5-1993

Comparison of the Three Major Administrative Approaches to the Management of Concurrent Enrollment Programs at Utah State University from 1987 to 1991

Haile Hirpa
Utah State University

UtahState University
MERRILL-CAZIER LIBRARY

www.manaraa.com

COMPARISON OF THE THREE MAJOR ADMINISTRATIVE

APPROACHES TO THE MANAGEMENT OF CONCURRENT

ENROLLMENT PROGRAMS AT UTAH STATE

UNIVERSITY FROM 1987 TO 1991

by

Haile Hirpa

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Education
(Occupational and Adult Education)

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1993

ACKNOWLEDGMENTS

I would like to express my heartfelt thanks to Dr. Gary S. Straquadine for his unlimited help, guidance, and encouragement, and his personal friendship above all. Dr. Straquadine walked me through the process of my study step by step, from start to finish. It was because of Dr. Straquadine's endless patience and diverse capabilities that I managed to complete this study.

Special thanks go to my committee members, Dr. Weldon S. Sleight, Dr. Lloyd W. Bartholome, Dr. Byron R. Burnham, and Dr. Stephen E. Poe, for their continuing help and advice. Their support and input were invaluable to the successful completion of this study. I also would like to thank Dr. Gilbert A. Long, my initial sponsor, for enabling me to begin this study.

I wish to express my appreciation to all friends who went out of their way to help me complete my research. Special thanks go to Susan H. Jonsson and the Class Division staff for providing most of the data.

Finally, I wish to express my sincere love and gratitude to my family members. My oldest daughter, Bultu H. Hirpa, took responsibility for raising her younger sisters and brother after my wife's death. If not for the love and kindness that Bultu showed to our family, my life could have been more difficult. The love and encouragement that my daughter, Duretti, my son, Matti, and my youngest daughter, Mitiki, provided, sustained me so that I could complete this study.

Last, but not least, I would like to thank my new wife, Hanna G. Fida, for giving me a new beginning in life.

Haile Hirpa

CONTENTS

LIST OF TABLES

ABSTRACT

Comparison of the Three Major Administrative Approaches

to the Management of Concurrent Enrollment

Programs at Utah State University

From 1987 to 1991

by

Haile Hirpa, Doctor of Philosophy

Utah State University, 1993

Major Professor: Dr. Gary S. Straquadine
Department: Agricultural Technology Systems and Education

The purpose of this study was to investigate the relationship of the Utah

State University concurrent enrollment program to the achievement (GPA),

recruitment, and retention of program participants after joining Utah State

University.

Three administrative approaches to the management of concurrent

enrollment programs were identified for the purpose of this study: Level One,

Level Two, and Level Three. Level One involved high school teachers who

taught and graded the concurrent enrollment program courses. In Level Two,

high school teachers taught the courses, but University professors prepared exams

and graded the papers. In Level Three, teaching, exam preparation, and paper

grading were all executed by university faculty.

To determine the effects of the three different administrative approaches on concurrent enrollment programs, four research questions were formulated: (1) For the three different administrative approaches to the management of the concurrent enrollment program practiced by Utah State University, are there different GPAs for comparable selected major courses for program participants? (2) For the three different administrative approaches, are there differences in the proportion of high school students recruited to Utah State University? (3) For the three different administrative approaches, are there different rates of retention for participating students one year after joining Utah State University? (4) For the three different administrative approaches, are there greater GPAs and retention rates when compared with Utah State University's regular freshmen population?

A sample from the target population of concurrent enrollment program participants from 1988 to 1991 was used. The data were collected from existing Utah State University records.

The dependent variables were GPA, recruitment, and retention, while administrative approaches were the three levels of the independent variable. The means for the Level One approach were statistically and educationally significant as compared to the remaining two levels. One year after joining Utah State University, the recruited concurrent enrollment program participants tended to

remain with Utah State University. Therefore, it was recommended that the

program be supported with the emphasis on encouraging more high school

teachers to teach concurrent enrollment courses in the future.

(101 pages)

CHAPTER I

INTRODUCTION

Background and Rationale for the Study

A concurrent enrollment program is an educational program which allows high school students, including seniors and in some cases juniors, to take college-level courses prior to graduation and simultaneously receive credit toward high school graduation and college (Greenberg, 1989).

Sponsors of concurrent enrollment programs include the National Association of Secondary Principals, the American Association of Higher Education, the Carnegie Foundation for the Advancement of Teaching, the Ford Foundation, and the Fund for the Improvement of Post-Secondary Education. These organizations have supported research, conferences, and projects dealing with high school/college curriculum redundancy and the changing demographics of the college population in general, and concurrent enrollment programs in particular (Greenberg, 1989). Today, university educators are emphasizing development of such programs as an alternative solution to the problem of declining enrollment in colleges and universities.

Voorheis (1979) reported that because a number a high school seniors complete most of their high school requirements by the end of their junior year, or after the first semester of their senior year, they often face an intellectual slack

time. Offering college-level courses to such high school students could challenge them intellectually and could also expose them to a college environment and a higher education curriculum. Moreover, concurrent enrollment program students could save money on tuition later when they enter the university as full-time students.

<div align="center">Benefits of Concurrent Enrollment Programs</div>

According to Greenberg (1989), concurrent enrollment programs provide numerous and substantial benefits to students, parents, high schools, post-secondary institutions, and society as a whole. The most obvious benefits to the students are the following: Students may earn college credits; receive reduced tuition costs; experience an increased desire to learn; and be relieved of senior year boredom commonly known as "senioritis." Parents can save on tuition costs and have the chance to assess their children's aptitudes for college-level work. Also as a result of concurrent enrollment programs, high schools enjoy reduced senioritis, a more open line of communication between high schools and colleges, enhanced status of high school teachers, and a more positive image in the community. Furthermore, participating colleges are able to recruit motivated students, create grant opportunities, enhance high school/college faculty interactions, and improve community relations. In short, the educational system benefits as a whole.

Gilmour (1981) observed that high school students go through a gradual process in selecting a college fairly early in their high school careers. Therefore, exposing high school students to college or university programs through concurrent enrollment programs could help recruitment at an early age.

In 1967, Utah State University leaders initiated a concurrent enrollment program, with major centers in Ogden and Uintah. The program was initiated to overcome the problems of intellectual slack time during the high school senior year and declining enrollment in colleges. Since then, the concurrent enrollment program has been perceived by Utah State University administrators as an important recruitment tool. In 1987, Utah State University College of Agriculture educators introduced three 100-level agricultural science courses as a concurrent enrollment program. Two years later, Parkinson (1989) concluded that the program had attracted students to Utah State University, and Denton (1989) concluded that a substantial number of participating students had achieved grades sufficient to earn them college credits.

Utah State University concurrent enrollment program administrators have been practicing three distinctly different approaches to management of the concurrent enrollment program (Table 1). Each approach can be classified as having an increasing level of administrative control.

In Level One, high school teachers were responsible for teaching the courses, preparing the tests, grading the tests, and assigning the final course grades. This was the type of management used at the Utah State University -

Ogden Center.

In Level Two, high school teachers received training at Utah State University prior to teaching and held adjunct status. The high school teachers in the Level Two approach would teach the courses at the high school while Utah State University faculty members prepared the tests, graded the tests, and assigned the final course grades. This was the type of management used for the three concurrent enrollment courses offered through the College of Agriculture.

The Level Three administrative approach had Utah State University extension faculty members teaching the courses, preparing the tests, grading the tests, and assigning the final course grades. This management strategy was used for concurrent enrollment courses offered through the Utah State University - Uintah Center.

Table 1

Increasing Levels of Administrative Control

Level One (Least Control at Ogden Center)	Level Two (Int. Control at Coll. of Agri. Center)	Level Three (Most Control at Uintah Basin Center)
High School Teachers Teach CEP Course	High School Teachers Teach CEP Course	USU Extension Faculty Teach CEP Course
High School Teachers Prepare/Deliver Exams	USU Faculty Prepare Tests Grade Papers	Extension Faculty Prepare Tests Grade Papers

Concurrent Enrollment Courses

Concurrent enrollment courses are regular Utah State University courses, mostly required general education classes or selected major courses, that are under direct supervision of one of the seven participating Utah State University colleges and 24 departments. Courses offered under the program and courses commonly taught at Ogden and Uintah centers are listed in Table 2 and Table 3, respectively. Grades obtained from these courses are used to determine the GPAs of the participating concurrent enrollment program students.

Problem Statement

Utah State University's concurrent enrollment program has been in operation for the last 25 years. While the program has been perceived to have important benefits, its impacts on the participants' achievement (GPA), recruitment, and retention under the three major administrative approaches have not been systematically assessed. Therefore, a comparison of the three administrative approaches was necessary to determine which of them has the greatest impact on participating students' achievement (GPA), recruitment, and retention.

Table 2

Concurrent Enrollment Courses Offered by USU 1987 to 1991

Center/Program	College	Courses
Level One	Humanities	ENGL 101, 113, 114, 120, 126
	Arts & Soc. Sci.	HIS 170, SW 105, THART 140, MUSC 102
	Business	BIS 111, 121, 140, BA 135, ACCT 105
	Science	CS 150, PHYX 101, 111, 112, CHEM 101, 111, BIOL 101, 215 PHYSL 130, MATH 101, 105, 106, 215, 220, 221, 222
	Education	PSY 101
	Engineering	ITE 101, 120, 121, 122, 201
	Family Life	NFS 122, FHD 150
Level Two	Agriculture	PL SCI 100, AG ED 101, ADVS 111
Level Three	Science	MATH 101, 105, 106, 215, 220, 221, 222, CS 170, CHEM 101, 111, BIOL 101, 125, MICROB 111, 112, PHYYSL 130
	Humanities	ENGL 001, 101, 115, 195
	Arts & Soc. Science	THART 140, 201, HIS 170, COMM 105, ART 101
	Business	BIS 140, 141
	Engineering	ITE 120, 121, 322

Table 3

Courses Taught at Both Level One and Level Three

Business	Engineering	Humanities	Science
BIS 140	ITE 120	ENGL 101	BIOL 101
	ITE 121	HIS 170	BIOL 125
		THART 140	CHEM 101
			CHEM 111
			MATH 101
			MATH 105
			MATH 106
			MATH 215
			MATH 220
			MATH 221
			MATH 222
			PHYSL 130

Definition of Terms

Achievement is defined as the grade point average (GPA) a student

received in a concurrent enrollment course and/or a Utah State

University - Logan campus course. The GPA is used as an

indication of student performance, and therefore, achievement in

the specific course. The summative GPA is considered an

indication of the student's performance, and therefore, achievement

in a group of courses (i.e., all concurrent enrollment courses, all

Utah State University - Logan courses, both concurrent enrollment courses and Utah State University - Logan courses).

Concurrent enrollment program (CEP) is an educational program which allows high school students, including seniors and in some cases juniors, to take college-level courses prior to graduation and simultaneously receive credit toward high school graduation and college.

Concurrent enrollment program grade point average (CEPGPA) is defined as the grade point average received by an individual student in a specific concurrent enrollment course.

Overall grade point average (OVALLGPA) is the grade point average received by CEP students obtained from all CEP courses taken on and off campus, as well as other college courses.

Passing grade is a GPA of 2.00 and above on a scale of 0.00 to 4.00.

     0.00 - 0.67 = F

     0.68 - 1.33 = D

     1.67 - 2.33 = C

     2.67 - 3.33 = B

     3.67 - 4.00 = A

Recruitment pertains to whether students came to the Utah State University campus after participating in the concurrent enrollment program to pursue their college education.

Retention, for the purpose of this research, was defined as a student's stay

for at least one year at Utah State University after participating in

the concurrent enrollment program.

Total concurrent enrollment program grade point average (TCEPGPA) is

the grand total concurrent enrollment program courses grade point

average received by participating students. This reflects only grades

received in the CEP courses. It does not include grades received as

a student enrolled at the Utah State University - Logan campus.

Utah State University campus grade point average (USUCPGPA) is the

grade point average received by CEP students for all courses after

joining Utah State University with the exception of TCEPGPA.

Year grade point average (YEARGPA) is the grade point average of CEP

students for the first year after joining Utah State University.

Participants who did not complete the first year were not included

in the group. This GPA is a calculation of the student's grades after

one year of enrollment at Utah State University, excluding the

grades (TCEPGPA) received in a CEP course.

Research Questions

Throughout this research the effects of the Utah State University

concurrent enrollment program under the three administrative approaches from

1987 to 1991 were compared. The major emphasis was on participants'

achievement (GPA), recruitment possibilities, and retention after one year.

Specific research objectives led to the following questions:

1. For the three different administrative approaches to the management of the concurrent enrollment program practiced by Utah State University, are there different GPAs for comparable selected major courses for program participants?

Hypothesis:

When the three major administrative approaches are compared, there is no significant difference between concurrent enrollment program GPA (CEPGPA), Total CEP GPA (TCEPGPA), USU Campus Course GPA (USUCPGPA), GPA after one year at USU for selected USU general education courses and selected major courses (YEARGPA), and Overall CEP participants' GPA (OVALLGPA).

A. For CEP Course GPA (CEPGPA)

HO: $\mu1 = \mu2 = \mu3$
HA: $\mu1 \neq \mu2 \neq \mu3$

B. For CEP Total GPA (TCEPGPA)

HO: $\mu1 = \mu2 = \mu3$
HA: $\mu1 \neq \mu2 \neq \mu3$

C. For USU Campus GPA (USUCPGPA)

HO: $\mu1 = \mu2 = \mu3$
HA: $\mu1 \neq \mu2 \neq \mu3$

D. For End of First Year GPA (YEARGPA)

$$HO: \quad \mu1 = \mu2 = \mu3$$
$$HA: \quad \mu1 \neq \mu2 \neq \mu3$$

E. For Overall GPA (OVALLGPA)

$$HO: \quad \mu1 = \mu2 = \mu3$$
$$HA: \quad \mu1 \neq \mu2 \neq \mu3$$

2. For the three different administrative approaches, are there differences
in the proportion of high school students recruited to Utah State University?

Hypothesis:

There is no significant difference in recruitment, which can be

attributed to the three administrative approaches, in the proportion

of high school students who attend Utah State University as a result

of participating in a concurrent enrollment program.

$$HO: \quad \sigma^2_1 = \sigma^2_2 = \sigma^2_3$$
$$HA: \quad \sigma^2_1 \neq \sigma^2_2 \neq \sigma^2_3$$

3. For the three different administrative approaches, are there different
rates of retention for participating students one year after joining Utah State

University?

Hypothesis:

There is no significant difference in the rate of retention of

concurrent enrollment program participants, which can be attributed

to the three administrative approaches, after enrollment at Utah

State University.

$$HO: \quad \sigma^2_1 = \sigma^2_2 = \sigma^2_3$$
$$HA: \quad \sigma^2_1 \neq \sigma^2_2 \neq \sigma^2_3$$

4. For the three different administrative approaches, are there greater GPA and retention rates when compared with Utah State University's regular freshmen population?

Hypothesis:

There is no significant difference in the three administrative approaches when concurrent enrollment program students are compared to the regular freshman population in terms of GPA and retention rate at the end of their first year.

A. GPA

$$HO: \quad \mu_1 \text{ CEP} = \mu \text{ USU}$$
$$HA: \quad \mu_1 \text{ CEP} \neq \mu \text{ USU}$$

$$HO: \quad \mu_2 \text{ CEP} = \mu \text{ USU}$$
$$HA: \quad \mu_2 \text{ CEP} \neq \mu \text{ USU}$$

$$HO: \quad \mu_3 \text{ CEP} = \mu \text{ USU}$$
$$HA: \quad \mu_3 \text{ CEP} \neq \mu \text{ USU}$$

B. Retention

$$HO: \quad \sigma^2_1 \text{ CEP} = \sigma^2 \text{ USU}$$
$$HA: \quad \sigma^2_1 \text{ CEP} \neq \sigma^2 \text{ USU}$$

$$HO: \quad \sigma^2_2 \text{ CEP} = \sigma^2 \text{ USU}$$
$$HA: \quad \sigma^2_2 \text{ CEP} \neq \sigma^2 \text{ USU}$$

$$HO: \quad \sigma^2_3 \text{ CEP} = \sigma^2 \text{ USU}$$
$$HA: \quad \sigma^2_3 \text{ CEP} \neq \sigma^2 \text{ USU}$$

Parkinson (1989) recommended further study of the students who participated in the concurrent enrollment program and who continued to attend Utah State University. Denton (1989) also recommended that research on the College of Agriculture program should continue in order to determine the influence of the program on students' achievements, but should be limited to students with high school GPAs of 3.0 or better. In a preliminary study at the Ogden and Uintah Center, it was found that the majority of the concurrent enrollment program participants do not come to the Utah State University campus as intended, but go to nearby colleges and universities (Johnson, Medlyn, & Tueller, 1990).

The results of this study will help Utah State University administrators to assess the impact of the program as a recruitment tool. If students' achievements and rate of retention are practically and educationally significant, the program should be entitled to more grants and sponsorship to reach its fullest capacity. If not, financing should be re-evaluated. This study will help determine the influence of Utah State University's concurrent enrollment programs on student achievements, retention, and recruitment.

Scope of the Study

This research was conducted as an ex post facto study under the pre-experimental static-group comparison design. It is an ex post facto experiment because the effects studied have already taken place.

Four school years, 1987-88, 1988-89, 1989-90, and 1990-91, under the three levels (Levels One, Two, and Three) with their respective three distinct administrative approaches, were included in the study.

The target population included 3,170 students from the Ogden center, 4,997 students from the Uintah center, and 515 students from the College of Agriculture program.

Summary

For the last 25 years, the Utah State University concurrent enrollment program has been perceived as an important recruitment tool. Parkinson (1989) studied the Utah State University College of Agriculture concurrent enrollment program and ascertained that it attracts students to Logan. However, the influence of concurrent enrollment programs at Level One and Three is not similarly known and has not been compared with Level Two. Therefore, the comparison of the Ogden administrative approach, the Uintah administrative approach, and the College of Agriculture administrative approach was deemed crucial in regards to concurrent enrollment program participants' achievements (GPA), recruitment, and retention. The comparison should also determine the

relative efficacy of the three programs with respect to their administrative

approaches.

CHAPTER II

LITERATURE REVIEW

This chapter describes the history of advanced placement, its implications for the establishment of concurrent enrollment programs, and its influences on students' achievement, retention, and recruitment. In addition, this chapter explores major concepts such as concurrent enrollment programs across the U.S., attributions of academic success, declining enrollment in agricultural colleges, and students' recruitment to colleges.

Concurrent Enrollment: Its Origin in Advanced Placement

Concurrent enrollment originated in the concept of advanced placement. The main purpose of the advanced placement program was to offer academically advanced high school students an opportunity to take college-level courses. As a result, in the last two decades, high school students have been given the opportunity to earn college credit applicable toward an undergraduate degree prior to enrolling at a college or university of their choice (Dillon, 1986). Since the 1970s, the advanced placement program has received considerable attention in educational literature (Carnegie Commission on Higher Education, 1973; Menacker, 1975; National Association of Secondary School Principals, 1975; Boyer, 1981; O'Keefe, 1981; Willingham & Morris, 1986).

LeMay (1985) explained that advanced placement offers an opportunity for students who are able, motivated, and confident to take college-level course work while in high school. These high achievers continue to excel on the college campus. Upon reviewing the program, which has been very effective for the last 25 years, Hanson (1980) commended the program for encouraging advanced students. Chamberlain, Pugh, and Schellhammer (1978) further noted that advanced placement benefitted students throughout their undergraduate years. Advanced placement continues to influence students' academic progress throughout the undergraduate years (Arbolino, 1976; Hochman, 1970; Kastrinos & Erk, 1974; Modu, Reed, & Coon, 1975; White, 1974).

Dillon (1986) found that most colleges and universities emphasized the completion of advanced placement courses and that completion did in fact positively affect student opportunities for higher education. Investigating why students enroll in advanced placement programs, Hogan (1971) found that 57% of the students participated because they were interested in a particular field that was not adequately covered in regular high school courses; and 43% enrolled to get a head start in college. Hogan also learned that 76% of advanced placement participants believed the courses helped them in their college course work.

In 1988, approximately 200,000 students, about one-third of the nation's high school seniors, enrolled in the advanced placement program, which is sponsored by the College Board (AP Yearbook, 1988). According to Greenberg (1989), the program is designed by teams of high school and college educators,

which allows high schools to offer college-level courses in a variety of disciplines. Successful completion of the courses enables students to earn high school credits. In addition, students may receive college credits. To do so, students must sit for a standardized test, offered by the Educational Testing Service, and then they must submit their exam results to the college of their choice. Exams are graded on a scale of 1 to 5: 5 means extremely well-qualified for college credit; 4 means well-qualified; 3 means qualified; 2 means possibly qualified; and 1 means no recommendation. However, even though students enrolled in the program are an academically select group, colleges do not guarantee the acceptability of advanced placement exam results.

The advanced placement program has its strengths and limitations. It is a well-known and refined program that is cost-efficient and operates without disruption within the regular school schedule. Teachers in the program also have the chance to interact extensively with college educators. However, the program is limited by lack of assurance for college credits, the fact that exams are offered only once a year in May, and the fact that only high achievers may enroll.

Concurrent Enrollment Programs Across the U.S.

According to Greenberg (1989) there are seven concurrent enrollment programs in action which are recognized by the concurrent enrollment nationally recognized figures. Three programs are in New York (Syracuse University's Project Advance Program, Kingsborough Community College's College Now

Program, and LaGuardia Community College's Middle College High School

Program); two are in Florida (the Florida Dual Enrollment Model and Florida

International University's Partners in Progress Program); one is in Minnesota

(Minnesota Post-Secondary Enrollment Options Programs), and one is in

Washington (Seattle University's Matteo Ricci College Programs). These

programs have different capabilities, program designs, student populations,

strengths, limitations, and specific locations of their own. The major strength of

all the programs is that participating students may receive credit towards high

school graduation and college. However, transfer of credits from the sponsoring

institution to other colleges or universities is not guaranteed.

Project Advance Program of the Syracuse University

Syracuse University's Project Advance was established in 1973 to overcome

the problem of "senioritis" in New York areas. At present, this program serves

New York, Maine, Massachusetts, Michigan, and New Jersey. Regular high school

teachers learn to teach these concurrent enrollment program courses at a summer

training course at Syracuse University. Furthermore, participation in the summer

workshops qualifies the high school teachers for adjunct instructors' status.

Periodic in-service programs were given to the adjunct instructors every fall and

spring.

The courses are taught at the high school sites and have the same content

as the courses offered on the Syracuse University campus, but a three-credit

university semester course is extended to a year-long course for the high school seniors. Currently, the following courses are offered: biology, calculus, chemistry, English, psychology, sociology, and computer engineering. Tests are designed by Syracuse University faculty.

Students who successfully pass the tests received credit for high school and college. Based on standardized testing, Syracuse University's Project Advance students were superior to their peers who planned to attend college. According to Wilbur (1984), these students averaged nearly 100 points higher than the national mean on the verbal portion of the SAT and 117 points higher on the math portion.

As a result of a four-year follow-up of the Syracuse University Project Advance Class of 1977, Mercurio, Schwartz, and Oesterle (1982) found that Project Advance graduates who went on to college had a very low rate of attrition and achieved higher grades. They recommended overwhelmingly that, given the opportunity, high school students should enroll in Project Advance. In this study, it was also noted that the courses were taught by carefully selected high school faculty members whose credentials were reviewed by a faculty committee assembled from the appropriate Syracuse University departments.

Although the benefits far outweigh any limitations, a few problems still exist. Tuition is charged, although at a reduced rate, and the program is mainly designed for high academic achievers. However, educators are currently led by public policy of equal access to education for everyone.

Voorheis (1979) examined concurrent enrollment projects at Syracuse University, the University of Massachusetts at Amherst, and the University of Maine at Orono. Voorheis concluded that, despite its limitations, concurrent enrollment is a workable and carefully thought-out program in which schools and students can benefit.

College Now Program of the Kingsborough Community College

The Kingsborough Community College's College Now Program was established in 1984 at the Kingsborough Community College, City University of New York. College Now concurrent enrollment students take college-level courses taught by adjunct faulty at high school sites. Courses offered include Introduction to Business Administration, Introduction to Social Science, Humanities, Introduction to Science, and Introduction to Computer Science. The College Now program is designed for eight New York City high schools. Students are invited to visit the Kingsborough campus at least once each semester.

To be admitted, a student must earn a cumulative average of 65% and 80% in high school. College Now courses are tuition-free, but to enroll, students must pass a battery of tests known as the Freshman Assessment Program. Those who earn less than the minimum requirement are allowed to take a remedial course and, if they pass, are given the opportunity to take the college-level courses free of charge.

The College Now program demonstrates that it is possible to operate concurrent enrollment programs that are relatively successful with average students. For example, the 319 students enrolled in the program in a recent year earned slightly under a B- grade average. Almost 70% made a passing grade. However, the College Now program has been supported by special funding from the state legislature. If for some reason the state revokes this funding, the program will be in jeopardy (Greenberg, 1989).

Middle College High School of LeGuardia Community College

LeGuardia Community College's Middle College High School was opened in 1974 on the campus of LeGuardia Community College in Queens, New York, to serve high-risk students with average academic potential. Greenberg described the program as an intensive and supportive tool for student success. Students may receive both high school and college credit for the college-level courses they take. Eligibility for admission to the program is determined by a counselor who will also periodically monitor the progress of the student. To be eligible, students must graduate from one of six feeder junior high schools to the Middle College High School; moreover, they must be identified as potential high school dropouts who have the desire to join the Middle College High School.

A typical Middle College High School student taking college courses has high school grades in the 70% to 80% range with SAT verbal scores in the 300 to 350 range and SAT math scores in the 350 to 400 range. Each year, about 90

Middle College students take college-level courses. Since the program started, about 700 students, 30% of the Middle College students, have completed college level courses, earning a mean grade point average of slightly under C+ (Wilbur, 1984).

Partners in Progress Program of Florida International University

Florida International University's Partners in Progress Program, sponsored by Florida International University, began in 1982. It serves minority students in four Miami high schools and 14 high schools in Dade County. Partners in Progress students were brought to campus for two consecutive summers. In the first summer, they received basic skills training; in the second summer, they were allowed to take up to six credit hours of regular college courses depending on their aggregate SAT scores. Students with less than 950 on their SAT score were limited to one college course. Students received scholarships for fees and books, and materials were waived. Enrollment was open to any student from participating high schools with a C average or better. The students' performance in their college courses was comparable to that of the university's regular freshman. Again, the major problem was limited financial support (Greenberg, 1989).

The Florida Dual Enrollment Model

The Florida Dual Enrollment Model is a state-wide program in which high school students concurrently enroll in college courses taught at the high school sites. The chief strength of this program is its flexibility in serving each school district according to its needs. In every case, the entry criteria are determined by negotiations between the colleges and the school districts.

Post-Secondary Enrollment Option Program of Minnesota

Minnesota's Post-Secondary Enrollment Option Program was enacted by the Minnesota State Legislature as part of the 1985 Omnibus School Aid Act. As a result, high school juniors and seniors could take regular college courses, tuition-free, at the college site and receive high school and college credit. However, in 1986, modified legislation forced students to pay tuition for college credits, which eliminated the benefits of the concurrent enrollment program (Greenberg, 1989).

Matteo Ricci College of Seattle University

Seattle University's Matteo Ricci College, established in 1975, is a six-year program that begins at the high school freshman level and concludes with a bachelor's degree awarded by Seattle University, Washington (Greenberg, 1989). The program compresses the traditional eight school years into six years and addresses the problems of curriculum redundancy by offering, as an alternative, a

well-articulated and integrated liberal arts education. The curriculum is divided
into lower and upper divisions, or Matteo I and Matteo II, respectively. Matteo I
is conducted on the campus of the Seattle Preparatory School, while Matteo II is
conducted on the campus of Seattle University. Courses are in culture, literature,
religion, language-skill development, artistic-aesthetic development, unified
science, and psycho-physical for Matteo I; and philosophy, language, art, western
culture, social ecology, and cultural interface for Matteo II. According to Matteo
Ricci administrators, most Matteo Ricci students score well above national norms
on college aptitude tests such as the SAT and ACT.

Origin of Concurrent Enrollment Program Curriculum

High school/college curriculum redundancy and the changing demographics
of the college population could affect the appropriateness of many introductory
college-level courses (Greenberg, 1989). Curriculum redundancy, or duplication,
and an overlap of content during the last two years of high school and the first
two years of college have been recognized for several years. For students who are
deficient in the basic skills, duplication is essential, but for academically advanced
students, it is a waste of time. Blanchard (1971) concluded that nearly one third
of the subject matter during the first two years of college was merely a repetition
of what had already been taught in high school. Blanchard also estimated, based
on 1965 enrollment data and tuition costs, that $420 million had been spent that
year to teach courses in college that had been taught in high schools.

The Regents of the University of the State of New York (1974) concluded that many young people are physically, socially, and intellectually more advanced today than their parents were at the same age. This conclusion led them to reappraise many of the introductory college-level courses. Beginning with the G.I. Bill after World War II, colleges have opened their doors to an array of students representing the broad range of achievement found among the nation's high school graduates. In 1985 alone, more than one million high school graduates entered some type of post-secondary institution with varying degrees of capabilities (Boyer, 1987). Concurrent enrollment programs need to follow the same trend and consent to admit low, as well as high achieving students. As Parnell (1985) stated, bridges such as concurrent enrollment programs should be built between high schools and colleges.

<div align="center">Attributions of Academic Success</div>

Both advanced placement and concurrent enrollment programs emphasize student performance and success. Several studies have indicated that students have to master the prerequisite courses to succeed in their undergraduate work. For example, according to Sorge, Dennis, Wark, and Lois (1984), students who were successful in math were also successful in computer science. Furthermore, Marsh, Flake, Anderson, and Norman (1985) concluded that mathematical skills were needed as prerequisites for success in introductory biology courses. Moreover, Harris (1983) reported that mathematical skill levels were used in

predicting success in general college chemistry courses.

Fontana and David (1985) examined the relative importance of 12 categories of factors related to students' academic success. These factors were study habits, course content, teachers, social factors, interest, motivation, ability, domestic security, peers, luck, financial security, and health. They concluded that study skills are relatively the most important of all.

Kallingal (1989) indicated that the critical factors in college-level course achievements are ability and effort. Other researchers reported that the main factor influencing college success is study skill (Brechner, 1979). In his follow-up study, Watkins (1979) indicated that study skill is the major predicting factor for university success. Moreover, Alexander, Aaron, and Vines (1984) and De Silva, Deema, Freund, and Clara, (1987) also pointed out study skill as an essential success strategy in making it through college.

Academic success in concurrent enrollment programs is also commonly attributed to study skill (Trice, Ashton, Ogden, Stevens, & Booth, 1987). Wood (1988) reported that it is possible to help low achieving students and make them succeed in college work by teaching them good study skills. In his study called "Who is the successful student?," Borchardt (1989) asserted that good study habits are critical to academic success. Hence, one may infer that students' achievement (GPA) in concurrent enrollment programs reflects their study habits.

Fadale (1990) concluded that persistence breeds success, while a positive college environment, realistic expectations, a sense of belonging, and academic

success also contributed to the overall achievements of students. According to Scherer and Wygant (1982), student success increases as a result of students' understanding of goals and enhanced aspirations. At the University of California, San Diego, peer counseling proved to be an important strategy in the academic success program for economically disadvantaged minority groups (Buck & Pineda, 1985). Pairing courses such as reading and study skills with traditional academic courses like biology revealed benefits for enhancing academic achievement (Rauch & Fillenworth, 1985).

But the achievements of concurrent enrollment program participants cannot be viewed only in terms of study skills. Therefore, counselors should be advised to inform concurrent enrollment program participants to be aware of all other factors needed for successful academic careers.

Declining Enrollment in Agriculture

One of the major reasons for initiating the Utah State University College of Agriculture concurrent enrollment program was to overcome the problem of declining enrollment in agriculture. Robbins (1985) studied 77 colleges of agriculture and found a decline of 18% in the enrollment of undergraduates between the years 1981 and 1984. Pals (1987) listed four major reasons for declining enrollment in the field of agriculture:

1. Graduation requirements. Increased high school graduation requirements left students with fewer electives, and thus reduced opportunity to

study agriculture in high school.

2. The farm crisis. A general negative attitude toward farming and agriculture was perceived.

3. College entrance requirements. Colleges seeking to improve the quality of graduates have raised entrance requirements, which has led to declining enrollment in agricultural colleges.

4. Declining funds. Federal and state vocational education funds have gradually declined along with local budgets.

To increase agricultural college enrollment, Pals recommended several solutions. He suggested that the quality of instruction could be improved by assisting counselors and administrators in their understanding of the opportunities in agriculture. He also recommended seeking approval for science, math, or economics credit at the high school level for agricultural courses; combatting the negative image born of the farm crisis through adult education; continuing agriculture in the classroom programs at the elementary school level; and increasing the number of qualified agriculture teachers. If hiring more qualified agricultural teachers were not feasible, limiting enrollment to a manageable size could help in maintaining quality. Increasing the quality and quantity of students in elementary and secondary school could help to increase enrollment in post-secondary institutions.

Coulter, Staton, and Geocker (1986) assessed that

more than 48,000 employment openings are projected annually in the United States for new college graduates with expertise in agriculture,

natural resources, veterinary medicine and closely allied fields. Yet, fewer than 44,000 qualified college graduates are anticipated each year, resulting in a residual shortfall of about ten percent. (p. 2)

The fact that there are employment opportunities for new college graduates could make the concurrent enrollment program an important tool in boosting the recruitment of students to college programs and overcoming the problem of declining enrollment.

Student Recruitment into Colleges

The importance of student recruitment has grown because of the general decline in enrollment (Frost, Snow, & Novak, 1987). The demographic changes in student population, faculty, and patrons have affected the options available to campuses (Scott, 1987). In his report, Scott stated that recruiting new full-time freshmen requires strategy development and careful examination of applications and admission offers. Furthermore, recruiting students requires special mailings and advertisements. In 1985, the Los Angeles Community College District (LACCD) overcame its major enrollment decline by incorporating a new campaign. This district-wide campaign involved radio, television, and newspaper announcements designed to provide information about financial assistance, tuition waivers, and the academic calendar (Koltai, 1985). To this effect, the concurrent enrollment program distributes information about college opportunities, which could assist in recruiting efforts.

Summary

Advanced placement, which has been successful since its implementation, and concurrent enrollment programs, which evolved from advanced placement, are practiced throughout the U.S. and are promising to help students to be successful in academic careers. The declining number of students in agriculture as well as in other fields has forced administrators to look into the alternative of adapting the concurrent enrollment program as a critical recruiting tool. Even though study skills are the major attribute of college success, concurrent enrollment programs could also prove significant in augmenting students' academic achievements. This study will address the role of Utah State University's concurrent enrollment program in student achievement, retention, and recruitment.

CHAPTER III

METHODS AND PROCEDURES

This chapter describes procedures used to investigate the characteristics of concurrent enrollment programs at Utah State University from 1987 to 1991. This study focused on three dependent variables and one independent variable with three levels. The dependent variables were (a) student achievement as measured by GPA from the general education and selected major courses, (b) recruitment, and (c) retention after one year at Utah State University. The independent variable was the administrative approach to the management of concurrent enrollment which was classified into three levels of administrative controls: Levels One, Two, and Three.

Population and Sampling Procedures

Samples of concurrent enrollment program participants from control Levels One, Two, and Three were drawn from the populations of participants who had enrolled in the programs. Because this study specifically focused on high school students who had been recruited by Utah State University and who had been retained in the program, extension students and other category students were excluded. The target population of Level One was 3,170 participants. From Levels Two and Three, the target populations were 515 and 4,997 students, respectively. Samples of 793 participants from Level One, 130 from Level Two,

and 1,250 from Level Three were included in the study.

Sample size figures were obtained from Cohen's (1977) sample size formula, stated as follows:

$$n = N.05/400f^2 + 1$$

where N.05 is the necessary target population for the given α, u, and desired power at $\alpha = .05$. f is the nontabled effect size (ES) rounded to the nearest integer and/or the effect size; α is the significance criterion; u is the number of degrees of freedom; and n is the sample size. Four hundred (400) is a constant from Cohen's formula. For this study, the following assumptions were made: $\alpha = .05$, $u = k-1$, $k = 3$, $u = 2$, $f = .1$, and power $= .95$.

For the Level Two administrative control, the sample size was computed as follows:

$$n = 515/400(.1 \text{ x}.1) + 1$$
$$= 129 + 1$$
$$= 130$$

All members in each group were from defined populations already placed on a list in a random order. In the case of the College of Agriculture program (Level Two), a sample of 130 participants from a list of 515 students was selected. To use systematic sampling, 515 was divided by 130, which was approximately equal to 4. Then, a number smaller than 4 was selected, say 2. Two (2) was used as the random start. Then, every fourth name from the list of the target population was chosen, for example, 2, 6, 10, 14, and so forth. This systematic

sampling is similar to simple random sampling because the population has already been placed on a list in random order. Level Two was chosen as an example because there were fewer participants in Level Two than in the other two control levels. A similar procedure and formula were applied for Levels One and Three.

For Level One:

$$n = 3170/400(.1x.1) + 1$$

$$= 793$$

For Level Three:

$$n = 4997/400(.1x1) + 1$$

$$= 1250$$

Design

In most educational research, the researcher's intent is to discover the relationship between variables. Two variables are said to have a relationship if the values of the dependent variables can be predicted from the knowledge of the values of the independent variable (Borg & Gall, 1983).

One approach for exploring relationships between variables is to use ex post facto research. Ex post facto research can be used to analyze relational data involving comparison of groups that are different with regard to a critical value, but are otherwise comparable. However, since subjects cannot be randomly assigned to treatment groups, the relationships among variables cannot be experimentally manipulated. According to Borg and Gall (1983), in ex post facto

research the relationships can be studied after they have, presumably, exerted their effect on another variable. The major advantage of the ex post facto research technique is that it helps the investigator to examine relationships among many variables in a single study. For further research, an experiment could be conducted on variables with strong relationships. In this research, the ex post facto approach allowed us to study the predictability of student achievement, retention after one year, and potential for recruitment based on the concurrent enrollment program administrative control levels.

Campbell and Stanley (1963) referred to the "ex post facto experiment" as a technique grouped under the static-group comparison design. Ex post facto research was first introduced by Chapin and Queen (1937) and was later extensively treated by Greenwood (1945) and Chapin (1955). Greenwood and Chapin concluded that the ex post facto approach is an important tool for comparison studies.

Data Collection

The data for this research were acquired from Utah State University's existing records. Nominal information included course number, sex, and college major. Interval measurements included individual course grade, total concurrent enrollment course GPA, Utah State University campus GPA, GPA after one year, and the overall GPA.

Course GPA was derived from the concurrent enrollment courses completed by the students in the different colleges. General education courses that students completed in the concurrent enrollment program were also identified.

Data Analysis

For the purpose of analysis, the data collected were placed on a computer diskette using SPSS/PC (Neuroses, 1988). The first step in a static-group comparison design is to compute descriptive statistics such as frequency, mean, mode, and median. Next, statistics describing the dispersion of the range, variance, standard deviation, and standard error of mean were computed. A test of statistical significance was then calculated.

The choice of a significance test depends on whether the investigator is interested in comparing groups with mean score, variance, median, rank scores, or proportions. In this study, mean score, variance, confidence intervals, and proportions were used. For all relevant circumstances, a priori probability of alpha at 0.05 was used.

To investigate the differences between the three administrative approaches used in the concurrent enrollment program, the proportions of students attending Utah State University for each group were compared. To avoid Type I confounding error, analysis of variance was used. Post hoc comparions (LSD, Duncan's, Tukey's, and Scheffe's) were used to determine which groups were significantly

different, once significant *F*-tests were obtained in analysis of variance. Scheffe's test, which is the most conservative, was used for reporting.

To determine the differences resulting from administrative approaches, an analysis of variance (ANOVA) was conducted for the following:

> Administrative approaches by CEP course GPA (CEPGPA)
>
> Administrative approaches by total CEP GPA (TCEPGPA)
>
> Administrative approaches by USU campus GPA (USUCPGPA)
>
> Administrative approaches by Year GPA (YEARGPA)
>
> Administrative approaches by Overall GPA (OVALLGPA)

To identify if there were different rates of recruitment success for the three administrative approaches, a chi-square analysis was performed comparing the recruitment rates with the three administrative approaches.

To study the rate of retention, a chi-square analysis was performed for administrative approaches by retention.

The four major research questions were analyzed as follows:

Analysis method for hypothesis #1. ANOVA was used to assess the difference between the GPA of selected courses by administrative approaches. *T* tests were used when only two levels of variables were involved.

Analysis method for hypothesis #2. Proportions of participants enrolled at Utah State University one year following movement to main campus were compared using chi-square analysis.

Analysis method for hypothesis #3. Proportions of enrollment were compared using chi-square analysis to investigate the rate of enrollment due to the different administrative approaches at Utah State University.

Analysis method for hypothesis #4. Mean GPA CEP courses by administrative approaches were compared to USU GPA using t-tests as follows:

Level One CEP GPA compared to USU freshman GPA

Level Two CEP GPA compared to USU freshman GPA

Level Three CEP GPA compared to USU freshman GPA

Retention proportions relative to administrative approaches were compared to Utah State University freshman general retention using z scores for:

Level One retention compared to USU freshman retention

Level Two retention compared to USU freshman retention

Level Three retention compared to USU freshman retention.

CHAPTER IV

FINDINGS

The purpose of this research was to identify the differences among the three levels of concurrent enrollment management and student achievement, recruitment, and retention. To meet the objectives of the research, four research questions were formulated:

1. For the three different administrative approaches to the management of the concurrent enrollment program practiced by Utah State University, are there different GPAs for comparable selected major courses for program participants?

2. For the three different administrative approaches, are there differences in the proportion of high school students recruited to Utah State University?

3. For the three different administrative approaches, are there different rates of retention for participating students one year after joining Utah State University?

4. For the three different administrative approaches, are there greater GPAs and retention rates when compared with Utah State University's regular freshmen population?

The purpose of this chapter is to summarize the major findings of the research.

Description of Selected Characteristics in the Sample

It was determined that Utah State University's concurrent enrollment program operates under three different levels of administrative control. Of the total participants in this study, 36.5% were from the Ogden Center, which functions at the first and lowest level of administrative control. Six percent of the program participants were from the College of Agriculture concurrent enrollment program, which functions at the second, intermediate level. The highest percentage of participating students, 51.5%, came from the Uintah Center, which also functions at the highest level of administrative control. The number and percentage of students included under each level of administrative control are indicated in Table 4.

Table 4

Number and Percentage of Students in Each Level of Administrative Control

Level of Administrative Control	Frequency	Percentage
Lowest (Ogden Center)	793	36.5
Intermediate (College of Agri.)	130	6.0
Highest (Uintah Center)	1,250	57.5
Total	2,173	100.0

The study was based on a sample of 2,173 students who participated in the concurrent enrollment program from 1988 to 1991. The number and percentage of students taken from each year are displayed in Table 5. Concurrent enrollment students were from the junior and senior classes. To reduce the selection error, each participant was enlisted once. Table 6 shows that more females participated in Levels One and Three than males. In Level Two, more males participated in the program than females.

Table 5

Number and Percentage of CEP Students Enrolled in Each School Year Included in the Study

Year	Frequency	Percentage
1988	767	35.3
1989	495	22.8
1990	666	30.6
1991	245	11.3
Total	2173	100.0

Table 6

Number and Percentage of CEP Participants by Gender

Gender	Level 1	Level 2	Level 3	Total
Male	42%	60%	45.6%	981
Female	58%	40%	54.4%	1192
Total	793	130	1250	2173

The ages of program participants varied from 16 years to 20 years old. Table 7 indicates that 51.7% of the participants were 17 years old.

Table 7

Ages of Concurrent Enrollment Program Participants by Levels

Age	Level One	Level Two	Level Three	Total Frequency	Percentage
16	77	1	192	270	12.4
17	356	3	765	1124	51.7
18	304	44	263	611	28.1
19	41	32	4	77	3.5
20	15	50	26	91	4.1
Total	793	130	1250	2173	100.0

Mean = 17.45

SD = 0.81

Among the concurrent enrollment participants, there were students majoring in each of the eight colleges at Utah State University. While most of the participants majored in engineering, the lowest number of students majored in the natural sciences. Table 8 further indicates that 7.1% of the participants had not yet declared a major. Concurrent enrollment program participants majored in different colleges after completing the concurrent enrollment courses. Therefore, they are not classified under any of the concurrent enrollment administrative levels once they enroll at Utah State University.

Table 8

Number and Percentage of Majors for CEP Participants

College	Frequency	Percentage
Agriculture	42	1.9
Business	144	6.6
Education	86	4.0
Engineering	157	7.2
Family Life	52	2.4
HASS	80	3.7
Natural Science	9	0.4
Science	135	6.2
General Registration	27	1.2
Undeclared	143	7.1
Not at USU	1298	59.7
Total	2173	100.0

Males tended to major in Agriculture, Engineering, Natural Resources, or Science; females tended to major in Education, Family Life, or Humanities. Males and females majored in Business with nearly the same frequency (see Table 9). The participants in Table 9 have already enrolled at Utah State University.

Table 9

Gender of CEP Participants by Major

Major	Gender	
	Male	Female
Agriculture	78%	22%
Business	49%	51%
Education	2%	98%
Engineering	87%	13%
Family Life	6%	94%
Humanities & Art	33%	67%
Natural Resources	100%	0%
Science	56%	44%
General Reg.	56%	44%
Undeclared	46%	54%
Total	45%	55%

Among the eight colleges at Utah State University, 48 different courses were offered under concurrent enrollment. Fourteen percent of the participants completed English 101; 10.3% completed History 170; and 9.7% completed Math 105 (see Table 10).

Table 10

Number and Percentage of Students in Sample Enrolled in Concurrent

Enrollment Program Courses

Course	Frequency				Percentage
	1988	1989	1990	1991	
ACCTG 105	2	2	6		0.5
ADVS 111	19	12	17	6	2.5
AGED 101	7	3			0.5
ART 101	2	3	1		0.3
BA 135	7	19	59	9	4.3
BIO 101	2	2	10	5	0.9
BIO 215	9	5	2		0.7
BIS 111	4	10	19	7	1.8
BIS 121		1	7	1	0.4
BIS 140	1	5	6	2	0.6
BIS 141			1	1	0.1
CHEM 101	18	14	13	9	2.5
COMM 105	1	3			0.2
CS 150	5		1		0.3
CS 170	6				0.3
ENGL 101	91	76	97	38	14.0
ENGL 113	7	22	16		2.1
ENGL 114	17	13	7		1.7
ENGL 115	11	15	17	5	2.2
ENGL 120	5		6	2	0.6
ENGL 126	11	16			1.2
FHD 150		2	1	5	0.4

(table continues)

	1988	1989	1990	1991	
HIS 170	73	46	84	21	10.3
ITE 101	5	8	30	7	2.3
ITE 120	3	6	5	1	0.7
ITE 121	13	2	4		0.9
ITE 122	1				0.0
ITE 201			1		0.0
ITE 322			2	1	0.1
MATH 101	25	10	44	27	5.0
MATH 105	94	39	48	29	9.7
MATH 106	60	15	17	17	5.0
MATH 215	40	6	7		2.4
MATH 220	26	6	15	9	2.6
MATH 221	16	5	5	4	1.4
MATH 222	15	2	2		0.9
MICROB 111	2	4	4	3	1.8
MICROB 112	2	4	4	2	0.6
MUSIC 102	4	4	5	2	0.7
NFS 122	2	3	10	12	1.2
PHYSL 130	5	10	4	2	1.5
PHYX 101	10	14	2		1.2
PHYX 111		8	6		0.6
PHYX 112		1	4		0.2
PLSCI 100	18	24	21	7	3.2
PSY 101	22	18	11	2	2.5
SW 105	13	8	4		1.2
THART 140	88	28	31	11	7.3
Total	767	495	666	245	2173
	35.3%	22.8%	30.6%	11.3%	100.0%

From 1988 to 1991, the general freshman GPA increased from 2.612 to 2.725, with a mean of 2.65 and a standard deviation of 0.04. The Utah State University Office of Institutional Research (1992) provided this information as listed in Table 11.

Table 11

USU Freshman GPA, 1988 to 1991[a]

Year	GPA[b]
1988	2.612
1989	2.627
1990	2.671
1991	2.725

Mean = 2.65

SD = 0.04

[a] Data obtained from USU Office of Institutional Research, 1992 Summary Report

[b] GPA figures were based on the definition: A = 4.00, B = 3.00, C = 2.00, D = 1, and F = 0

Utah State University's annual freshman retention rates from 1988 to 1991 are documented in Table 12. This information was provided by the Utah State University Office of Institutional Research (1992).

Table 12

USU Freshman Retention Rate[a]

Year	Retention Rate
1988	53.7%
1989	54.0%
1990	55.0%
1991	58.0%

[a] Data obtained from USU Office of Institutional Research,

1992 Summary Report

Limitations of the Findings

The results of this research are to be generalized to the samples, which should be considered representative of the population. Therefore, the findings of this study are limited to the population in question, the concurrent enrollment program students at the three locations from 1988 to 1991. The demographic information at the beginning of this chapter would indicate that the participants at the three different locations were not equal or like-groups.

The design of this study is ex post facto, in which groups used exhibited differences in the dependent variables. According to Kerlinger (1973), when assignment into groups is not random, "there is always a loop hole for other variables to crawl through" (p. 382). Kerlinger also pointed out that group

membership on the basis of a variable always brings selection into the picture. Self-selection into samples occurs when subjects are selected in a nonrandom fashion into a sample.

However, according to Campbell and Stanley (1963), simple or stratified randomization assures unbiased assignment of experimental subjects to groups. It is a less than perfect way of assuring the initial equivalence of such groups. It is nonetheless the only way of doing so, and the essential way. In this research, a systematic sampling technique similar to the random sampling method was used. We called it a simple random sampling because the populations have already been placed on a list in random order.

<div align="center">Objective 1: Difference in GPA Related to</div>

<div align="center">Different Administrative Approaches</div>

Objective 1 called for an identification of the differences in GPA related to the three administrative approaches. Differences were identified using ANOVA. Once the statistical significance had been considered, the calculation of effect size was used to determine if the statistical significance was of practical or educational importance. To answer the research question in objective 1, ANOVA and effect size analysis were conducted.

An analysis of variance in GPA was conducted for the Concurrent Enrollment Program (CEPGPA) as related to each administrative control level. The analysis showed that there was a difference between the lowest administrative

control and the other two administrative controls at alpha 0.05 level (Table 13).

Effect size is used for studies that compare an experimental group and control group. In this research, the experimental group was considered each of the three administrative approaches while the control group was considered the average GPA from Utah State University freshmen. An effect size of 1.00 indicates that the mean of the experimental group was at the 84th percentile of the control group distribution. The control group means were provided by the specialists in the Office of Institutional Research at Utah State University.

Effect sizes were calculated using the following formula for selected variables with GPA data:

ES = $\underline{\bar{X}\text{ experimental - }\bar{X}\text{ control}}$

       SD control

ES = Effect Size

$\bar{X}$ experimental = expected mean of the experimental sample

$\bar{X}$ control = the mean of the control group

SD control = the standard deviation of the control group.

For determining the effect size for CEPGPA, the mean GPA of specific Concurrent Enrollment Program courses was compared to the mean GPA of Utah State University freshmen. The CEPGPA for each administrative approach was used as the experimental group and the mean GPA for the Utah State University freshmen was as the control group. The results from the effect size calculation indicated that Level One administrative approach had a difference of 1.46

Table 13

One-way Analysis of Variance for CEPGPA by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between groups	2	78.74	39.37	63.87	$p < .05$
Within groups	2170	1338.54	.62		
Total	2172	1417.33			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.I for mean
1	793	3.30	.73	.26	3.25 to 3.35
2	130	2.90	.75	.66	2.74 to 3.06
3	1250	2.90	.82	.02	2.87 to 2.93
Total	2173	3.10	.81	.02	3.02 to 3.18

	Groups				
Groups	2	3	1	Effect Size	
2				Level One	1.46
3				Level Two	0.49
1	*	*		Level Three	0.57

standard deviations when compared to the Utah State University freshmen group.

Level Two and Level Three administrative approaches indicated a

difference of 0.49 and 0.57 standard deviations when compared to Utah State

University freshmen, respectively. This could mean that the Level One

administrative approach appears to have a practical and educational importance

in relation to Levels Two and Three administrative approaches when compared to Utah State University freshmen achievement. However, one must be aware of the confounding effects of differences in test construction and graders, self-selection, extraneous variables, and the dependence of this conclusion based on what could be measured.

The ANOVA result for Total Concurrent Enrollment Program GPA (TCEPGPA) as related to administrative control levels was similar to the result of the CEPGPA. There was a difference between the lowest administrative level and the other two administrative control levels (see Table 14). All post hoc tests (LSD, Ducan's, Tukey's, and Scheffe's) produced similar results.

For determining the effect size for TCEPGPA, the mean GPA of total Concurrent Enrollment Program course was compared to the mean GPA of the Utah State University freshmen. The TCEPGPA for each administrative approach was used as the experimental group and the mean GPA for the Utah State University freshmen was used as the control group. The results from the effect size calculation indicated that Level One had a difference of 1.43 standard deviations. Levels Two and Three had a difference of 0.46 and 0.53 standard deviations, respectively. This indicated that the Level One administrative approach appears to have practical and educational importance compared to Levels Two and Three, but one has to be aware of the limitations of the ex post facto research design.

Table 14

One-way Analysis of Variance for TCEPGPA by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between Groups	2	75.25	37.62	89.44	$p < .05$
Within Group	2170	912.86	.42		
Total	2171	988.11			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.I for Mean
1	793	3.30	.67	.23	3.21 to 3.40
2	130	2.90	.74	.66	2.70 to 2.98
2	1250	2.90	.62	.02	2.86 to 2.94
Total	2173	3.00	.67	.01	2.96 to 3.09

Groups	Groups 2 3 1			Effect Size	
2				Level One	1.43
3				Level Two	0.46
1	*	*		Level Three	0.53

The ANOVA results for Utah State University Campus GPA
(USUCPGPA) as related to levels of administrative control indicated that there
was no significant difference between any two groups at the 0.05 Alpha level (see
Table 15).

Table 15

One-way Analysis of Variance for USUCPGPA by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between Groups	2	1.37	.68	1.66	not significant
Within groups	873	358.64	.41		
Total	875	360.01			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.I for Mean
1	354	3.07	.74	.04	3.00 to 3.15
2	46	3.00	.49	.07	2.86 to 3.15
3	476	3.00	.58	.03	2.95 to 3.05
Total	876	3.03	.64	.02	2.99 to 3.07

No two groups are significantly different at the 0.05 level.

	Effect Size
Level One	0.95
Level Two	0.78
Level Three	0.77

For determining the effect size of USUCPGPA, the mean GPA in selected courses (e.g., English 101) completed by CEP participants on the Utah State University campus was compared to the mean GPA of Utah State University freshmen. The USUCPGPA for each administrative approach was used as the experimental group and the mean GPA of Utah State University freshmen was used as the control group. The results from the effect size calculation for

USUCPGPA and USUGPA indicated that the Level One administrative approach

had a difference of 0.95 standard deviations or 0.95 standard deviations greater

than the USU freshmen GPA, while Levels Two and Three administrative

approaches had a difference of 0.78 and 0.77 standard deviations when compared

to Utah State University freshmen GPA, respectively. This was a minimal

difference when the three administrative approaches are compared. Therefore,

limited inference can be made that the Level One administrative approach had a

greater practical and educational importance when compared to the Utah State

University freshmen GPA or achievement. Again, one must be aware of the

confounding effects of self-selection and other extraneous variables.

The ANOVA results for GPA at the end of one year at Utah State

University (YEARGPA) as related to administrative control levels showed that no

two groups were significantly different at the 0.05 Alpha Level (Table 16).

For determining the effect size for YEARGPA, the GPA at the end of one

year at Utah State University was used as the experimental mean; the GPA of the

regular Utah State University freshmen population was used as the mean for the

control. The results from the effect size indicated that the Level Two program

had a difference in GPA by more than one standard deviation or by more than

the 84th percentile. Level One had a difference of 0.92 standard deviation, while

Level Three exhibited a difference of 0.77 standard deviation at the end of the

first year after enrolling at Utah State University (see Table 16).

Table 16

One-way Analysis of Variance for YEARGPA by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between Groups	2	1.14	.57	.97	not significant
Within Groups	858	499.97	.58		
Total	860	501.11			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.L for Mean
1	354	3.06	.92	.05	2.97 to 3.16
2	40	3.11	.49	.08	2.95 to 3.26
3	467	3.00	.65	.03	2.96 to 3.04
Total	862	3.03	.76	.03	2.98 to 3.08

No two groups are significantly different at the .050 level.

	Effect Size
Level One	0.92
Level Two	1.01
Level Three	0.77

A one-way analysis of variance for all concurrent enrollment program participants' GPA (OVALLGPA) as related to administrative control levels revealed a statistically significant difference between the lowest and the highest control levels (Table 17).

For determining the effect size for OVALLGPA, the mean GPA of courses taken on and off campus by CEP students was compared to the mean GPA of

Table 17

One-way Analysis of Variance for OVALLGPA by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between Groups	2	4.28	2.14	6.27	$p < .05$
Within Groups	874	298.44	.34		
Total	876	302.72			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.I for Mean
1	356	3.38	.38	.04	3.11 to 3.48
2	46	3.03	.44	.07	2.90 to 3.16
3	475	3.04	.51	.02	2.99 to 3.08
Total	877	3.09	.59	.02	3.05 to 3.13

		Groups			
Groups	2	3	1		Effect Size
2				Level One	1.17
3				Level Two	0.84
1		*		Level Three	0.85

Utah State University freshmen. The OVALLGPA for each administrative approach was used as the experimental group and the mean GPA of Utah State University freshmen was used as the control group. The results from the effect size calculation indicated differences of 1.17 standard deviations for Level One, 0.84 standard deviation for Level Two, and 0.85 standard deviation for Level Three when compared to the Utah State University freshmen GPA. This indicated that the Level One administrative approach appears to have a slightly

better practical and educational importance compared to Levels Two and Three. However, one has again to take into consideration the limitations of these findings mentioned earlier.

A one-way analysis of variance was also performed for concurrent enrollment participants' ages as related to levels of administrative control. The analysis showed that there was a difference between Level One and Level Three, between Level Two and Level Three, and between Level Two and Level One (Table 18).

Table 18

One-way Analysis of Variance for Age by Administrative Control Levels

Source	df	SS	MS	F ratio	Significance
Between Groups	2	414.38	207.19	340.05	$p < .05$
Within Groups	2170	1322.18	.61		
Total	2172	1736.57			

Group	Count	Mean	Std. Dev.	Std. Err.	95% C.I for Mean
1	793	17.45	.81	.03	17.39 to 17.50
2	130	18.98	.94	.08	18.81 to 19.14
3	1250	17.13	.74	.02	17.08 to 17.17
Total	2173	17.35	.89	.02	17.32 to 17.39
	Groups				

Groups	3	1	2
3			
1	*		
2	*	*	

Table 19 shows the grades received by participants for individual

concurrent enrollment courses at the different levels of administrative control.

Utah State University freshmen grades (FMANGD) were obtained from the Utah

State University grade distribution list only for 1989 to 1991. The grade

distribution for 1988 was not available from the registrar. At Level One, 31.1%

of the students received an A grade. However, only 20.2% of the average

freshmen at Utah State University received an A. The average of the grade

distribution is listed as freshmen grades (FMANGD) in Tables 23 through 27 for

visual comparison. Note that at Level Two, any student who received less than a

C- did not qualify for the program.

Table 19

Concurrent Enrollment Course GPA (grade) by Levels of Administrative

Controls

CEP Grade	Level 1	Level 2	Level 3	Total Percentage	Freshmen Grades
A	31.1%	4.6%	16.9%	22.0	20.2%
A-	20.6%	10.0%	10.6%	14.2	10.4%
B+	0.1%			0.0	9.4%
B	11.1%	13.8%	13.0%	12.4	13.6%
B-	22.6%	26.9%	29.3%	26.7	8.3%
C+			0.2%	0.1	6.8%
C	3.8%	9.2%	9.4%	7.4	10.9%
C-	8.4%	25.4%	15.0%	13.2	4.8%

<div align="right">(table continues)</div>

F				8.0%
Column	793	130	1250	2173	100.0%
Total	36.5%	6.0%	57.5%	100.0%	

The Utah State University campus course GPA for the concurrent
enrollment participants grade is listed in Table 21.

Table 21

USU Campus Course Grade Percentage for CEP Participants by Levels of

Administrative Controls

USU Campus GPA Grades	Level 1	Level 2	Level 3	Total Percentage	Freshmen Grades
A	5.9%	4.5%	5.3%	5.5	20.2%
A-	16.8%	2.3%	9.1%	11.9	10.4%
B+	22.1%	20.5%	15.0%	18.2	9.4%
B	14.5%	15.9%	19.7%	17.4	13.6%
B-	16.2%	34.1%	24.9%	21.8	8.3%
C+	7.8%	11.4%	16.7%	12.8	6.8%
C	3.9%	6.8%	3.0%	3.5	10.9%
C-	7.0%	4.5%	4.2%	5.4	4.8%
D+	3.1%		1.7%	2.2	2.3%
D	2.2%		0.9%	5.3	
D-	0.6%	0.4%	0.5%		
F					8.0%
Column	358	44	473	875	100.0%
Total	40.9%	5.0%	54.1%	100.0%	

The average grades for concurrent enrollment participants at the end of
the first year of enrollment at Utah State University are listed in Table 22.

Table 22

CEP Grades Percentage at the End of the First Year After Enrollment at USU
by Level of Administrative Controls

Year End Grades	Level 1	Level 2	Level 3	Total Percentage	Freshmen Grades
A	13.7%	9.1%	8.5%	10.6	20.2%
A-	18.4%	2.3%	8.2%	12.1	10.4%
B+	12.3%	13.6%	11.6%	12.0	9.4%
B	14.2%	20.5%	20.1%	17.7	13.6%
B-	13.4%	29.5%	26.8%	21.5	8.3%
C+	10.9%	9.1%	9.5%	10.1	6.8%
C	0.8%	2.3%	5.7%	3.5	10.9%
C-	6.1%	2.3%	2.7%	4.1	4.8%
D+	4.7%	11.4%	4.9%	5.1	2.3%
D	1.7%		1.9%	1.7	5.3%
D-	2.8%			1.1	
F	0.8%			0.3	8.0%
Column Total	358 40.9%	44 5.0%	473 54.1%	875 100.0%	100.0%

Table 23 shows that the overall grade distribution of program participants
was similar to the results obtained for end-of-year grades and Utah State
University grades.

Table 23

Overall CEP Participants' Grade Percentage by the Levels of Administrative

Controls

Overall Grades	Level 1	Level 2	Level 3	Total Percentage	Freshmen Grades
A	3.9%	4.5%	3.0%	3.4	20.2%
A-	3.5%		7.5%	13.7	10.4%
B+	26.8%	15.9%	20.3%	22.7	9.4%
B	10.3%	31.8%	23.5%	18.5	13.6%
B-	13.4%	31.8%	22.0%	19.0	8.3%
C+	8.9%	6.8%	12.1%	10.5	6.8%
C	5.9%	6.8%	7.0%	6.5	10.9%
C-	3.4%	2.3%	3.6%	3.4	4.8%
D+	2.0%		1.1%	1.4	2.3%
D	2.0%			0.8	5.3%
F					8.0%
Column Total	358 40.9%	44 5.0%	473 54.1%	875 100.0%	100.0%

Objective 2: Comparing Recruitment Rates as Related to

the Three Administrative Approaches

Table 24 indicates that once students had completed concurrent enrollment

courses, 40% of them enrolled at Utah State University, while 60% of the

participants did not.

Table 24

Number and Percentage of CEP Participants Enrolled at USU

Recruitment Status	Frequency	Percent
Enrolled at USU-Logan	875	40.3
Did not Enroll at USU-Logan	1298	59.7
Total	2173	100.0

Table 25 shows that 49% of the recruited participants were male while 51% were female.

Table 25

Percentage of CEP Participants Enrolled at USU by Gender

Gender	Enrollment %
Male	49
Female	51

A cross tabulation table was constructed and a chi-square analysis of recruitment as related to levels of administrative control of concurrent enrollment was calculated. This analysis indicated 58.9% of the program participants did not enroll at Utah State University. The highest percentage (46.2%) of students who

were recruited came from the Ogden Center. Table 26 shows that there was a difference among the three administrative control levels when recruitment rates were compared.

Table 26

Chi-square Analysis of CEP Recruitment Related to Levels of Administrative Controls at USU

Level 1		Level 2		Level 3		Total
Enrolled	46.2%	Enrolled	33.8%	Enrolled	40.3%	40.3%
Not Enrolled	53.8%	Not Enrolled	66.2%	Not Enrolled	59.3%	59.7%
Total	793		130		1250	2173
	36.5%		6.0%		57.5%	100.0%

Chi-square = 14.55326   df = 2 p = .00069
Cramer's V = .00124

Objective 3: Retention Rates as Related to the

Three Administrative Approaches

Table 27 shows that of the 875 students recruited, 869 (99.3%) were retained at Utah State University after one year.

Table 27

Number and Percentage of CEP Students Retained at USU After One Year

Retention Status	Frequency	Percent
Retained at USU One Year After Completing CEP Course	869	99.3
Not Retained at USU One Year After Completing CEP Course	6	0.7
Total	875	100.0

In Table 28, the chi-square analysis of retention as related to levels of administrative control of concurrent enrollment illustrates that once participants were recruited to Utah State University, they tended to stay.

Table 28

Chi-square Analysis of CEP Retention Related to Levels of Administrative Controls as Compared to USU Freshman Retention

Level 1	Level 2	Level 3	Row Total
99.7%	97.7%	99.2%	869

Chi-square = 14.55   df = 2 p = .0069

Cramer's V = .0069

Objective 4: Identifying Achievement Differences

Between CEPGPA and USUGPA

In order to determine the relationship between concurrent enrollment program student achievements and Utah State University freshman achievements, the GPAs of program participants at Levels One, Two, and Three were compared to the regular Utah State University freshmen GPA using the t test. The null hypothesis and the alternative hypothesis are taken from research objective #4. The following formula was used to calculate a t value for comparing the two different GPAs.

$$t = \frac{x - u}{Sx}$$

x = the observed value of the sample mean.

u = the hypothesized value of the population mean.

Sx = the estimated standard error of the sample mean.

$Sx = (S/\sqrt{N})$

In the case of Level One (the lowest control level) t was calculated as follows:

$$t = \frac{3.0647 - 2.6460}{.0487}$$

$$= 8.60$$

df = 353, α = 0.05, and table t = 1.96.

From the above figures the calculated t was greater than the tabulated

figure (8.60 > 1.96). Since this is a rare occurrence, happening less than 5% of

the time by sampling error ($p < .05$), we conclude that it is not likely that μ_1 CEP

= μ_{USU}. We reject this null hypothesis in favor of μ_1 CEP $\neq$ μ_{USU} and say that

there is a significant difference in the GPA of the concurrent enrollment program

at Level One when compared to the Utah State University freshmen GPA from

1988 to 1991. In other words, there was a significant difference between the

Level One concurrent enrollment program GPA and the general Utah State

University freshmen GPA.

For Level Two the t-value was as follows:

$$t = \frac{3.1068 - 2.6460}{0.0769}$$

$$= 5.9922$$

df = 39, α = 0.05, and table t = 2.021.

The calculated t is greater than the tabulated t (5.9922 > 2.021). Since

this is a rare occurrence, happening less than 5% of the time by sampling error

($p < .05$), we conclude that it is not likely that μ_2 CEP = μ_{USU}. We reject this null

hypothesis in favor of μ_2 CEP $\neq$ μ_{USU} and say that there is a significant

difference in the GPA of the concurrent enrollment program at Level Two when

compared to the Utah State University freshmen GPA. There was a difference

between the Level Two GPA and the Utah State University freshmen GPA.

For Level Three :

$$t = \frac{2.9982 - 2.6460}{0.0299}$$

$$= 11.7793$$

df = 466, α = 0.05, and table t = 1.96.

The calculated t was greater than the tabulated t (11.7793 > 1.96). Since this is a rare occurrence, happening less than 5% of the time by sampling error ($p < .05$), we conclude that it is not likely that μ_3 CEP = μ_{USU}. We reject this null hypothesis in favor of μ_3 CEP $\neq$ μ_{USU} and say that there is a significant difference in the GPA of the concurrent enrollment program at Level Three when compared to the Utah State University freshmen GPA in this study. There was a difference between the Level Three CEP GPA and the freshmen GPA.

To compare the retention of concurrent enrollment students relative to the three different administrative approaches to the freshman retention rate, critical z values were calculated using the following formula:

$$z = p - \pi \ / \ \sqrt{\pi (1 - \pi)/N}$$

where   p = proportion observed in the sample.

                π = estimated value of the population

                    proportion. This proportion was obtained from

                    the average of the four years' retention

                    included in the study.

                N = number of students in the sample.

For the Level One administrative approach, the statistical analysis was performed as follows:

Estimated population proportion = 0.552.

Proportion observed in sample = 0.993.

HO: π = 0.552

HA: $\pi \neq$ 0.552

α = 0.05

z = .993 - .552 / $\sqrt{.552(1 - .552)/354}$

= 16.6852.

The calculated value of 16.6852 is greater than the tabulated critical z value of 1.96. Since this is a rare occurrence, happening less than 5% of the time by sampling error ($p < .05$), we conclude that it is not likely that σ^2_1 CEP = σ^2_{USU}. We reject this null hypothesis in favor of σ^2_1 CEP $\neq$ σ^2_{USU} and say that there is a significant difference in retention of concurrent enrollment program retention when compared to Utah State University freshmen retention rate. Based on the above result, there is a difference between the retention of concurrent enrollment students under the Level One administrative approach and the general freshmen population from 1988 to 1991 at Utah State University. More concurrent enrollment students were retained than were freshmen students.

The null hypothesis and the alternative hypothesis were similar for Levels
One, Two, and Three when comparing the difference between these levels and the
Utah State University freshmen retention rates.

For the Level Two approach:

$$z = .441 \ / \ \sqrt{.552(1-.552)/40}$$
$$= 5.6087.$$

The calculated value of 5.6087 is greater than the tabulated critical z value
of 2.021. Since this is a rare occurrence, happening less than 5% of the time by
sampling error ($p < .05$), we conclude that it is not likely that σ^2_2 CEP $= \sigma^2_{USU}$.
We reject this null hypothesis in favor of σ^2_2 CEP $\neq \sigma^2_{USU}$ and say that there is a
significant difference in the retention of the concurrent enrollment program at
Level Two compared to the Utah State University freshmen retention. This
indicates that there is a difference between retention of concurrent enrollment
students under the Level Two administrative approach and that of the general
freshmen population indicated in this study.

A similar calculation was conducted for the Level Three administrative
approach:

$$z = .441 \ / \ \sqrt{.552(1-.552)/476}$$
$$= 19.3479.$$

For the Level Three administrative approach, the calculated value, 19.3479, is greater than the critical z value of 1.96. Since this is a rare occurrence, happening less than 5% of the time by sampling error ($p < .05$), we conclude that it is not likely that σ^2_3 CEP = σ^2_{USU}. We reject this null hypothesis in favor of σ^2_3 CEP $\neq$ σ^2_{USU} the alternative hypothesis and say that there is a significant difference in the retention of the concurrent enrollment program at Level Three compared to the Utah State University freshmen retention rate. Thus, there is a difference between the rentention rate of concurrent enrollment students under the Level Three administrative approach and that of the general freshmen population in this study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The Problem

The major purpose of this study was to identify the differences the administrative strategies used to manage the concurrent enrollment program related to participants' achievement (GPA), recruitment, and retention. Three administrative control levels were identified as independent variables with selected dependent variables to answer the research questions. The three administrative approaches were identified as Levels One, Two, and Three. There were 793 participants at Level One; 130 at Level Two; and 1,250 at Level Three. This study covers a sample of 2,173 concurrent enrollment students from 1988 to 1991. There were 767 program participants included in the study from 1988, 495 participants from 1989, 666 participants from 1990, and 245 participants from 1991. Among the total sample of 2,173 participants, 45% were males and 55% were females. The ages of the participants varied from 16 to 20 years old.

Some program participants were majoring in each of the eight colleges of Utah State University; only 7.1% had not declared their majors by the end of their first year at Utah State University. Concurrent enrollment participants enrolled for 48 different courses both on and off the Utah State University campus. Forty percent of the participants chose to enroll at Utah State University

after completing concurrent enrollment courses in high school; 99.3% of those enrolled at Utah State University stayed with the university through the freshman year.

Major Findings

The major finding of this investigation was that students' grade point averages were greatest at the lowest level of administrative control (Ogden Center), where high school teachers taught the concurrent enrollment courses and also evaluated the students. When compared to the other two control levels in terms of GPA, the Ogden Center's results were statistically significantly higher. However, this initial "gain" evaporated over time.

Upon completing concurrent enrollment courses in high school, only 40% of the participants actually enrolled at Utah State University; however, the results of this study indicate that once program participants were recruited to Utah State University, they tended to remain enrolled with a very low dropout rate (0.7%). In fact, 99.3% of the recruited participants finished their freshman year at Utah State University.

Finally, when the GPAs of concurrent enrollment students were compared to those of regular Utah State University freshmen, the t-tests indicated a statistically significant difference.

Relationship Between CEPGPA and Administrative

Control Levels

A one-way analysis of variance for CEPGPA by administrative control
levels indicated that Level One was higher than Levels Two and Three. Effect
size results also indicated that for the CEPGPA variable, there was a difference of
1.46 standard deviations for Level One, 0.49 standard deviation for Level Two,
and 0.57 standard deviation for Level Three when compared to Utah State
University freshmen GPAs.

Relationship Between TCEPGPA and Administrative

Control Levels

The ANOVA results for TCEPGPA and CEPGPA were very similar.
There was a statistically significant difference between Level One and Level Two
and between Level One and Level Three. The effect size results indicated a
difference of 1.43, 0.46, and 0.53 standard deviations for Levels One, Two, and
Three, respectively, when compared to Utah State University freshmen GPAs.

Relationship Between USUCPGPA and Administrative

Control Levels

Once students arrive at Utah State University and stay on campus for a
year, there is no evidence of GPA differences between the administrative control

levels. But when compared to the average Utah State freshmen GPA, the effect size result indicated a 0.95, 0.78, and 0.77 standard deviation difference for Levels One, Two, and Three, respectively.

Relationship Between YEARGPA and Administrative Control Levels

When the GPAs of concurrent enrollment participants were investigated one year after they enrolled at Utah State University, the effect size result indicated that the intermediate administrative control level yielded a difference of more than one standard deviation. However, there was no significant difference at the 0.05 level between any two administrative control levels when ANOVA was used for analysis.

Relationship Between OVALLGPA and Administrative Control Levels

ANOVA analysis indicated that there was a statistically significant difference between the Level One and Level Three administrative control levels. Effect sizes of 1.17, 0.84, and 0.85 were obtained for Levels One, Two, and Three, respectively.

Relationship Between CEP Participants' and USU

Freshmen's GPA Grade Distribution

The letter grade distributions for concurrent enrollment participants and for regular Utah State University freshmen did not drastically differ. For example, looking at the overall GPA grade distribution for the program participants and for regular Utah State University freshmen GPA, both groups earned similar percentages of B grades and C grades.

Relationship Between CEP Recruitment and Levels of

Administrative Controls

A chi-square analysis indicated a statistically significant difference among the three levels of administrative controls in terms of recruitment. Among the total participants in the concurrent enrollment program, 40.3% chose to attend Utah State University; approximately 46.2% were recruited from Level One, 38.8% from Level Two, and 40.9% from Level Three.

Relationship Between CEP Retention and

Levels of Administrative Controls

Concurrent enrollment participants tended to stay at Utah State University for at least one year once they were recruited to the campus. Of the recruited 40.3% of participants, 99.7% from Level One, 97.7% from Level Two, and 99.2% from Level Three were retained at Utah State for one year.

Relationship Between CEP GPA and USU

Freshman GPA

A *t*-test was conducted to determine if there was a significant difference between concurrent enrollment students' GPAs and regular Utah State University freshmen's GPAs. The test output indicated that the concurrent enrollment students' GPAs were higher than those of the regular freshmen. The null hypothesis was rejected in favor of the alternative hypothesis.

Relationship Between CEP Retention and USU

Freshman GPA

The critical z values were calculated to determine if there was a difference between the concurrent enrollment student retention rate and the Utah State University freshman retention rate. The result indicated a statistically significant difference. Again, the null hypothesis was rejected in favor of the alternative hypothesis.

Conclusions

1. Fifty-seven and one half percent of the students in the study were from the Level Three administrative control level (Uintah Center). The concurrent enrollment participants were mostly students with better grades than their classmates. For example, in the case of the Level Two administrative control (the

College of Agriculture program), program participants were required to have a GPA of 3.0 or better. In terms of percentage of participants, Level One ranked second (36.5%), while Level Two ranked third (6.0%).

2. The GPA calculated in a specific course was different when the three levels were compared. For example, in terms of CEPGPA, the results from Level One were statistically significantly higher than Levels Two and Three. In the instance of total concurrent enrollment courses' GPA, Level One was more important than both Level Two and Level Three, statistically and educationally. When Utah State University campus GPA and GPA after one year were compared under the three administrative approaches, there was no statistical difference between the two groups, but there was an educationally important difference of one half standard deviation increment. In the case of overall GPA, there was a statistically significant difference between Level One and Level Three. According to the effect size results, the educational importance had a difference of almost one standard deviation.

3. The three different administrative levels yielded different rates of recruitment. Level One had the highest rate (46.2%), which was statistically higher than the other two levels.

4. The difference among the administrative levels with regard to retention was very small. However, when the retention rate of concurrent enrollment participants was compared to that of Utah State University freshmen, the difference was statistically significant. Program participants tended to stay once

they were recruited (99.3%).

5. For all three administrative levels, the mean GPAs were statistically significantly higher than those of the Utah State University freshmen GPAs.

Recommendations

Based on the results of this study, the concurrent enrollment program appears to be a viable program. The overall GPA of the participating students had at least one half a standard deviation difference higher compared to Utah State University freshmen GPA. For Level One, there was a difference of 1.17 standard deviations over the Utah State University freshmen GPA, while 0.84 and 0.85 standard deviations for Level Two and Level Three, respectively.

According to the variables that were measured in this study, with the administrative approach that used high school teachers (Level One), students received the highest grades, when compared to the other administrative approaches (Levels Two and Three). Based on CEPGPA, the concurrent enrollment program students had a higher grade from the high school teachers. This could be because of the personal relationship between high school teachers and students. Yet, this could be explained as high school teachers being easier graders.

The retention rate for concurrent enrollment participants at Utah State University was very high (99.3%). This calls for the continuation of the program.

The concurrent enrollment program should continue to operate because it is related to participants' GPA, recruitment, and retention at the university. Although the higher levels of performance found by early measures (CEPGPA) appear to diminish overtime, educationally, there was at least one half standard deviation difference for any of the selected variables tested in this study.

Level One, where high school teachers are completely responsible for the courses, appears to be effective. High school teachers could teach CEP courses, with the provision of university professors to offer in-service training and motivation. In this way, CEP courses could be more effective and less costly because high school teachers are paid by school districts.

In the past, Utah State University educational leaders have perceived the concurrent enrollment program as a recruitment tool, but didn't realize the specific strengths of the program. Therefore, either a complete copy of this dissertation, or Chapter Five, will be offered to the educational leaders of Utah State University.

The scope of this study was limited to the first year in college. A follow-up study of concurrent enrollment students throughout their college education is crucial to gaining more understanding about the impact of the program on student achievement, recruitment, and retention. Specific recommendations for further study:

For further understanding of the concurrent enrollment program, information about the participants of this study should be pursued until the

participants graduate from Utah State University.

An economic model related to the cost effectiveness of the concurrent enrollment program should be developed with a focus on full-time faculty employees versus high school teachers.

REFERENCES

Alexander, H., Aaron, B.K., & Vines, H. (1984). Making it through college or, getting your money's worth out of higher education. Professional Staff Congress, City University of New York, New York, NY.

AP Yearbook. 1988. Advanced placement program. New York: College Board.

Arbolino, J.N. (1976, Spring). No matter where you learned it. College Board Review, 99, 13-21.

Blanchard, B.E. (1971). A national survey of curriculum articulation between the College of the Liberal Arts and the secondary school. Chicago: DePaul University.

Borchardt, L.L. (1989). Who is the successful student? College Teaching, 37(4), 138.

Borg, W.R., & Gall, M.D. (1983). Educational research, an introduction (4th ed.). New York and London: Longman.

Boyer, E.L. (1981). High school, college partnerships that work. In Current Issues in Education: High school/college partnerships, American Association for Higher Education, 1.

Boyer, E.L. (1987). College: The undergraduate experience in America. New York: Harper & Row.

Brechner, I. (1979). The college survival kit: 51 proven strategies for success in today's competitive college world. New York: Bantam Books, Inc.

Buck, C.B., & Pineda, C. (1985, February). A peer counseling training model for campus outreach and support service. Paper presented at the Annual meeting of the California Association for counseling and Development, San Diego, CA.

Campbell, D.T., & Stanley, J.C. (1963). Experimental and quasi-experimental design for research. In N.L. Gage (Ed.), Handbook of research on teaching (pp. 171-246). Chicago: Rand McNally.

Carnegie Commission on Higher Education. (1973). Continuity and discontinuity: Higher education and the schools. New York: McGraw-Hill.

Chamberlain, P.C., Pugh, R.C., & Schellhammer, J. (1978). Does advance placement continue throughout the undergraduate years? College and University, 53(2), 195-200.

Chapin, F.S. (1955). Experimental designs in sociological research (rev. ed.). New York: Harper.

Chapin, F.S., & Queen, S.A. (1937). Research memorandum on social work in the depression. New York: Social Science Council Bull., 39.

Cohen, J. (1977). Statistical power analysis for behavioral sciences (rev. ed.). New York, San Francisco and London: Academic Press.

Coulter, K.J., Stanton, H., & Goecker, A.D. (1986). Employment opportunities for college graduates in the food and agricultural sciences. Washington, DC: Higher Education Programs.

Denton, G.W. (1989). Concurrent credit programs in Utah. Unpublished doctoral dissertation, Ohio State University, Columbus.

De Silva, K., Deema, R.L., Freund, B., & Clara, W.G. (1987). Success strategies for college students. Wichita State University, Kansas.

Dillon, D.H. (1986). The advanced placement factor. Journal of College Admissions, 133, 14-17.

Fadale, L.N. (1990). Factors related to retention in post-secondary occupational education: Emphasis on minority student population. A model for retention of minority students, phase II: Project report. State University of New York, Albany, Bureau of Post-Secondary Grants Administration.

Fontana, C., & David, N.L. (1986). Students' attributions of academic success. Assessment and Evaluation in Higher Education, 11(2), 105-16.

Frost, C., Snow, F., & Novak, E.F. (1987). How to increase enrollment in undergraduate and graduate schools of social work. Journal of Social Work Education, 23(2), 75-82.

Gilmour, J.E., Jr. (1981). How high school students select a college. Policy paper presented at Pennsylvania State University, University Park, PA.

Greenberg, A.R. (1989). Concurrent enrollment program: College credit for high school students. Fastback 284. Phi Delta Kappa Educational Foundation, P.O. Box 789, Bloomington, IN.

Greenwood, E. (1945). Experimental sociology: A study in method. New York: King's Crown Press.

Harris, S.P. (1983). Physics, an important factor in the success of college chemistry students. Journal of Chemical Education, 60(9), 739-40.

Hochman, W.R. (1970, Fall). Advanced placement: Can it change with the times. College Board Review, 77, 16-19.

Hogan, W.F. (1971). An evaluation follow-up of students who took college courses while still in high school. Abstract from the Research and Guidance Laboratory for Superior Students. Madison, WI.

Johnson, S.H., Medlyn, D.A., & Tueller, R.L. (1990). Concurrent enrollment: Analysis of future collegiate success, rural vs. urban. Unpublished manuscript. Utah State University, Logan.

Kallingal, A. (1989). Critical factors in college level courses achievement. U.S. Department of Education, Office of Educational Research and Improvement.

Kastrinos, W., & Erk, F.C. (1974, May). Advanced placement exam in biology. The American Biology Teacher, 36, 282-91.

Kerlinger, F.N. (1973). Foundations of behavioral research (2nd ed.). Holt, Rinehart and Winston, Inc. New York, Chicago, San Francisco, Atlanta, Dallas, Montreal, Toronto, London, and Sydney.

Kolatai, L. (1985). Los Angeles Community College district establishes recruitment committee to stave off major enrollment decline. Center for the Study of Community College Bulletin, 16.

LeMay, M. (1985). Academic achievement of students who received A.P. credit. College and University, 60(2), 155-159.

Marsh, R., Flake, J., Anderson, T.D., & Norman, P. (1985, April). An assessment of the qualitative skills of students taking introductory college biology courses. Paper presented at the annual meeting of the National Association for Research in Science Teaching, French Lick Springs, IL.

Menacker, I. (1975). From school to college: Articulation and transfer. Washington, DC: American Council on Education.

Mercurio, J., Schwartz, S., & Oesterle, R. (1982). College courses in the high school: A five year follow-up of the Syracuse University Project Advance Class of 1977. College and University, 58(1), 5-17.

Modu, C.C., Reed, N., & Coon, R.L. (1975, May). How valid is the advanced placement French language examination? French Review, 48, 1013-22.

National Association of Secondary School Principals. (1975). College courses: A twelfth grade option. NASSP Curriculum Report, 5(2).

Neuroses, M.J. (1988). SPSS/PC Version 2.0, base manual. Chicago, IL: SPSS, Inc.

O'Keefe, M. (1981). High school/college cooperative programs. Association for Higher Education Proceedings for the National Conference on Higher Education Current Issues in Higher Education, 1, 5-10.

Pals, D.A. (1987, July). Balancing vocational agriculture enrollments. Agricultural Education Magazine, 60(1).

Parkinson, S. (1989). Influences of concurrent credit courses on students perceptions of agriculture and desire to enroll in U.S.U. College of Agriculture. Unpublished master's thesis, Utah State University, Logan.

Parnell, D. (1985). The neglected majority. Washington, DC: Community College Press.

Rauch, M., & Fillenworth, C. (1985, April). Paired courses: One method for enhancing academic success. Paper Presented at the Minnesota Post-Secondary Reading Council's State Conference, White Bear Lake, MN.

Regents of the University of the State of New York. (1974). The articulation of secondary and post-secondary education: A statement of policy and proposed action. Albany, NY: State Education Department.

Robbins, W. (1985). Who is going back to the farm? Davis Enterprise, 15(4).

Scherer, C., & Wygant, N.S. (1982). Sound beginnings support. Freshman transition into university life. Journal of College Student Personnel, 23(5), 378-383.

Scott, R.A. (1987, October). Strategic responses to demographic changes: Students, faculty, and patrons. Paper Based on an Invited Address at the Annual Meeting of the Eastern Association of College and University Business Officers, Pittsburgh, PA.

Sorge, G., Dennis, N.T., Wark, F.B., & Lois, D. (1984). Factors for success as a Computer Science major. AEDS Journal, 17(4), 36-45.

Trice, R.C., Ashton, D., Ogden, E.P., Stevens, W., & Booth, J. (1987). Concurrent validity of the academic locus control scale. Educational and Psychological Measurement, 47(2), 483-86.

Utah State University Office of Institutional Research. (1992). [USU Research Bureau Summary Report 1992], unpublished raw data. Logan.

Van Overwalle, F. (1989). Success and failure of freshmen at university: A search for determinants. Higher Education, 18(3), 287-308.

Voorheis, G.P. (1979). Concurrent high school - college enrollments. Educational Records, 60(5).

Watkins, D. (1979). Prediction of university success: A follow-up study of the 1977 internal intake to the University of New England. Australian Journal of Education, 23(3), 301-03.

White, D.K. (1974, Fall). AP Year in Utah. College Board Review, 93, 7-9.

Wilbur, F.P. (1984). School-college partnerships: Building effective models for collaboration. In The school-college connection: Relationships and standards, 68(474), 34-49 . Reston, VA: National Association of Secondary School Principals.

Willingham, W.W., & Morris, M. (1986). From years later: Longitudinal study of advanced placement students in college. College Board Report, 86(2). New York.

Wood, P.H. (1988, September). Predicting college grades and helping colleagues to assist poor readers to succeed in college courses. Paper presented at the National Reading and Language Arts Educators' Conference, Kansas City, MO.

VITA

HAILE HIRPA

Candidate for the Degree of

Doctor of Philosophy

Dissertation: Comparison of the Three Major Administrative Approaches to the Management of Concurrent Enrollment Programs at Utah State University From 1987 to 1991

Major Field: Occupational and Adult Education

EDUCATION

1979   B.S. Degree in Plant Science
       Addis Abeba University, Alemaya, Ethiopia

1985   M.S. Degree in Agricultural Education with
       International Extension Option
       Utah State University, Logan, Utah

1987   M.S. Degree in Soil and Water Conservation
       Utah State University, Logan, Utah

PROFESSIONAL EXPERIENCE

1984 - Present   Graduate Research Associate, Utah State University
                  Logan, Utah

1983 - 1984   Interdisciplinary Approach Research Associate,
                  International Agriculture University, Wagenigen,
                  The Netherlands

1980 - 1983   Agricultural Development Project Manager
                  World Bank Rehabilitation Project, Wollo, Oromia

1979 - 1980   Vocational Agriculture Instructor
                  Bethel Secondary High School, Dembi-Dollo, Oromia