65.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>794*</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*Excludes "Unknown".

Table 2 indicates that female enrollment exceeds male enrollment in every ethnic category. The greatest difference between male and female enrollment occurred among African Americans. African American females outnumbered males in a ratio of about 8:1.

The greatest numerical difference between male and female enrollment occurred among Caucasians, with 186 more females enrolled than males. Caucasian females outnumbered males in a ratio of 2:1.
Table 2  \textbf{CCHS Ethnicity and Gender: 1996-2000}

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Gender</th>
<th>Number</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native American</td>
<td>Female</td>
<td>7</td>
<td>0.88</td>
</tr>
<tr>
<td>Native American</td>
<td>Male</td>
<td>2</td>
<td>0.25</td>
</tr>
<tr>
<td>Asian</td>
<td>Female</td>
<td>65</td>
<td>8.2</td>
</tr>
<tr>
<td>Asian</td>
<td>Male</td>
<td>26</td>
<td>3.3</td>
</tr>
<tr>
<td>African American</td>
<td>Female</td>
<td>80</td>
<td>10.1</td>
</tr>
<tr>
<td>African American</td>
<td>Male</td>
<td>11</td>
<td>1.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Female</td>
<td>54</td>
<td>6.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Male</td>
<td>33</td>
<td>4.2</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>Female</td>
<td>351</td>
<td>44.2</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>Male</td>
<td>165</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>794*</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Excludes “unknown”.

Research question #2: How do the demographic characteristics of dual enrolled students compare with first time, first term college students in an open-admissions, comprehensive community college? Table 3 indicates the ethnicity of CCSN students enrolled during the fall 2000 semester. Students who reported their race/ethnicity as “unknown” were excluded from this analysis. Percentages are based on the total number of students who reported an ethnicity.
Table 3  **CCSN Ethnicity: Fall 2000**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Number</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native American</td>
<td>348</td>
<td>1.22</td>
</tr>
<tr>
<td>Asian</td>
<td>2877</td>
<td>10.12</td>
</tr>
<tr>
<td>African American</td>
<td>2971</td>
<td>10.45</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4557</td>
<td>16.03</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>17678</td>
<td>62.18</td>
</tr>
<tr>
<td>Total</td>
<td>28431*</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Excludes “resident alien” and “unknown”

The ethnicity of the CCSH students enrolled in spring 1996 through fall 2000 reflects the CCSN ethnicity of regularly enrolled students who attended during fall 2000. Figure 1 compares the ethnicity of CCHS students as a percentage of the total CCHS enrollment from 1996 through 2000 with the ethnicity of CCSN students enrolled in fall 2000.
Figure 1  CCHS and CCSN: Comparison of Ethnicity
Table 4 indicates the ethnicity of first time, first term degree seeking students enrolled in regular CCSN courses during fall 1999. The sub-population of first time, first term students are similar to CCHS students in terms of recent high school experience to and, by and large, are drawn from the local community. It should be noted, however, that prior to the influx of Millennium Scholarship students beginning in fall of 2000 the percentage of students aged 18 to 24 attending CCSN remained relatively small. The general CCSN student population is considerably older and includes students who migrate to the local community from a variety of other areas.

Table 4 First Time, First Term Degree-Seeking CCSN Student Ethnicity: Fall 2001

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Number</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native American</td>
<td>22</td>
<td>1.30</td>
</tr>
<tr>
<td>Asian</td>
<td>136</td>
<td>8.05</td>
</tr>
<tr>
<td>African American</td>
<td>227</td>
<td>13.44</td>
</tr>
<tr>
<td>Hispanic</td>
<td>300</td>
<td>17.77</td>
</tr>
<tr>
<td>Caucasian</td>
<td>1003</td>
<td>59.41</td>
</tr>
<tr>
<td>Total</td>
<td>1688*</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Excludes “resident alien” and “unknown”

While the ethnicity of CCHS students reflects the larger CCSN student population, the ethnicity of CCHS students should closely reflect the population of first time, first term CCSN student. Figure 2 compares the ethnicity of CCSH students with the ethnicity of first time, first term CCSN students enrolled during fall 2001.
The ethnicity of CCHS students closely reflects the ethnic composition of first time, first term students, as well as the general CCSN student population. It should also be noted that the enrollment of first time, first term African Americans at CCSN exceeds that of African Americans enrolled in the Community College High School program. However,
CCHS enrollment of African Americans exceeds the enrollment of African Americans in the general CCSN population. It would appear that African American first time, first term students are less likely to be retained to subsequent terms. Indeed, an analysis of student retention to end of term conducted by the CCSN Office of Institutional Research and Planning for the fall 1998 term indicated that African American students are least likely to be retained to end of term (West, 1998). Fifty-one percent of African American CCSN students persisted from the fall 2000 term to the spring 2001 term compared with an overall persistence rate of 56%. While Hispanics appear to be slightly under-represented in the CCHS population, it seems that minorities are not being admitted to the CCHS program in disproportionate numbers.

Research question # 3: How does student performance of dual enrolled students compare with regularly enrolled college students? Grade point average (GPA) earned by students is an obvious measure of student success. Few studies of high school students concurrently enrolled in college courses have examined student GPA over more than a few semesters. Greenberg (1989), however, reports that since 1974 when the Middle College began on the LaGuardia Community College, 700 students completed college courses and earned a mean GPA of slightly under C+. Table 5 indicates the GPA, the median GPA, and the standard deviation of CCHS students enrolled from spring 1996 to fall 2000.
Table 5  CCHS Grades

<table>
<thead>
<tr>
<th>Term</th>
<th>GPA</th>
<th>Median GPA</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1996</td>
<td>2.15</td>
<td>2.16</td>
<td>1.24</td>
</tr>
<tr>
<td>Summer 1996</td>
<td>2.01</td>
<td>2.30</td>
<td>1.32</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>2.69</td>
<td>3.00</td>
<td>1.14</td>
</tr>
<tr>
<td>Spring 1997</td>
<td>2.39</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Summer 1997</td>
<td>3.12</td>
<td>3.54</td>
<td>1.24</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>2.57</td>
<td>2.85</td>
<td>1.12</td>
</tr>
<tr>
<td>Spring 1998</td>
<td>2.32</td>
<td>2.50</td>
<td>1.29</td>
</tr>
<tr>
<td>Summer 1998</td>
<td>2.56</td>
<td>3.00</td>
<td>1.30</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>2.52</td>
<td>2.74</td>
<td>1.14</td>
</tr>
<tr>
<td>Spring 1999</td>
<td>2.48</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Summer 1999</td>
<td>2.66</td>
<td>3.00</td>
<td>1.40</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>2.51</td>
<td>2.85</td>
<td>1.16</td>
</tr>
<tr>
<td>Spring 2000</td>
<td>2.57</td>
<td>2.85</td>
<td>1.15</td>
</tr>
<tr>
<td>Summer 2000</td>
<td>2.49</td>
<td>3.00</td>
<td>1.36</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>2.59</td>
<td>2.78</td>
<td>1.11</td>
</tr>
</tbody>
</table>

These data do reveal some patterns in the distribution of CCHS grade point averages. Table 6, for example, presents these data in rank order. It appears that GPA improves from the inception of the CCHS program in 1996 through fall 2000. This pattern becomes more apparent when summer terms are eliminated from this analysis. Summer enrollment of CCHS students is small compared with CCSN summer enrollment. Indeed, high school students still living with their parents are more involved in family vacations or in gaining summer employment than in continuing their higher education.
Table 6  CCHS Grades: Ascending Rank Order

<table>
<thead>
<tr>
<th>Term</th>
<th>Duplicated</th>
<th>GPA</th>
<th>Median GPA</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 1996</td>
<td>33</td>
<td>2.01</td>
<td>2.30</td>
<td>1.32</td>
</tr>
<tr>
<td>Spring 1996</td>
<td>154</td>
<td>2.15</td>
<td>2.16</td>
<td>1.24</td>
</tr>
<tr>
<td>Spring 1998</td>
<td>649</td>
<td>2.32</td>
<td>2.50</td>
<td>1.29</td>
</tr>
<tr>
<td>Spring 1997</td>
<td>403</td>
<td>2.39</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Spring 1999</td>
<td>1141</td>
<td>2.48</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Summer 2000</td>
<td>129</td>
<td>2.49</td>
<td>3.00</td>
<td>1.36</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>1483</td>
<td>2.51</td>
<td>2.85</td>
<td>1.16</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>1049</td>
<td>2.52</td>
<td>2.74</td>
<td>1.14</td>
</tr>
<tr>
<td>Summer 1998</td>
<td>84</td>
<td>2.56</td>
<td>3.00</td>
<td>1.30</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>571</td>
<td>2.57</td>
<td>2.85</td>
<td>1.12</td>
</tr>
<tr>
<td>Spring 2000</td>
<td>1462</td>
<td>2.57</td>
<td>2.85</td>
<td>1.15</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>1344</td>
<td>2.59</td>
<td>2.78</td>
<td>1.11</td>
</tr>
<tr>
<td>Summer 1999</td>
<td>116</td>
<td>2.66</td>
<td>3.00</td>
<td>1.40</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>395</td>
<td>2.69</td>
<td>3.00</td>
<td>1.14</td>
</tr>
<tr>
<td>Summer 1997</td>
<td>34</td>
<td>3.12</td>
<td>3.54</td>
<td>1.24</td>
</tr>
</tbody>
</table>

Table 7 indicates the GPA of CCHS students enrolled in spring and fall terms exclusive of summer terms. It appears that the earned GPA of students enrolling in the spring semesters improves in the fall semesters. It also seems apparent that the larger the CCHS population, the more closely they resemble CCSN students.
Table 7  CCHS Grades: Ascending Rank Order Excluding Summer Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Headcount</th>
<th>Mean GPA</th>
<th>Median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1996</td>
<td>154</td>
<td>2.15</td>
<td>2.16</td>
<td>1.24</td>
</tr>
<tr>
<td>Spring 1998</td>
<td>649</td>
<td>2.32</td>
<td>2.50</td>
<td>1.29</td>
</tr>
<tr>
<td>Spring 1997</td>
<td>403</td>
<td>2.39</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Spring 1999</td>
<td>1141</td>
<td>2.48</td>
<td>2.66</td>
<td>1.21</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>1483</td>
<td>2.51</td>
<td>2.85</td>
<td>1.16</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>1049</td>
<td>2.52</td>
<td>2.74</td>
<td>1.14</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>571</td>
<td>2.57</td>
<td>2.85</td>
<td>1.12</td>
</tr>
<tr>
<td>Spring 2000</td>
<td>1462</td>
<td>2.57</td>
<td>2.85</td>
<td>1.15</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>1344</td>
<td>2.59</td>
<td>2.78</td>
<td>1.11</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>395</td>
<td>2.69</td>
<td>3.00</td>
<td>1.14</td>
</tr>
</tbody>
</table>

Table 8 compares the GPA of CCHS students with the GPA of the general population of CCSN students. It should be noted that, with the single exception of the summer 1997 term, the CCSN general student population achieved a higher GPA in each semester than the CCHS students. The mean GPA achieved for CCHS students was 2.50 compared with a mean GPA of 2.88 achieved by CCSN students. An analysis of variance (one way ANOVA) was conducted to determine whether there was a significant overall difference among the groups. A calculated F ratio of 29.27 was obtained and determined to be significant at the .05 level. There appears to be a significant overall difference between the GPA performance of CCHS students and the general college student population. The results of this analysis are summarized and presented in Table 9.
Table 8  
Comparison of CCHS GPA and CCSN GPA

<table>
<thead>
<tr>
<th>Term</th>
<th>CCHS GPA</th>
<th>CCSN GPA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1996</td>
<td>2.15</td>
<td>2.86</td>
<td>0.71</td>
</tr>
<tr>
<td>Summer 1996</td>
<td>2.01</td>
<td>3.06</td>
<td>1.05</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>2.69</td>
<td>2.82</td>
<td>0.13</td>
</tr>
<tr>
<td>Spring 1997</td>
<td>2.39</td>
<td>2.85</td>
<td>0.16</td>
</tr>
<tr>
<td>Summer 1997</td>
<td>3.12</td>
<td>3.02</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>2.57</td>
<td>2.79</td>
<td>0.22</td>
</tr>
<tr>
<td>Spring 1998</td>
<td>2.32</td>
<td>2.77</td>
<td>0.45</td>
</tr>
<tr>
<td>Summer 1998</td>
<td>2.56</td>
<td>2.99</td>
<td>0.43</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>2.52</td>
<td>2.78</td>
<td>0.26</td>
</tr>
<tr>
<td>Spring 1999</td>
<td>2.48</td>
<td>2.73</td>
<td>0.25</td>
</tr>
<tr>
<td>Summer 1999</td>
<td>2.66</td>
<td>2.94</td>
<td>0.28</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>2.51</td>
<td>2.84</td>
<td>0.33</td>
</tr>
<tr>
<td>Spring 2000</td>
<td>2.57</td>
<td>2.91</td>
<td>0.34</td>
</tr>
<tr>
<td>Summer 2000</td>
<td>2.49</td>
<td>3.03</td>
<td>0.54</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>2.59</td>
<td>2.91</td>
<td>0.32</td>
</tr>
<tr>
<td>Total</td>
<td>2.50</td>
<td>2.88</td>
<td></td>
</tr>
</tbody>
</table>

F=29.27 (1,28) p=<.05
Table 9  
Analysis of Variance: One Way

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>F-Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Group</td>
<td>1.07</td>
<td>1</td>
<td>1.07</td>
<td>29.27</td>
<td>4.20</td>
</tr>
<tr>
<td>Within Group</td>
<td>1.03</td>
<td>28</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.10</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It may be argued that CCHS students do not earn as high a GPA as regularly enrolled college students because the dual enrolled student suffers “culture shock” from the first exposure to a college environment. Moreover, that experience of culture shock may be exacerbated, in the instance of younger than traditional age college students, by their relative lack of maturity and experience. It may be more insightful to compare the performance of early enrolled high school students with college students who are also experiencing their first exposure to the college environment. Comparing high school student performance in college classes with the performance of the general college student population may not be a fair comparison. Comparing the performance of co-enrolled high school students with first time, first term, degree-seeking students who would tend to be similar to CCHS students in terms of recent graduation from high school as well as similar in terms of experiencing a college environment for the first time may provide information about how well CCHS students perform as early admitted students compared with students experiencing similar culture shock. While it should be noted that only 42% of the first time, first term students enrolled in the fall 2001 term were 18 to 24 years old, the first time college experience is common to both the CCHS
student and all CCSN first time, first term regularly enrolled students. It would be likely therefore, that there would be less difference between the performance of these groups.

One important difference between the CCHS students and regularly enrolled CCSN students is that the dual enrolled high school student is highly motivated to successfully complete college courses because graduation from high school is contingent upon maintaining a minimum grade of C in each college course taken. The average GPA earned by dual enrolled high school students in college courses may be inflated compared with regularly enrolled college students. Moreover, both CCHS students and CCSN students may also choose to receive a grade of withdraw or audit for a variety of reasons other than academic ability. Additionally, students take a variety of classes ranging in difficulty, credit load, and method of delivery. It would be more fruitful, therefore, to compare the percentages of CCHS students and CCSN first time, first term students who passed, failed, or withdrew from college courses.

Table 10 compares the percentage of CCHS students within each fall term who passed, failed, and withdrew from classes with first time, first term college students. In order to pass a class the student must have earned a grade of P, A, A-, B+, B, B-, C-, C, C+, D-, D, or D+. Receiving a grade of F is counted as failure. A grade of W is counted as a withdrawal. Grades of I (incomplete) and AU (audit) are eliminated from the analysis. Collapsing individual grade data into dichotomous Pass/Fail categories eliminates the problem of assigning a numerical score to the grade of P (pass) and avoids the problem of creating a scale of grades with pluses and minuses in each grade category except A+. 

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Table 10  

CCHS Student and CCSN First Time, First Term Students Course Pass Rate: Fall Terms, 1996-2000

<table>
<thead>
<tr>
<th>Term</th>
<th>CCHS</th>
<th>CCSN</th>
<th>CCHS</th>
<th>CCSN</th>
<th>CCHS</th>
<th>CCSN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>81</td>
<td>69</td>
<td>4</td>
<td>8</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>1997</td>
<td>81</td>
<td>69</td>
<td>5</td>
<td>9</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>1998</td>
<td>76</td>
<td>70</td>
<td>7</td>
<td>9</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>1999</td>
<td>77</td>
<td>65</td>
<td>5</td>
<td>9</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>2000</td>
<td>79</td>
<td>68</td>
<td>5</td>
<td>9</td>
<td>16</td>
<td>23</td>
</tr>
</tbody>
</table>

Mean  79  68  5  9  16  23

Clearly, the CCHS students passed their college classes in greater proportion than first time, first term college students. A Chi-Square test performed on the data indicated that there is a significant difference at the .001 level in the rate at which CCSD students pass their classes compared with first time, first term CCSN students. That is, there is only one chance in a thousand that these results would be obtained if there were no difference between CCHS and CCSN students. Tables 11 and 12 summarizes the Chi-Square analysis.
Table 11  
**CCHS and CCSN Course Pass Rates: Combined Fall Terms, 1996-2000**

<table>
<thead>
<tr>
<th>Status</th>
<th>CCHS</th>
<th>CCSN, 1st Time, 1st Term</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passed</td>
<td>3799</td>
<td>15641</td>
<td>19440</td>
</tr>
<tr>
<td></td>
<td>(3644.16)</td>
<td>(15795.83)</td>
<td></td>
</tr>
<tr>
<td>Failed</td>
<td>284</td>
<td>2057</td>
<td>2341</td>
</tr>
<tr>
<td></td>
<td>(438.83)</td>
<td>(1902.16)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4083</td>
<td>17698</td>
<td>21781</td>
</tr>
</tbody>
</table>

Table 12  
**Computation for Chi-Square**

<table>
<thead>
<tr>
<th>Cell</th>
<th>$f_o$</th>
<th>$f_e$</th>
<th>$f_o - f_e$</th>
<th>$(f_o - f_e)^2$</th>
<th>$(f_o - f_e)^2 / f_e$</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>3799</td>
<td>3644.16</td>
<td>154.84</td>
<td>23975.42</td>
<td>6.57</td>
</tr>
<tr>
<td>b</td>
<td>15641</td>
<td>15795.83</td>
<td>-154.84</td>
<td>23975.42</td>
<td>1.51</td>
</tr>
<tr>
<td>c</td>
<td>284</td>
<td>438.83</td>
<td>-154.84</td>
<td>23975.42</td>
<td>54.63</td>
</tr>
<tr>
<td>d</td>
<td>2057</td>
<td>1902.16</td>
<td>154.84</td>
<td>23975.42</td>
<td>12.60</td>
</tr>
<tr>
<td>Total</td>
<td>21781</td>
<td>21781</td>
<td>75.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$X^2=75.31, df=1$

$P<=$.001

A separate Chi-Square analysis was performed for each fall term. Fall 1996 was the only term in which there was not a significant difference at the .05 level between the course pass rates of CCHS and CCSN first time, first term students. That is, in fall 1996 there was no statistically significant difference between the proportion of CCHS students passing college classes and the proportion of first time, first term CCSN students passing college classes. It should also be noted that as CCHS enrollment increases, as in the fall 1998, 1999, and 2000 terms, there appears to be less difference between the
percentage of CCHS students who pass their college classes and the percentage of regularly enrolled first time, first term students who pass their classes. This difference is still, however, statistically significant.

Research question # 4: How does course retention of dual enrolled students compare with regularly enrolled college students? A student is successfully retained if they completed a course with a passing grade. A passing grade is an A, B, C, or D. A student completing a course with a grade of F, AU, I, or W is not considered a successfully retained student. Table 13 indicates the number and percent of successfully retained CCHS students for the semesters from spring 1996 through fall 2000.
Table 13  CCHS Retention by Semester

<table>
<thead>
<tr>
<th>Term</th>
<th>Duplicate Enrolled</th>
<th>Passed</th>
<th>Percent Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sp 1996</td>
<td>154</td>
<td>117</td>
<td>76</td>
</tr>
<tr>
<td>Sum 1996</td>
<td>33</td>
<td>25</td>
<td>76</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>395</td>
<td>319</td>
<td>81</td>
</tr>
<tr>
<td>Sp 1997</td>
<td>403</td>
<td>304</td>
<td>75</td>
</tr>
<tr>
<td>Sum 1997</td>
<td>34</td>
<td>29</td>
<td>85</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>571</td>
<td>452</td>
<td>76</td>
</tr>
<tr>
<td>Sp 1998</td>
<td>649</td>
<td>465</td>
<td>72</td>
</tr>
<tr>
<td>Sum 1998</td>
<td>84</td>
<td>67</td>
<td>80</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>1049</td>
<td>781</td>
<td>74</td>
</tr>
<tr>
<td>Sp 1999</td>
<td>1141</td>
<td>825</td>
<td>72</td>
</tr>
<tr>
<td>Sum 1999</td>
<td>116</td>
<td>83</td>
<td>72</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>1483</td>
<td>1095</td>
<td>74</td>
</tr>
<tr>
<td>Sp 2000</td>
<td>1462</td>
<td>1060</td>
<td>73</td>
</tr>
<tr>
<td>Sum 2000</td>
<td>129</td>
<td>93</td>
<td>72</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>1344</td>
<td>1000</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td>9047</td>
<td>6715</td>
<td>74</td>
</tr>
</tbody>
</table>

The College has recently changed the way in which retention is defined. Prior to fall 2000, retention was defined by the College as completion of a course with a grade, including the grade of F. Grade postings of AU, I, or W were considered non-completion. As a result, retention figures were inflated by the number of students who took a course but failed that course. For example, the College retention rate for spring...
2000 was 73%. That is, 73% of students who enrolled in credit bearing courses completed those courses with a grade, including the grade of F. Overall college retention rates for the fall 2000 semester indicate that 74% of students were completed a course with a grade and 68% of those students successfully passed. Similarly, for fall 2001, 75% of students completed a course with a grade an 68% of those students successfully passed their course. These figures indicate that a greater percentage of the Community College High school students are successfully retained in courses compared with the successful retention rates of the general student population. It should also be noted that a greater proportion of CCHS students complete college courses with a passing grade compared with first time, first term degree seeking students.

Research question # 5: How do rates of remediation for dual enrolled students compare with regularly enrolled college students?

Beginning in the academic year 1998, the Community College of Southern Nevada has reported data for recent high school graduates enrolled in remedial English and mathematics classes. Table 14 indicates the recent high school graduates enrolled in these remedial classes as a percentage of all students enrolled in remedial English and mathematics courses for the academic years 1998, 1999, and 2000. For purposes of this analysis, students are considered recent high school graduates if they graduated high school between September and August of the year immediately preceding their enrollment at CCSN.
Table 14 Recent Nevada High School Graduates Enrolled in Remediation as a Percentage of all Remedial Students

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>All Remedial Students</th>
<th>Recent HS Grads in Remediation</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>3383</td>
<td>589</td>
<td>17.4</td>
</tr>
<tr>
<td>1999</td>
<td>3448</td>
<td>452</td>
<td>13.1</td>
</tr>
<tr>
<td>2000</td>
<td>3027</td>
<td>464</td>
<td>15.3</td>
</tr>
<tr>
<td>Total</td>
<td>9858</td>
<td>1505</td>
<td>15.3</td>
</tr>
</tbody>
</table>

Table 15 indicates the number and percentage of CCHS students who were placed into remedial English and mathematics courses from spring 1996 through fall 2000. These data indicate that far fewer CCHS students place into remedial courses than do regularly enrolled Community College students, including recently graduated high school students enrolled at the College. The majority of CCHS students placed into remedial courses are placed in mathematics rather than English. CCHS students are selected, in part, on their writing skills as evidenced by an essay required for admission to the program.
Table 15  
CCHS Students Enrolled in Remedial English and Math

<table>
<thead>
<tr>
<th>Term</th>
<th>Duplicated</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrollment</td>
<td>Remedial</td>
<td></td>
</tr>
<tr>
<td>Sp 1996</td>
<td>154</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sum 1996</td>
<td>37</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Fall 1996</td>
<td>395</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Sp 1997</td>
<td>403</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Sum 1997</td>
<td>34</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fall 1997</td>
<td>571</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Sp 1998</td>
<td>649</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Sum 1998</td>
<td>84</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>1049</td>
<td>36</td>
<td>3</td>
</tr>
<tr>
<td>Sp 1999</td>
<td>1141</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>Sum 1999</td>
<td>116</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>1448</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>Sp 2000</td>
<td>1422</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>Sum 2000</td>
<td>125</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>1314</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>8836</td>
<td>215</td>
<td>2</td>
</tr>
</tbody>
</table>

Research question # 6: How does the course taking behavior of dual enrolled students compare with the course taking behavior of college students? Part of the rationale for the development of high school-college co-enrollment programs is to provide career training opportunities for students who might not otherwise choose to attend college. There was an early expectation that many of the students admitted into the
Community College High School program would be vocationally oriented (Mersalis, 2000).

Courses were grouped as transfer, vocational, or developmental based on whether or not an undergraduate degree in the program area was offered at UNLV.

Developmental courses are those courses numbered under 100. Table 16 summarizes the course taking of CCHS students.

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>% Transfer</th>
<th>% Vocational</th>
<th>% Developmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>87</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>1997</td>
<td>83</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>1998</td>
<td>81</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>1999</td>
<td>85</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>2000</td>
<td>88</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

CCHS students are overwhelmingly oriented toward college transfer courses. Twenty-nine CCHS students have graduated from CCSN from 1999 through 2001. Twenty of these graduates received Associate of Arts, Associate of Science, or Associate of General Studies degrees in academic areas. The remaining nine students received degrees/certificates in Dental Hygiene (2), Electronic Engineering (2), Automotive Technology (2), and one each in Fire Science, Legal Assisting, and Occupational Therapy Assisting. According to the 1999-2000 Accountability Report (Mersalis, 2000), over ninety percent of the 2000 CCHS graduating class plan to continue their education at a two or four-year institution and graduating senior earned an average of seventeen college credits.
CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to explore selected variables indicative of student success in a dual enrollment program within an open enrollment, comprehensive community college. Additionally, a second goal was to construct an academic profile of the dual enrolled high school student and compare this profile with similar Community College students. Students voluntarily apply for admission into the CCHS program. These applicants are then selected for admission based in part on high school academic performance and in part on their ability to fit into and benefit from a college experience. An implicit assumption of the CCHS program is that exposure to the freedom and challenges of the college campus provides high school youth with the environment to develop a sense of increased responsibility for their own education. The college environment provides an academically enriched setting enveloping a high school located on campus which leads students to believe that a college education is possible and a natural progression in their education. This research assumes that high school students who not only self-select but are also selected by a panel of educators for concurrent enrollment would perform better than regularly enrolled college students in an open-admissions institution.
The concurrent enrollment of high school students in community colleges is touted as one of the ways that federal, state, and local entities are attempting to eliminate barriers between educational levels and provide greater access for educational and workforce training needs. Most of these programs have established criteria for enrollment that is highly selective and restrict the opportunity for early college enrollment to a select few. It is not surprising that student academic performance in these instances is high given the ability of prior academic achievement to predict future academic achievement. This study has been conducted to further explore variables indicative of student success in a concurrent enrollment program at an open enrollment community college for students of average to high ability relative to regularly enrolled community college students.

Summary of the Findings

Results of the study indicated that high school students concurrently enrolled at a community college are similar in many respects to the general college population. Seventy percent of CCHS students were female, compared with 55% female in the general population enrolled for fall 2000. Thirty-five percent of CCHS students reported a minority ethnicity compared with 38% reporting a minority ethnicity in the fall 2000 general student population. CCHS female student enrollment exceeded male enrollment in every ethnic category. This is the same pattern of enrollment by ethnicity and gender prevalent in the general student population. For CCHS students and regularly enrolled CCSN students, the greatest difference between male and female enrollment occurred.
among African Americans. CCHS ethnicity also closely reflects the ethnic composition of regularly enrolled first time, first term degree-seeking students.

With the exception of summer 1997, the mean GPA for the general college population exceeded that of the mean GPA for the CCHS students in each term from spring 1996 through fall 2000. The mean GPA for the general college population was 2.88 compared with a mean GPA of 2.50 for CCHS students. Overall, there was a significant difference in the GPA performance between CCHS students and regularly enrolled college students, with the general college students out performing CCHS student. It should be noted that the average GPA of C+ earned by CCHS students is acceptable for admission to the selective University of Nevada, Las Vegas and, in this light, the achievement of these students when compared to their advanced classmates might be considered a positive academic outcome.

When GPA performance of the concurrently enrolled high school students was compared with the GPA performance of regularly enrolled first time, first term degree-seeking students, the CCHS students passed their college classes in far greater proportion. A Chi-Square test was performed on the data and there was found to be a significant difference (p=<.001) in the rate in which CCHS students pass college classes compared with first time, first term degree-seeking students. This result is consistent with the 1993 Oregon study.

A greater percentage of CCHS students are successfully retained in college courses compared with the general student population; 74% of CCHS students compared with 68% of regularly enrolled students. It should be noted, however, that CCHS students are motivated to successfully complete their college classes in order to graduate from
high school as well as to accumulate college credit. In a similar way, motivation to graduate from high school drives student persistence from term to term. It is not surprising, therefore, that concurrently enrolled high school students retain and persist in college courses. Motivation to successfully complete and persist is further bolstered through the use of a Student/Parent Contract which, among other conditions, requires the student to maintain a C average in both college and high school classes and requires written permission from parents to drop a college course.

A significantly greater proportion of regularly enrolled college students and recently graduated high school students are placed into remedial classes then are CCHS students. The majority of CCHS students who are placed into remedial classes are placed into remedial mathematics rather then English.

CCHS students are overwhelmingly oriented toward enrolling in college transfer courses rather than vocational courses. Seniors graduating in 2000 earned an average of 17 college credits. About 70% of CCHS students who continued their education at CCSN, graduated with a degree in an academic area.

Conclusions and Recommendations

Analysis of the data indicated that Community College High School students are similar in most respects to regularly enrolled Community College students. Community College High School students also perform similarly to regularly enrolled college students and perform slightly better that first time, first term college students. As a result, community colleges should continue to develop dual credit high school programs on college campuses that offer duel highschool-college credit for regular college courses.
Selecting high school students who volunteer for participation in dual credit programs
developed on open-enrollment community colleges should be predicated on encouraging
students who have social and academic profiles similar to regularly enrolled students.

Students selected for the CCHS program seem to have better basic math and
English skills than the general college population including recent high school graduates.
This difference may result from students with higher math and English ability self-
selecting for the CCHS program and being further selected for admission based upon
their achievement in math and English. It may also be that students currently enrolled in
eleventh and twelfth grade high school English and math retain more basic skills than
high school graduates. In any case, the College in collaboration with high school
personnel, should consider establishing an admissions process for all high school juniors
and seniors that would include an assessment of the student’s educational and career
goals, and would allow students to be dual enrolled into college English and math
courses on a probationary basis during summer terms and with performance monitored
by college and high school personnel. Successful completion of college level English
and math could serve as a pre-requisite for consideration for admission into the
Community College High School program. This would improve access, ensure
reasonable success, and reduce remediation while serving as a bridge between high school
and college and motivating students for higher education.

Suggestions for Further Research

Further research should be conducted to explore the relationship between
variables such as student level of dissatisfaction with high school, level of maturity, and
educational intent and student success in dual enrolled programs. Students of average or low ability and who possess no other indicators for success, such as completion of honors courses, often do well in dual enrolled programs. Research should be conducted to explore the relationship between student characteristics and environmental factors that lead to student success by average and at-risk dual enrolled students. Community College High School students are often expressed dissatisfaction with the normal high school experience and structure and sought dual enrolled programs not only as an expedient means to educational or career goals, but as an alternative to the social environment and regimentation of high school. Students must appreciate the freedom and responsibility of the college environment. Indeed, student maturity, ability to fit into and benefit from the college experience, respect given to faculty and peers, are among the criteria used for teacher recommendations to assess student applicants to the CCHS program. However, no formal research has been conducted that explores the relationships between student success and these assessment criteria.

Further research should be conducted to explore institutional characteristics such as having high academic expectations, a clear sense of mission, and providing a caring and supportive environment. Whatever the ability level of admitted dual enrolled students, the CCHS program expected the student to be high achievers. Students were told repeatedly and in a variety of ways, that they had potential and were capable of “college achievement”. Indeed, the students admitted to this program were “special”, and “selected”. The early motto of the Community College High School was “Seize the Opportunity”, indicating to students that their enrollment into the program was a special opportunity and, by extension, they became special when they seized this opportunity.
The CCHS motto was later changed to "Soaring Above the Rest", further creating expectations for high achievement. Students admitted to the CCHS program signed a contract with their parents and the school indicating that they would maintain minimum academic standards, not exceed 10 absences during the semester, and acknowledge that they will be enrolled in "college classes with adults". In short, establishing high expectations and creating a special identity may have a great deal of impact on student performance and is well worth further exploration.

The Community College High School has had a clear and consistent mission since its inception. The stated mission is "...to facilitate the successful transition of our students from high school to post-secondary education" (Mersalis, 2000). This mission statement focuses on the transition from high school to college, suggesting that this transition is not automatic nor guaranteed but that it will be mediated and facilitated by high school personnel for the benefit of students. The mission statement of the Community College High School also implies a degree of paternalism in the concern for "our students". Indeed, high schools are still centered in the ethic of in loco parentis, and so tend to focus on creating a caring, supportive, and more "paternalistic" environment than do higher education institutions that respond to "the challenge of educating students by providing a comprehensive curriculum, a program of student activities, and a variety of cultural activities to serve students and the community" (CCSN Handbook, 2002). CCSN is focused on students as rational, decision-making individuals with identifiable needs and who are active participants in determining the course of their education. In short, the focus of the institutional mission for the College is upon meeting the educational needs of adults, while the focus for the CCHS program is upon mediating the
transition of from childhood education to adult education. This does not imply that college in general or CCSN in particular is uncaring. Rather, secondary and postsecondary institutions view their relationship to students differently. Not only is the impact of providing this environment important to understanding the successful performance of dual enrolled students, but the blending of two divergent cultural ethics and legal philosophies has not been formally explored in the early enrollment literature.

Consistent with the notion of in loco parentis, there are a number of indicators that should be explored in order to determine the impact of creating a supportive environment on student outcomes. The Community College High School faculty, counselors, and administrators engage in intrusive advisement. CCHS personnel do not hesitate to provide proactive advising, often contacting parents to solicit assistance in helping students or providing advice and guidance on personal matters. Student support is pivotal for student success and caring and support must be balanced with student self-reliance and responsibility. When students feel that they are noticed, important, and appreciated they are likely to grow, develop, and succeed in college (Schlossberg, 1989).

As a result of this study, the following questions warrant further investigation: (a) how do dual enrolled high school students self-identify and what is the relationship between self-identification and student success?, (b) what are the expectations for achievement and growth among dual enrolled high school students and what is the relationship between student expectations and student success?, (c) what is the relationship between faculty perceptions of dual enrolled high school students and student success?, and (d) what is the impact of providing intrusive advisement to student success and what are the ideal enrollment limits implied by this type of student support?
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