STUDENT OUTCOMES IN SELECTED DISTANCE LEARNING AND TRADITIONAL

COURSES FOR THE DALLAS COUNTY COMMUNITY

COLLEGE DISTRICT: A PILOT STUDY

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The study compared outcomes for distance learning courses with those of traditional courses offered by the seven campuses of Dallas County Community College District (DCCCD).

The course outcomes were defined as completion rate, dropout rate and success rate. Eleven courses offered during the fall 2003 semester were selected for the study. The methods of instruction employed for each course were traditional classroom lecture/discussion and distance learning formats of Internet, TeleCourse and TeleCourse Plus. Internet courses are delivered on-line, using Internet access and a browser, TeleCourse uses one-way videos or public broadcasting, and TeleCourse Plus is a hybrid between Internet and TeleCourse courses.

Seven of the courses selected were part of the core curriculum approved by Texas Higher Education Coordinating Board (THECB) while four other courses were completely transferable. Two types of specific data were extracted: course data and individual student data. Course data included method of instruction, length of course, instructor's load, enrollment, number of withdrawals, and grade distribution. In addition, course requirements including the use of email, videos and Internet, orientation and testing on campus were added as variables. The student data included demographic variables such as age, gender, ethnicity, family status, employment and academic variables including number of credit hours completed, previous distance learning courses, grade point average (GPA), grades, placement scores, previous degrees held, withdrawal history, and financial aid. The theoretical framework for ensuring sound statistical analysis was Astin's student engagement model.

The results showed that significant differences exist due to the three distance learning methods of instruction for all course outcomes studied. Completion and success rates are higher for traditional courses and dropout rate is higher for distance learning ones. The outcomes for Internet courses are closer to the rates of traditional courses. Student factors that relate to performance in distance learning courses are GPA, credit hours completed, and family status, whereas those which do not relate to performance in the same classes are semester load, age, TASP reading scores, previous distance learning courses, income, and number of dependents. Course characteristics have a significant effect upon success rate, but no effect upon completion and dropout rates.

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CHAPTER 1

INTRODUCTION

The achievements in technology during the last decades of the 20th century have

influenced major changes to higher education, introducing new ideas about how information is

presented, skills achieved, and learning measured at the end of class and/or programs. Distance

education has gained more and more in importance, and has given the students more control of

how or when the exchange of information occurs.

Distance education is a process of instruction where students and instructors are not face-

to-face, and are separated by physical distance. Technology is used to "bridge the instructional

gap" (Engineering Outreach, 2001, p.1). The Southern Association of Colleges and Schools

(SACS) defines distance education

> for the purposes of accreditation review, as a formal educational process in which the
> majority of the instruction occurs when student and instructor are not in the same place.
> Instruction may be synchronous or asynchronous. Distance education may employ
> correspondence study, or audio, video, or computer technologies. (Southern Association
> of Colleges and Schools, 1997)

The Texas Higher Education Coordinating Board has a slightly different definition,

which includes classes taught off-campus even though students and instructors are face-to-face.

Distance education or

> distributed education is education provided through instruction delivered other than face-
> to-face on a student's home campus. It may be delivered through electronic modes of
> distance education including television, interactive video conferencing, or computer
> networks, or it may be delivered off-campus by faculty travel to distant sites. (Texas
> Higher Education Coordinating Board, 2003b)

Under Texas Higher Education Coordinating Board's definition a class is considered a distance

education class if more than half of the instruction is done at a distance from the home campus

(Texas Higher Education Coordinating Board, 2003c).

The concept of distance learning is not new in the United States of America. Distance education started in the 19th century with written correspondence courses and continued in the 20th century with the use of electronic media (Wood & Wylie, 1972). In 1950, the Ford Foundation made public a 1,400-page study calling for the "broadening the scope of the foundation's activities from that of a local, charitable agency to that of an organization concerned with improving man's conditions and society on a worldwide scale" (Wood & Wylie, 1972) (p. 39). For the next 20 years the Ford Foundation was the single greatest benefactor of educational television (ETV). In 1962 the Educational Television Facilities Act (Public Law 87-447) was passed by Congress, and millions of dollars were poured in building and improving physical facilities for educational communications. For the first time federal money was available for ETV. From courses delivered through radio programs to cable TV, video, and finally the Internet, distance learning always used the most advanced technology available at a given time (Alessi & Trollip, 1985; Bates, 1995; Wood & Wylie, 1972).

Community colleges became active participants in the ETV movement of the 1950s, 1960s, and 1970s. Many community colleges started and to this day operate their own campus TV and radio stations, and/or National Public Radio affiliates. Many more delivered TV instruction on local cable access channels. It was during the 1970s that the Dallas County Community District (DCCCD), which was established in 1964, became active in ETV. By the 1997-1998 school year, 62% of two-years colleges in the United States offered some type of distance learning courses, with 9.6 % of the community college students taking at least one distance education class (Cohen & Brawer, 2003). DCCCD's growth mirrors the national trends, serving approximately 60,000 credit students in fall 2003 semester, with roughly 6,000 students

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enrolled in distance learning classes (DCCCD District Office of Research, 2003c; DCCCD District Service Center, 2003a) (see Table1).

Table 1: DCCCD Distance Education Enrollment (Fall 2003)

	Total Headcount	Distance Education Total Enrollment	Distance Education Only Enrollment	Distance Education & On-Campus Enrollment
DCCCD	61,508	6,664	2,719	3,945
%	100.0%	10.8%	4.4%	6.4%

Source: DCCCD District Service Center, Students Enrolled in Distance Learning Fall 2003 Report (XDLR1)

The Dallas County Community College District (DCCCD) was founded in Dallas County, Texas in 1964. In 1965, El Centro College was the first of the DCCCD colleges to register students. Six additional colleges were built across the Dallas County over the next two decades (see Table 2).

The DCCCD has offered a multitude of TeleCourses since 1973. Today, distance education is offered through the collaboration between the seven colleges and Dallas TeleCollege. Dallas TeleCollege is the virtual campus of DCCCD, allowing students to access courses without the student having to actually go to campus. Formerly known as the Instructional Television Center, the LeCroy Center for Educational Telecommunications (LCET) was established in 1974. As its growth exceeded expectations, a new location was build adjacent to the DCCCD Richland College campus exclusively for the operation of distance learning and it became the R. Jan LeCroy Center for Educational Telecommunications (Neal, 1991), named in the honor of DCCCD's second chancellor. Presently it is organized as a separate campus, led by a President that reports directly to the DCCCD chancellor.

Table 2: DCCCD Colleges and their Enrollment (Fall 2003)

College	Location	Headcount	%
Brookhaven (BHC)	Farmers Branch	10,890	18%
Cedar Valley (CVC)	Lancaster	4,405	7%
Eastfield (EFC)	Mesquite	11,708	19%
El Centro (ECC)	Dallas	5,874	10%
Mountain View (MVC)	Dallas	6,410	10%
North Lake (NLC)	Irving	8,341	14%
Richland (RLC)	Dallas	13,880	23%
LeCroy Center for Educational Telecommunications (LCET)	Dallas	3,097	5%
DCCCD Total		61,508	100%

Source: 2003 - 2004 DCCCD Catalog
    DCCCD District Office of Research - Facts Brief

All DCCCD colleges offer college-based distance learning courses, in which more than 50% of the instructional contact hours are delivered at a distance, with occasional on-campus instructional requirements. However, most student services are still delivered on campus (Dallas County Community College District, 2003a). The Dallas County Community College District designates its courses as distance learning based on the definition promoted by Southern Association of Colleges and Schools (SACS) (Southern Association of Colleges and Schools, 1997). Dallas TeleCollege is not independently accredited, however, its courses are accredited through Eastfield College, one of the seven separately accredited campuses of the DCCCD.

Students have the choice between several types of distance learning courses (Dallas Telecollege, 2003). The types of delivery offered in DCCCD are described below. They include: TeleCourses, TeleCourses Plus, Internet, live –interaction television, and individualized distance learning (IDL). Some course requirements are campus-related, such as orientation or student services, with the exception of on-line courses. For Internet courses, the orientation is offered on-

line and access to student services such as library access, counseling, or technical support is done through phone, computer, and email.

The DCCCD defines distance-learning courses as follows (Dallas Telecollege, 2003):

1. The TeleCourse allows the student to work and learn independently, but there are campus-based requirements such as orientations, testing, and review sessions. The courses usually include a pre-produced video series with print materials. Class interaction is offered through the telephone, fax and mail. Students are required to have access to local cable or a VHS format videocassette player.

2. An Internet course is delivered using only computers and computer peripherals. Students are required to have reliable Internet access and the latest version of Internet browser software.

3. TeleCourse Plus combines TeleCourse with Internet courses. It incorporates the use of video and the Internet classroom and the students are required to have access to local cable or a VHS format videocassette player and also reliable Internet access and the latest version of Internet browser software.

4. A live-interactive television course uses one-way video and two-way audio. Students must have access to a participating cable television system. Students may interact with the faculty by telephone or by placing a call to a voice system.

5. Individualized distance learning courses (IDL) are self-paced courses that require print materials and assignments related to course topics. It requires faculty – student contact regarding work assignments and projects.

6. Multimedia (CD-ROM and video streaming format) courses use fully integrated multimedia course delivery in addition to print material, Internet resources, and/or video lesson

programs. Students are required to have access to a computer with Internet access and the latest version of browser.

According to the National Center for Education Statistics (NCES), 89.5% of US community college students are non-traditional, and only 10.5% are traditional students (National Center for Education Statistics, 2002b). The NCES has listed general characteristics of nontraditional students to include delayed enrollment, part-time attendance, full-time work, and financial independence. The nontraditional student is more likely to be a single parent, have dependents other than the spouse, and not posses a high school diploma. Based on this definition, undergraduate students can be minimally nontraditional if they have only one characteristic, moderately nontraditional if they present two or three, and highly nontraditional if they have four or more characteristics (National Center for Education Statistics, 2002b).

Research of student attrition typically does not take into consideration that there are two types of dropouts (Kember, 1995). One is involuntary departure, which comprises 15% of dropouts. Involuntary departure means the student would stay, if possible. Usually the reasons for involuntary departure are failure to meet academic standards, but can be also due to "social dismissal" (violation of school rules). Voluntary departure makes up the remaining 85% of dropouts (Drew, 1990; Woodley, Lange, & Tanewski, 2001). The reasons usually given are financial hardship, lack of maturity, work demands, family obligations, career indecision, poor academic records, poor student support services, or just that the student entered college with no intention of completing (Astin, 1975; Woodley et al., 2001). Research shows that the reasons students drop out of a course are usually beyond the college's control. Change of work, family obligations, lack of child care facility, students' abilities, change of career goals, and course level are just a few reasons cited by students as contributing to the decision to withdraw (Astin, 1975;

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Sydow & Sandel, 1998). Research shows that the individuals enrolled in distance education courses are non-traditional students, who are unable be on campus due to social or family commitments (Imel, 1998; Perez & Foshay, 2002; Cohen & Brawer, 2003).

Traditionally the distance education research addressed the difference in outcomes between face-to-face and distance education courses. Russell (2001) compiled results of studies conducted in the last 20 years with the purpose of demonstrating that applying technology in the educational process does not have an impact upon educational outcomes. He found that the use of technology made no difference in the outcomes of learning process. The research on dropout rate and course completion in distance education has had mixed results. A number of studies found that students were more successful in distance education classes (Fredda, 2000; Hogan, 1997), however others have found that attrition rates may have been higher or lower than the traditional courses (Blackner, 2000; Carey, 2003; Hogan, 1997; Osborn, 2000; Terry, 2001). According to Cohen and Brawer whose book *The American Community College*, now in its fourth edition, is considered the "gold standard" in the field of community college research, in community colleges the completion rates for distance-education courses are lower than they are in traditional classes, but unfortunately the authors did not cite any studies to support that statement (Cohen & Brawer, 2003).

An important contributor to the theoretical framework of student retention is Alexander W. Astin, Director of Higher Education Research Institute (HERI) at University of California at Los Angeles (UCLA). Astin's student engagement model takes into consideration past and present experiences and attributes of the students. His I-E-O (Input – Environment – Output) model was designed to help the research in the area of educational assessment. For Astin, student involvement or engagement meant the amount of effort a student was willing to put into the

learning process. In his view, the student was supposed to be an active participant in achieving the desired learning, shifting the focus from what the instructor does in the classroom to what the student does to achieve his/her goal. Astin pointed that educators had to compete with other forces in the student's life, and that the student's energy and time use is influenced by his or her personal agenda and background characteristics. According to Astin, learning outcomes are influenced by the share of time and energy students allocate to education versus family, friends, and work. Astin considered involvement any activity the students had on campus and classroom, and argues that the act of dropping out is the ultimate form of student non-involvement (Astin, 1984). The model illustrates Astin's belief that the educational outcomes are influenced by the background characteristics the students bring into the process (environment) of education, and also by the environment itself (Astin, 1993). Even though somewhat simplistic, the model can be applied successfully to the naturalistic research that is usually conducted in educational settings.

Statement of the Problem

This study compared course outcomes for distance learning courses with those of traditional courses offered by DCCCD. As no study was found that evaluated separately different modes of delivery of distance learning courses, this study compared the course completion, dropout, and success rates for different formats of delivery of distance learning courses. As multiple characteristics of the student body, the institution, and the individual courses have been found to influence course outcomes, the study looked at the relationship among the most common factors that influence the performance of students in the distance learning courses studied.

Purpose of the Study

The primary purpose of this study was to investigate the relationship between traditional and distance learning instructional delivery methods and course outcomes (completion rate, success rate, and drop rate).

A secondary purpose of the study was to determine which student characteristics influence course completion, success, and/or dropout for the different types of distance learning courses. Variables to be considered were divided into background/ demographic variables (e.g. age, ethnicity, gender, enrollment status, region of residence, family education), academic variables (e.g. contact hours completed, withdrawal history, developmental courses completed, placement test scores), and environmental variables (e.g. employment status, marital status, financial need).

The third purpose of the study was to determine course characteristics that influence distance learning course completion.

A forth purpose was to provide DCCCD administrators and faculty with information regarding the withdrawal/retention behavior of the students enrolled in distance learning courses, and to provide insights that could lead to further research and improved policy and practices by community college leaders at other institutions in Texas and the nation.

Research Questions

To meet the purposes of the study, the following research questions were answered:

1. What is the difference, if any, between course outcomes for different types of distance learning courses?

2. What is the difference, if any, between course outcomes for traditional and distance learning courses?

3.   What student characteristics influence the course outcomes in distance learning

courses?

4.   What course characteristics influence the course outcomes in distance learning

courses?

Significance of the Study

The significance of the study for DCCCD was represented by the richness of the data

provided in relationship with the courses offered. Dr. Pamela Quinn, President of the LCET,

admitted that they have never had access to this type of information, so she views the results as

being useful for future decisions. The data can be used to determine the efficacy of the distance

education courses offered, as it provided a summative course evaluation. The results of the study

provided information for student advisors, helping them to recommend to students the right

approach for that student. As the production of TeleCourses is a costly process for the DCCCD,

it is helpful to have information about the effectiveness of the TeleCourses that are produced, so

that decisions can be made regarding future offerings and productions (R. Pool, Personal

Communication, April 28, 2004; P. Quinn, Personal Communication, April 27, 2004).

At the state level, the data analyzed matched the requirements of the Texas Higher

Education Coordinating Board (THECB) for evaluation of distance learning programs and

courses in Texas. The evaluation of the proposed outcomes may help Texas colleges and

universities minimize the effect of two-time limit law, that allows a student to take a course a

maximum of two times to still receive state subsidy, effective as of fall 2004 ("General

Appropriation Act. Special provisions relating only to state agencies of higher education," 2003)

(§50). House Bill 85 of the 74th Texas Legislature required THECB to devise a Distance

Learning Master Plan for the State of Texas. The recommendations incorporated in the Advisory

Committee Report (Texas Higher Education Coordinating Board, 1996) refer to student progress in distance learning courses: "Institutions should carefully monitor the progress of students engaged in distance learning to determine the effectiveness of instruction and make any needed changes". Other colleges in the state may use the methodology of this project to collect and analyze data relating to their own distance learning courses.

Research results illustrating the efficacy of TeleCourses produced by DCCCD may have a national impact. In addition to broadcasting locally for DCCCD students, LCET sells their TeleCourses to other institutions. Accordingly, LCET productions are broadcasted nationally. A positive or negative evaluation of the outcomes of these courses may impact the future demand for their use.

The operational use of Astin's theory to an area of research that has yet to be tapped, distance learning outcomes, may also prove to have national significance.

Delimitations

This study was limited to courses offered by member colleges of the Dallas County Community College District (DCCCD). DCCCD is composed of seven public two-year campuses located in the metropolitan area surrounding Dallas, Texas. Each campus offers many types of distance learning courses plus traditional lecture courses. Dallas TeleCollege, the virtual campus of DCCCD and housed in the LCET, offers only Internet and TeleCourse Plus courses and is accredited through Eastfield College, as Dallas TeleCollege is not accredited by any agency.

The study evaluated the completion, dropout, and success rates of distance education courses offered in TeleCourse, TeleCourse Plus, and Internet formats. As not enough courses

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were offered in live interactive television and individualized distance learning formats for the time period studied, these two methods were not included in the study.

There is a significant difference in the number of distance education courses offered from one semester to another. The most recent semester available to the researcher for study was fall 2003. This semester also had the most diverse offering of course delivered via distance learning up to the present date and thus was selected for study.

The DCCCD offers three methods of delivery - live-interactive television, individualized distance learning, and multimedia - for distance learning (Dallas County Community College District, 2003b) which were not a part of this study. The offerings for these methods of instruction were limited in the fall 2003 semester, and none of the courses selected has had these methods available.

The courses selected for this study were English composition (ENGL 1301 and 1302), government (GOVT 2301 and 2303), economics (ECON 2301 and 2302), accounting (ACCT 2301 and 2302), business (BUSI 1301 and 2301), and psychology (PSYC 2301). These courses were offered in both traditional and distance-learning formats (Internet, TeleCourse, and TeleCourse Plus). The selection of these courses is based on the fact that these courses were offered in fall 2003 in all four formats of delivery (traditional and three distance learning formats). All the courses selected are either DCCCD core curriculum and/or transfer courses. English Composition fulfills 6 credit hours of Communications requirement. Government, Economics, and Psychology satisfy part of the social/behavioral requirement. Accounting and Business courses are not part of the core curriculum, but they are transferable to 4-year institutions and were included in the study. Table 3 illustrates the composition of the general education core curriculum in DCCCD.

Table 3: DCCCD General Education Core Curriculum, 2003 - 2004

Subject Area		Required Credit Hours
Communication		9
	ENGL 1301	
	ENGL 1302	
	SPCH 1311	
Mathematics		3
Lab Sciences		8
Social/Behavioral Sciences		15
required	HIST 1301	
	HIST 1302	
	GOVT 2301	
	GOVT 2302	
elective (choose one of the following)	ANTH 2346	
	ANTH 2351	
	ECON 1303	
	ECON 2301	
	ECON 2302	
	ECON 2311	
	PSYC 2301	
	PSYC 2314	
	PSYC 2316	
	SOCI 1301	
	SOCI 1306	
	SOCI 2319	
Humanities/visual and Performing Arts		9
Other		4
Total		48

Source: 2003 - 2004 DCCCD Catalog

Each discipline offering courses in DCCCD has a supervising committee who decides on type and number of courses offered in the discipline, course objectives, and course competencies. Representatives of each college agree upon course objectives and competencies for each course, so that there is theoretically no difference among and between the colleges in regards to learning outcomes. The objectives and competencies are included in each course syllabus, and they are the same regardless of the method of delivery. Based on this practice, the assumption for the study was that the material covered in each course is the same regardless of method of teaching, as long as the course objectives are the same and intellectual competencies are identical for all the courses in the discipline. The lists of competencies for courses included in the core curriculum can be found in Appendix A.

The Colleague system which houses the DCCCD databases is a live system that changes continuously. Due to this fact, all the data necessary for the analysis was extracted at the same point in time and no previously compiled reports were used.

Limitations

This study focused on a single large urban multi-campus public community college district in the United States. The findings may not be generalized to four-year institutions or colleges outside of United States or outside the State of Texas. The findings also may not be generalized to private two-year colleges or to vocational and proprietary schools. The data used in this study was collected from Colleague database, the official reporting system of DCCCD. The accuracy of the data was limited by the input. No science courses were included in the present study because no science courses were offered in all of the modes of delivery to be studied (traditional lecture, TeleCourse, TeleCourse Plus, and Internet).

Random selection of students was not possible because the class was the unit of study. Also the random assignment of students in classes was not possible because of historical type of study to be conducted.

No student or instructor was required to participate because all the data used was secondary data from DCCCD student database.

Definition of Terms

Course outcomes: For this study, the course outcomes are dropout rate, completion rate, and success rate.

Dropout: student that formally withdrew from the class with a grade of W

Withdrawal: Termination of class with a grade of W

Course completion: Finishing a course with a grade other than W

Completer: student that receives a grade other than W

Success: Finishing a course with a grade of A, B, or C

DL: distance learning. For this study it includes TeleCourses, TeleCourses Plus, and Internet courses only

Internet course: Method of instruction that uses computers and computer peripherals

TeleCourse: Method of instruction that uses pre-produced video series and print material

TeleCourse Plus: Method of instruction that incorporates video and Internet classroom

Traditional classroom: Instruction tied to specified times and places, usually including lecture and printed text as the main instructional elements

Certified enrollment: the 12th day enrollment reported to the Texas Higher Education Coordinating Board for funding purposes

ACCUPLACER®: Assessment instrument offered by The College Board (www.collegeboard.com)

ASSET®: Assessment instrument offered by ACT (http://www.act.org)

COMPASS®: Assessment instrument offered by ACT (http://www.act.org)

TASP: Texas Academic Skills Program

TSI: Texas Success Initiative

Core Curriculum: A set of courses required for all degree programs

Colleague: The main system used by DCCCD to store and report information regarding students and employees. A product of Datatel, Colleague handles all the activities in DCCCD colleges from registration and records to payroll and financial aid

Dallas TeleCollege: Virtual campus of Dallas County Community College District, allowing students to access courses without going into a campus building

Nontraditional Student: A student who delays enrollment, attends school part-time, works full-time, is financially independent, is a single parent, has dependents other than the spouse

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The review of the literature centers on distance education and the methods of delivery employed in the Dallas County Community College District (DCCCD). The theoretical framework of distance education and student attrition are reviewed, including the most common theory used to explain student attrition developed by Vincent Tinto of Syracuse University. The differences between students enrolled in distance learning courses offered by community colleges and the typical traditional students described by Tinto require the exploration of other theories of student retention, and are thus reviewed in this chapter.

The "no significant difference" phenomenon between face-to-face and distance education courses described by Russell (2001) continues to dominate the literature, but a review of the shortcomings of the research done in the last decade cautions against having total confidence in the results of any single study. Phipps and Merisotis (1999) point to factors that may have an impact upon completion of distance learning courses, and the present review examines the variables contributing to academic performance in these courses. In general, most studies of the educational outcomes of students enrolled in distance learning courses lack vigor in regard to comparable control groups of students enrolled in traditionally delivered "seated" courses. The study at hand attempts to address this deficiency.

The review of the literature begins with the broad topics and then focuses more narrowly. The first section explores the definitions and evolution of distance education, and theoretical frameworks that have been applied to distance education learners. The second section focuses on the distance learning efforts at the Dallas County Community College District. This part of

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the review included information on the history of distance education at the DCCCD and the structure of the core curriculum. Student attrition and retention research follows with a separate section on distance learners' characteristics. The final section addressed the research on distance education that has been conducted in the past 30 years.

The sources used for the literature review were: (a) journals, (b) books, (c) dissertations, (d) the Educational Resources Information Clearinghouse (ERIC), (e) the Internet, (f) reports of the Texas Higher Education Coordinating Board (THECB), (g) internal reports from the DCCCD, and (h) personal communications. Additionally, the terms distance education and distance learning were used interchangeably throughout this review.

<div align="center">Distance Education: General Information</div>

History of Distance Learning

The concept of distance learning is not new in America or around the world, dating back almost 275 years. The earliest mention of an activity resembling distance learning dates from 1728, when Caleb Phillips, a teacher of shorthand, put a notice in *The Boston Gazette* offering to send weekly courses to whoever was interested (Holmberg, 1986). One hundred years later, a notice in "Lunds Weckoblad" offered the opportunity for "ladies and gentlemen" to study composition through the post. In 1843, the Phonographic Correspondence Society was formed in England, taking over the shorthand schools founded several years earlier by Sir Isaac Pitman. This was be the beginning of what later will be known as Sir Isaac Pitman Correspondence Colleges (Holmberg, 1986; Simonson, Smaldino, Albright, & Zvacek, 2003).

The first formal attempt at awarding formal course credit for distance education was made in Germany in 1856 by the Frenchman Charles Toussaint and the German Gustav Langenscheidt. They formed and organized a school for teaching foreign languages by

correspondence. A few years later, in the United States, Anna Eliot Ticknor started the Society to Encourage Study at Home in Boston. The Society enrolled more than 10,000 students, mostly women, between 1873 and 1897 (Simonson et al., 2003).

The first half of the 20th century witnessed the formal recognition of correspondence learning by governments and major corporations. In 1939, the French government, realizing that the education of their children would suffer as teachers were called to war, set up a government college, now called Centre National de Tele-Eseignement, which offered distance education courses (Holmberg, 1986). In the 1950s in the United States, the Ford Foundation released a 1,400-page study calling for "broadening the scope of the Foundation's activities from that of a local, charitable agency to that of an organization concerned with improving man's conditions and society on a worldwide scale" (Wood & Wylie, 1972). For the next 20 years, the Ford Foundation served as the single greatest benefactor of educational television (ETV). In 1962, the Educational Television Facilities Act (Public Law 87-447) was passed by Congress, and millions of dollars were directed to building and improving physical facilities for educational communication. For the first time federal money was available for ETV. Western Reserve University was the first to offer a continuous series of TeleCourses, followed by New York University who offered the well known "Sunrise Semester" televised series on CBS continuously from 1957 until 1982 (Simonson et al., 2003).

The founding of Open University in the United Kingdom in the 1970s represented a new era in distance education. Up to that period, distance education was generally offered by small private correspondence schools, with not much recognition by the public. The need for new distance-teaching universities was related to the need in many countries to increase access to postsecondary education. At the same time, it was clear that the adult population, which tended

to have work and family responsibilities, might constitute a significant group of prospective part-time students if the right media were made available (Holmberg, 1986).

The advent of fiber optic technology in the late 1980s and early 1990s allowed the expansion of live two-way audio and video systems of good quality. The Iowa Communications Network (ICN) provides two-way interactive video, Internet, and voice services to more than 600 classrooms, totaling about 100,000 hours per month (Bates, 1995). It represents a good example of state policy to develop technology that can expand access to education in rural areas, and to address challenges presented by barriers of time and space.

In reviewing the meeting agendas of the International Council for Distance Education between 1938 and 2001, Bunker found several emerging patterns. From the beginning there was a belief in providing access to higher education, followed by the commitment in providing education equal in value to traditional education. (Bunker, 2003).

Thus, from its beginnings in the early 1700s, distance education served those who could not access traditional forms of education. The development of new technologies opened opportunities for designing new programs, providing a multitude of choices to the prospective students, and dramatically expanding access to higher education.

Theoretical Frameworks of Distance Education

The development of a theory of distance education came from the need to define the field and its components so that better decisions could be made. There was a perception in the distance education field that the lack of a theoretical framework contributed to negative attitudes if not dismissal by the academy (Simonson et al., 2003). Even though distance education has been practiced since the 18th century, the first distance education theory was not developed until the 1970s. In the past thirty years, there has been a dramatic expansion of both theoretical and

applied research in distance education. The review in this section focused on the most significant models as they explain the dynamics of the processes involved in distance education.

Otto Peters is a German scholar who worked at the German Institute for Distance Education at Tubigen, in the Federal Republic of Germany. Later on he moved at the Berlin College of Education, and in 1975 became the Foundation vice-chancellor of the Fernuniversitat in Hagen. In 1965, he published his theory regarding distance learning. The increased popularity of correspondence courses influenced Peters to conclude that distance learning is a method of education for the masses, for which technology is required. He compared distance education with the industrial production of goods. He stated that traditional education was just a preindustrial form of education, in which the learner is in contact with his teacher. Peters used an artisan as an analogy of the teacher who is permanently in contact with his craft. In his opinion, distance learning is a product of the industrial era, using postal service and transportation as means of reaching the students (Peters, 1998). Peters analyses distance learning using industrial elements: rationalization, division of labor, mechanization, assembly line, mass production, preparatory work, planning and preparation, standardization, change of function, objectification, and concentration and centralization. His conclusion is that distance education represents the final stage in the advancement of education, defined as: egalitarian, democratic, aimed at mass audience, technology-based, and free from the dimensions of time, place and persons. The teaching process in distance education is restructured by increased mechanization. The student can now chose his own way of learning, casting new responsibilities on the learner (Peters, 1998).

A second theoretical approach is Michael Moore's independent study/autonomy theory. In 1973, Moore shaped his theory of distance learning based on two "macro-factors": distance

between teacher and learner and autonomy of the learner. In his view, distance education has three components: teacher, learner, and a method of communication. Moore believes that 'distance' is composed of two elements: one is two-way communication generating a dialog and the second is "structure" or the extent to which a program addresses the learner's needs. Regarding the autonomy of the learner, Moore observes that in distance education the learner has a lot of autonomy, due to the gap between him/her and the teacher. The learner needs to be active, accepting responsibility for learning and having control of his/her learning (Keegan, 1990; Simonson et al., 2003). Later Moore introduces the concept of "transactional distance," stating that the distance between the teacher and learner is not only geographic, but also educational and psychological. The concept shows a distance in the relationship of the two partners, learner and teacher (Saba, 2003).

A third theory was the independent study theory, developed by Charles Wedemeyer. Wedemeyer established himself as the first American theorist of distance education. For him the core of distance education was the independence of the learner. He believed that nobody should be denied the opportunity of education because he/she is geographically isolated, socially disadvantaged, poor, in poor health, institutionalized, or in general unable to attend an institution's campus. Wedemeyer hypothesized that the independent learner is able to succeed and that success will enable him to survive. Furthermore, in distance education, the learning is self-paced, individualized, and the learner has the freedom to choose his own goals and activities. Wedemeyer described a structural system for distance learning more aligned to his views. He thought that the only way to break space and time barrier was to separate teaching from learning and plan for them as separate entities (Wedemeyer, 1981). Wedemeyer believed that,

teaching and learning are separate acts, invested in separate persons (….) Hence any person, no matter how poor, how remote, how socially disadvantaged, how physically handicapped, can be in communication with a teacher or many teachers – if he has an effective communication system. Technology can provide the means – the tools – to achieve learning towards social and humanistic ends. (Wedemeyer, 1981 p.100)

Wedemeyer's proposed system had 10 characteristics that addressed the role of the teacher, learner, the incorporation of the media, and the necessity of evaluation of the student (Wedemeyer, 1981).

A fourth theory was Borje Holmberg's communication and interaction theory, published in 1986. For Holmberg, the focus is on the learner and on his/her responsibility to learn. However, he advocated the importance of a personal relationship between the teacher and the learner, with a guided conversation in which questions, answers, and arguments are exchanged (Holmberg, 1986; Keegan, 1990; Simonson et al., 2003). Later, in 1995, Holmberg expanded his theory and making it empathy based. He considers that (1) distance education serves only individuals who cannot use face-to-face teaching; (2) distance education is guided by printed materials, mediated communication between the student, and the supporting organization; and (3) personal relations between the learner and the organization, require feelings of empathy to be promoted. The empathy promotes a student's motivation to learn (Holmberg, 2003).

After reviewing the theories developed by scholars including Peters, Wedemeyer, Moore, and Holmberg, Desmond Keegan designed a theoretical framework for distance education. He suggests that any theoretician has to answer three questions before attempting to develop a theory: (1) is distance education an educational activity? (2) is distance education a form of conventional education? (3) is distance education possible or is it a contradiction in terms (Keegan, 1990 p.105)? The answers to the three questions constituted the theory proposed by Keegan.

According to Keegan, distance education is an educational activity with a theoretical base in general educational theory. It is not based on interpersonal communication, but it rather is characterized by the privatization of institutionalized learning (Keegan, 1990; Saba, 2003; Simonson et al., 2003). The answer to the last question is more complex and it is based on the research done by the school of philosophical analysis, represented by R. S. Peters, Paul H. Hirst, and Michael Oakeshott, who tried to identify the nature of teaching and learning according to Keegan (1990). Peters explained learning as a "result of communication from a teacher" (Keegan, p.108) and Oakeshott went even further saying "many of the important aspects of teaching cannot be taught directly. These aspects can only be learned in the presence of persons who have the qualities to be learned" (Keegan p. 109). Keegan used their work as basis for explaining distance education, concluding that, as the teaching acts are separated in time and space, distance education is a contradiction: distance instruction is possible but not distance education.

Keegan offers three hypotheses drawn from his theoretical framework. The first hypothesis is that the separation of teaching and learning results in poor integration of students into the life of the institution, which may increase the propensity to dropout. Second, the quality of the learning may suffer in those institutions where the reintegration of teaching is not achieved satisfactorily. Last, the separation of teaching and learning acts place distance education among the non-traditional forms of education and the degrees, diplomas, or other qualifications may be questioned and not recognized. In 1995, Keegan suggested that electronically linking the learner and the teacher can create a virtual classroom, and that it was the teacher's responsibility to offer equivalent learning experiences for all learners.

Another theory also used to explain distance education is Farhad Saba's systems theory. Initially conceptualized by Ludwig von Bertalanffy in 1968, systems theory was used to explain human development, chemistry, and other phenomena in the nature. Saba attempts to apply this theory to distance learning. He recognizes that education, and especially distance education, is dynamic and continuously changes. Distance education is composed of several systems (i.e. hardware systems, software systems, educational system, social system) interacting and influencing each other (Saba, 2003).

Saba used system modeling to demonstrate Moore's concept, showing that the highest hierarchical level between structure and autonomy is the inverse relationship between the two. The relationship determines how much transactional distance is required at each point in time. If the learner needs more instruction, then transactional distance decreases and the dialog increases. For a beginning learner more structure is required, but as he/she acquires expertise autonomy increases and the structure decreases (Saba, 2003).

The dynamic systems change in time and space, form multiple patterns, and result in shifts into chaos (Thelen & Smith, 1994). The "sequence of *complexity to simplicity to complexity* captures the essence of dynamic systems whatever the material substance of the elements: simple molecules, photons, biological molecules, cells, tissues, organs, neurons, networks of neurons, organisms, or social systems" (Thelen and Smith., 1994 p. 51). The characteristics of a dynamic system are complexity "consisting of very many individual elements" (Thelen & Smith, 1994 p. 51), hierarchical, dynamic, nonlinear that "means that change in the subsystems may not be smooth and incremental, but can occur with spurts, plateaus, and even regressions" (Thelen & Smith, 1994 p. 84), self-organizing "shifting from one pattern to another … and generating elaborate structures. These emergent organizations are

totally different from the elements that constitute the system, and the pattern cannot be predicted solely from the characteristics of the individual elements" (Thelen & Smith, 1994 p. 54). In distance education, therefore, the teacher, learner, and the instructional designers form a system in continuous interaction.

Systems theory allows for more theoretical constructs to be added to the model. An important feature of the distance education as a dynamic system is that a variety of data can be used to represent variables. Data can be amount of interaction, a particular communication medium, or even emotion (Saba, 2003).

Each of the abovementioned theories has added to the body of knowledge regarding distance education and refines finer points in the organization of the method. Peters sees it as an opportunity for the masses, allowing a larger access to education. At the same time, more responsibility is placed on the learner, a fact observed by Holmberg, Keegan, and Wedemeyer. In addition, Holmberg accentuates the need for a personal relationship between learner and teacher, with a solution proposed by Keegan in the form of virtual classroom by electronically linking students and teachers to bridge any gap between the acts of instruction and learning. Saba's attempt at theory needs more research, as systems theory was not applied usually in education.

Definitions of Distance Learning

The Southern Association of Colleges and Schools, the higher education accrediting body for colleges in 11 southeastern US states and Latin America, defines distance learning "for the purposes of accreditation review, as a formal educational process in which the majority of the instruction occurs when student and instructor are not in same place" (Southern Association of Colleges and Schools, 1997) . A more comprehensive definition states not only that student and teacher are separated in space and perhaps time, but also that technology is used to bridge the

instructional gap (Distance Education Clearinghouse, 2004; Engineering Outreach, 2001; Southern Association of Colleges and Schools, 1997; Willis, 1993). The methods of delivery can be correspondence, video, voice, and/or computer technologies (Distance Education Clearinghouse, 2004; Engineering Outreach, 2001; Southern Association of Colleges and Schools, 1997; Willis, 1993). The Texas Higher Education Coordinating Board (THECB) has a slightly different definition from SACS that includes the classes taught off-campus even though students and instructors are face-to-face (Texas Higher Education Coordinating Board, 2003c).

There are differing definitions of distance education. According to THECB's definition, Distance education or "distributed education is education provided through instruction delivered other than face-to-face on a student's home campus. It may be delivered through electronic modes of distance education including television, interactive video conferencing, or computer networks, or it may be delivered off-campus by faculty travel to distant sites" (2003b). The THECB defines a distance education class as one where more than half of the instruction is done at a distance from the main campus of the college (2003c). The THECB definition is consistent with that argued by Michael Moore, professor of education from Pennsylvania State University and founder of the *American Journal of Distance Education*, who defines distance education as "planned learning that normally occurs in a different place from teaching and as a result requires special techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (Distance Education Clearinghouse, 2004). In the report published by the National Center for Education Statistics (NCES), distance education included both synchronous and asynchronous instruction (National Center for Education Statistics, 1999), also consistent with THECB definition.

Borje Holmberg (1986) has written a definition that applies internationally to more than

one country, including the socialist countries from Eastern Europe. Writing three years before

the fall of the Berlin Wall, he explains that distance learning,

> includes the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises, but which, nevertheless, benefit from the planning, guidance and tuition of a tutorial organization (p. 2).

Otto Peters (Peters, 1998), vice-chancellor of the Fernuniversitat in Hagen, Germany,

promotes an industrial definition, considering distance teaching/education (*Fernunterricht*) an

industrialized method of teaching and learning for imparting knowledge, skills, and attitudes as

> a systemic connection is found from the very start between learning and teaching systems interpreted or developed in accordance with concepts of industrialization and the general processes of learning and teaching, because the education and training of students is viewed as the 'product' in the process (p.116).

Keegan (1990) attempts to review and synthesize these available definitions. He

proposes six basic elements of distance education. The elements are separation of teacher and

learner; the influence of an educational organization; use of technical media; two-way

communication; the possibility of occasional meetings for both didactic and socialization

purposes; and "participation in an industrialized form of education which, if accepted, contains

the genus of radical separation of distance education from other forms within the educational

spectrum" (p. 39).

As SACS separately accredits the seven DCCCD colleges, the definition of distance

learning used in this study is the one required by the accrediting agency. The THECB definition,

while broader, includes all courses designated as distance learning by SACS.

College Student Retention

Student Attrition Theories

The present study looks at course completion, drop out, and success rates. A theoretical framework is necessary to explain the results. The majority of research studies look at how Tinto's theory applies to distance learning. As in distance learning the contact between the learner and teacher is minimal more theories should be reviewed. The models presented are Astin's I-E-O model, Tinto's theory of student departure, Pascarella's model of assessing change, Bean's model of non-traditional student attrition, and Kember's model of student progress.

Student Engagement or Input – Environment – Outcome (I-E-O) Model – Alexander W. Astin

Astin defined student involvement or engagement as the amount of effort a student was willing to put into the learning process. In his view, the student was supposed to be an active participant in achieving the desired learning, shifting the focus from what the instructor does in the classroom to what the student does to achieve his/her goal. Astin noted that educators had to compete with other forces in their students' lives and that the student's energy and time use is influenced by his or her personal agenda and background characteristics. According to Astin, learning outcomes are influenced by the share of time and energy students allocate to education versus family, friends, and work. Astin's I-E-O model attempts to measure involvement in any activity the students had on campus and in the classroom, and views the act of dropping out as the ultimate form of non-involvement (Astin, 1984)

Accountability has becomes a key issue in American higher education and requires an assessment process that is able to provide feedback to the teachers and to enhance learning. Astin believes that assessment findings should provide information about the connections between the

inputs and outcomes of education. The Input – Environment – Outcome (I-E-O) Model was initially and designed to assist in educational assessment (Astin, 1993). Early research in education showed that the output of a course or program does not tell much if it is not analyzed in view of the input. Astin concluded that any assessment is incomplete if it does not include data on input variables and the environment in which the educational process takes place. The I-E-O Model was therefore created for use as a framework for developing assessments.

In the I-E-O model, "inputs" refer to the background variables, the personal characteristics that the student brings into the program or classroom. The "environment" refers to the actual experiences of the student in the classroom. "Output" represents the end result that it is achieved in the course. In research terms, the input represents the independent variables, the environment represents the treatment, and the output includes the dependent variables (Astin, 1993).

A great concern of researchers is to control for the interference that input variables may have which result in an unwanted impact on the output. A basic purpose of Astin's model is to control for input differences. For Astin, the model "represents nothing more than a convenient way of looking at phenomena that interests me – a tool for trying to understand why things are the way they are and for learning what may be done to make things differently" (Astin, 1993 p.20).

The model was developed to be used in natural experiments. Natural experiments allow the researcher to study what occurs in a classroom, without the artificial conditions of true experiments. Also, this type of experiment permits the study of many effects of environmental variables in the same time. However, the main limitation of natural experiments is that the students are not assigned randomly to the various environments. The I-E-O Model controls for

the input variables, minimizing the chances that the inference and influences regarding the outcomes may be wrong.

<div align="center">*A Theory of Student Departure – Vincent Tinto*</div>

Tinto's primary concept is that students enter colleges or universities with unique backgrounds, formed by various personal, family, and academic characteristics and skills. They have different goals and intentions regarding higher education, which are continuously modified due to the interactions between the individual and the college structures or members of the college community. The interactions between the student and the different academic and social systems also have a major role in integration of the individual, and can result in an increase in retention rates (Tinto, 1993).

Individual background is the first element that Tinto believes has an impact on student departure. This refers to family background variables including age, gender, and race, parents' level of education, socioeconomic status, and size of community. The initial attitudes and goals of the student when he/she enters college and his/her skills, motivation, and pre-college educational experiences are incorporated into the whole picture of a student's individual background. The influence of the external communities is controversial. Events in these external communities, including family or work, can help improve retention in college, but at the same time it is possible that the students will be "pulled away" by events with no connection with the institution (Tinto, 1982).

Tinto recognizes institutions as complex systems with multiple communities, academic and/or social, that will help students have an easier transition into college life. The model accepts the possibility that the student does not have to be integrated in both systems. The two systems "are conceptually distinct processes, they are mutually interdependent and reciprocal" (Tinto,

1993) (p.119). Tinto believes the interactions between goals and commitments (internal and external) have important influence in the decision for departure and in the form of that departure. Low goal commitments may lead to total withdrawal from any form of higher education, whereas the enhancement of the initial commitments may lead to an upward transfer at another institution.

Tinto's opinion is that socializing between students and /or students and teachers may diminish student departure. In distance learning the contact between teacher and students and between students in the classroom is minimal, as the student is supposed to be independent and in control of his studies. Even though this theory may apply to distance learning, the theory was designed for traditional college students and the different type of student enrolled in these courses make it an unsure fit.

A General Model for Assessing Change - Ernest Pascarella

Pascarella (1980) designed a general model that takes into consideration the institution's structural characteristics and its environment. He determines five major sets of variables that are supposed to influence the growth, directly and indirectly. The first set of variables refers to students' background, a set of individual characteristics that the students bring to college. The second set of variables includes features of the institution such as size and selectivity. Both sets shape the third variable set, the college environment. The interaction with agents of socialization represents the fourth set of variables. This fourth set is influenced by the first three sets: student background, institutional characteristics, and college environment. Quality of effort is the fifth and final set of variables (Pascarella & Terenzini, 1991).

Pascarella considers that interaction between students and faculty or students and students plays an important role in student retention. Very similar with Tinto's theory,

Pascarella's model focuses also on the interaction between students and faculty. Not all types of student-faculty non-class contact have the same influence. The informal interactions which extend intellectual content of formal academic education into the non-classroom life of the student have the greatest impact (Pascarella, 1980).

Initially Pascarella's model was designed to explain the change in learning and cognitive development of students. Later on, the model proved to be useful in studying other college outcomes. As distance education is not based on faculty-student interaction, Pascarella's theory does not seem suitable to be used in distance learning evaluating and assessing outcomes compared to traditional learning outcomes. Since his theory is also based on the behavior of traditional college students, a fact that clearly does not apply to distance education, as those students are non-traditional undergraduates, it is of limited use to the study at hand.

A Synthetic Causal Model of Student Attrition - John Bean; Bean and Metzner

John Bean of Indiana University applied a causal model adapted from employee turnover in work organization to student attrition in institutions of higher education. His basic assumption is that student attrition in postsecondary institutions is similar to turnover in work organizations (Bean, 1980). The model identifies four classes of variables: background variables of students; organizational variables including grades, close friends, informal contact with faculty; environmental variables over which the institution has little control; and attitudinal and outcome variables, including educational goal, certainty of choice, loyalty (Bean, 1982).

As non-traditional student enrollments have increased in recent decades, especially at community colleges, Bean and Metzner (1985) tried to explain nontraditional student's attrition and define risk factors that influenced student departure for that segment of population. It was clear from the research that even though there was an increase in nontraditional student

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enrollment, it seems likely that these students would not graduate with degrees. Nontraditional students are a very diverse group and because of that it is difficult to define the characteristics of nontraditional students.

The National Center for Education Statistics (NCES) identified the nontraditional students based on information regarding enrollment, financial dependency, family situation, and high school graduation. A nontraditional student delays enrollment as a freshman after graduating from high school, attends school part-time and works full-time, is financially independent, and has dependents other than a spouse. The nontraditional student may also not have a high school diploma and may be a single parent (National Center for Education Statistics, 2002b). In 1999-2000, NCES defined 72.6% of the students enrolled in US higher education as nontraditional. At community colleges, NCES defined the enrollment of nontraditional students even higher (89.5%) than at 4-year public universities (57.5%). The same study notes that nontraditional students are more likely to enroll in distance education courses. Sixteen percent (15.5%) of the undergraduates enrolled in distance education at US colleges and universities in 1999-2000 were nontraditional students (National Center for Education Statistics, 2002b). Bean and Metzner (1985) defined a nontraditional student as a student that is a commuter, is 25 years old or older, and attends school part-time. The non-traditional student was also very concerned about school academic offerings, especially courses, certifications, or degrees (National Center for Education Statistics, 2002b). Dropout from college of nontraditional students also resembles the employees' turnover in a place of work (Bean & Metzner, 1985). The students may have the same reasons for dropping a course as employees have to quit their jobs (Harvey-Smith, 2002).

The conceptual model developed by Bean and Metzner (1985) identifies four sets of variables that influence the dropout decision. These variables are:

1) academic outcome – students with a low GPA is expected to drop at a higher rate than the traditional students

2) intent to leave;

3) background and defining variables – age, enrollment status, residence, educational goals, high school performance, ethnicity, and gender;

4) environmental variables – finances, hours of employment, outside encouragement, family responsibilities, opportunity to transfer

Two compensatory interactions are included in the Bean and Metzner model. One interaction is found between academic and environmental variables, with the environmental variable being more important for the nontraditional students. The second interaction appears between academic outcomes and psychological outcomes (utility, satisfaction, goal commitment, and stress).

The non-traditional student described by Bean is different than the distance-learning students. Bean's students receive instruction via face-to-face classes, so that the focus of the model is on the quality and quantity of student-student and student-faculty interaction. The distance learning students receive their instruction via technology and the package of study materials (Kember, 1995). These differences make Bean's model unsuitable for evaluating distance learning in the study at hand.

A Model of Student Progress – David Kember

Based on previous models of student dropouts, but taking into consideration specific characteristics of distance education adult students, Kember (1989) proposed a model explaining the dropout of distance learning students. By 1995, when Kember published O*pen Learning Courses for Adults: A Model of Student Progress,* a full model of student progress had been

developed (Kember, 1995). The main idea behind Kember's theory is that adult students study part-time and have to cope with more social demands than do traditional students. They are more likely to work, be married and have dependents, and have social commitments. Previous research suggests that the primary benefit from offering distance education programs for postsecondary institutions include increased enrollment of nontraditional students and reduced cost of the programs (National Center for Education Statistics, 1999). Kember's first set of variables are clustered in student characteristics called "entry characteristics", that include age, number of children, previous education, sex, sponsorship/financial aid, region of residence. The second set of variables are the under "goal commitment", with an extrinsic (student's commitment to obtaining a certification or a degree) and intrinsic (how interested is the student in the subject) motivation. The integration components reflect academic and environmental integration. The final element of the model is "cost/benefit analysis". The student will decide if the opportunity costs of time spent studying are worth the certification that will be obtained.

Kember developed an instrument, the Distance Education Student Progress Inventory (DESP), which he used to validate his theory. He confirmed the four primary variables of the model: social integration, academic integration, external attribution, and academic incompatibility, and also confirmed relationships between these variables. Kember's model is based upon research on groups of students enrolled in distance-learning institutions in Hong Kong during the 1970s and 1980s. Unfortunately Kember did not test his theory outside Hong Kong's borders, in a variety of different institutions, or with different cohorts, which raises questions regarding the generalization of the theory.

Woodley, de Lange, and Tanewski (2001) replicated the Kember study using 450 students enrolled in business courses at Open University in the United Kingdom. The results

obtained were different than Kember's, suggesting the model of student progress does not apply to this group of students (Woodley et al., 2001). Similar results were obtained earlier by Thompson (1999), who administered the DESP to students enrolled in their fourth year of bachelor of education courses in an Australian university. Her results showed that the subscales identified by Kemper classified correctly about 64% of the withdrawals but the result is lower than the 80% obtained by Kember in his study of Hong Kong students (Thompson, 1999). No study using Kember's theory and looking at community college students was found in the review of the literature. Given the existent differences in organizational structure, governance, faculty, and student roles, the difficulties in replication made Kember's theory unsuitable for the study at hand.

Distance Education Learners at US Higher Education Institutions

A study conducted by the National Center for Education Statistics found that 62% of public two-year institutions offer some type of distance education. During the same period, 9.6% of all US community college students had taken at least one distance education course (Cohen & Brawer, 2003; National Center for Education Statistics, 1999). During the 1999-2000 academic year, 7.6% of the undergraduate students were participating in distance education, with public two-year colleges having higher percentage (9.0%) participation than four-year colleges (6.6%). Sixty percent (60.1%) of the students participating in distance education were enrolled in Internet classes, 37.3% in live TV/audio, and 39.3% were enrolled in prerecorded audio/TV classes (National Center for Education Statistics, 2002b).

Out of all US undergraduates, students participating in distance education are more likely to be nontraditional (15.5%) than traditional (5.3%) students. In public two-year institutions, 89.5% of nontraditional and 10.5% of traditional students enrolled in distance education courses,

with a higher percentage (75.2%) of highly and moderately nontraditional students than at public

four-year institutions (37.5%) (National Center for Education Statistics, 2002b).

DeFerrari (1998) examined the relative advantages of distance learning courses that may

have an impact on the students' decision to enroll in this type of course. He included in his

sample both traditional and non-traditional students, defined by the score on a Nontraditional

Student Scale developed by himself, which is based on the combined sums of z-scores of age,

marital status, number of children under 18, and number of work hours per week (DeFerrari,

1998). His results showed that the students with higher scores on Nontraditional Student Scale

are more likely to state that they are willing to adopt Internet distance learning and are more

likely to perceive the advantages in distance learning in view of their need for flexibility.

Distance education learners are likely to be individuals unable to participate in face-to-

face on campus courses (Imel, 1998). They are older, more often females, and high school

graduates (Perez & Foshay, 2002). Studies conducted on distance education students showed that

TeleCourse students are more likely to be women and older than their on-campus counterparts

(Cohen and Brawer, 2003). In general, distance education students are older and busier than the

traditional students (Carr, 2000). Selected research shows that distance education is better suited

to meet the needs of some adult learners, as it does not require the presence on campus of the

student (Moore, 2003). In a study conducted by Daugherty and Funke (1998), undergraduate and

graduate students enrolled in web-based instruction (WBI) completed an end-of-course survey in

which they were asked to make comparisons between the traditional instruction and WBI. The

graduate students, primarily employed, and married with families, remarked that the Internet

courses allowed them to better integrate school, work, and family (Daugherty & Funke, 1998).

The profile of the distance learner matches the characteristics of community college students.

Student Retention Research Related to Distance Learning

A key characteristic of American community colleges is their open door policy that provides open access which means that students can enroll in classes without completing a plan of study. It is common for a student to enroll in class, drop it, and then return with no penalty. Reasons given for dropping out are diverse, but most of them refer to personal problems beyond institution's control, including but not limited to changes in work schedule, health problems, problems with childcare, financial burdens, relocation, attendance at other institution, etc (Cohen & Brawer, 2003).

Many students do not have the goal to finish a degree. Many of them just want to take courses to transfer at a four-year college or to gain job-related skills (Sydow & Sandel, 1998). The course withdrawal process is complex as well. The research literature often does not take into account that the withdrawal may be voluntary: for example, the student may have met his goal in the course, or it may be due to performance, when the student prefers to receive a W instead of a failing grade (Woodley et al., 2001).

Sydow and Sandel (1998) conducted a study to determine reasons for high student attrition at Mountain Empire Community College, a rural community college in the mountains of western Virginia. Their study included all students that withdrew before the end of the semester, and had the purpose of identifying the reasons students had for withdrawing. Sydow and Sandel found that females were more likely to persist than males. Students in age group 20 to 25 are also more likely to withdraw. About 66% of the students surveyed gave work conflict as a reason for withdrawal; 32% of students cited personal or family illness on their withdrawal forms, and 24% of the phone respondents cited personal and family conflicts (Sydow & Sandel, 1998).

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In an article describing an ongoing attrition study at Johnson County Community College (Kansas), Conklin (1998) attempted to document the reasons students drop classes, and to analyze the possibilities for helpful intervention. The survey was administered to all students requesting a change of schedule from the admission office. The percent of students dropping courses remained stable at about 15% to 16% of total enrollments, and the number of classes with high attrition rates remained at about 3% to 4% of the total number of courses offered. The top five reasons the students gave for dropping courses were work schedule conflicts, bad time/inconvenient, personal problems, too hard/bad grades, and a dislike of the instructor. Comparing the reasons given by all students with those given by students enrolled in high attrition classes, the researchers found that "too hard/bad grades" reason was the second on the list for the students in high attrition classes (Conklin, 1997).

Matley (1979) looked at the relationship between grades and withdrawal from courses. His purpose was to discover a relationship between the academic standing in a class and the time of departure. He selected fourteen classes known for the high number of Ws presented at the end of the semester. The classes were offered at an unnamed southern California community college and all of them were transfer courses. Studying the course roll sheets and the number of W grades awarded, the results concluded that there was a slight correlation between grade and the week of withdrawal. The Ws were assigned by the instructors to low performing students and often in lieu of Ds or Fs (Matley, 1979).

As community college administrators and faculty believe that low grades and withdrawals are characteristics for students who register late, Smith, Street, and Olivarez (2002) studied the differences between students enrolling for classes during the three periods of registration at a west Texas community college. Two groups of students were considered, new

students and returning students. The four variables studied were semester GPA, successful completion rate, withdrawal rate, and persistence. For both groups, late registrants were less likely to persist than early or regular registrants. Also the withdrawal rate was also higher for late registrants. For returning students, early registrants earned higher GPA than late registrants. No significant difference was found for new students in GPA value (Smith, Street, & Olivarez, 2002).

One category of variables that can be found in all of the theories of student attrition are background characteristics. Given that community colleges have an open access/open door policy, a high percentage of students may be underprepared for academic work. In a study conducted by Grimes and David (1999), the researchers looked at the differences between two groups of students enrolled in a community college. The data was collected from Student Information Form developed by the Cooperative Institutional Research program (CIRP) operated under the direction of Alexander W. Astin at University of California at Los Angeles (UCLA) and completed by entering students at an open-admission community college in Florida.

The two groups, one of college-ready and one of underprepared students, were compared over three-years of outcome measures including graduation rates, persistence, hours completed, course completion rate, and grade point average (GPA). Grimes and David also looked at differences in demographic, experiential, and attitudinal characteristics, including age, gender, ethnicity, socioeconomic status, and academic preparation. Their results showed that the two groups differed significantly on course completion rates, with 59.7% for the underprepared students, and 76.7% for the college-ready ones. The groups also differed significantly by ethnicity, type of high school course work, high school grade point averages, and degree aspirations (Grimes & David, 1999).

In a previous study, Grimes (1997) found academically underprepared community college students displayed lower course completion rates and greater attrition than did college-ready students. She administered a series of tests to 140 students admitted to an unnamed open door community college with a ratio of minority students of 15%. The instruments included a placement test, a locus of control test, and a self-esteem self-reporting questionnaire. The results showed that college-ready students presented a higher course completion rate. The nonpersisters, either underprepared or college-ready, demonstrated a low course completion rate and lower GPA (Grimes, 1997).

Course dropping is not a well-studied aspect of student behavior at US community colleges. Linda Serra Hagedorn and her team at the University of Southern California's TRUCCS (Transfer and Retention of Urban Community College Students) project observed patterns of behavior related to course dropouts (Maxwell, Hagedorn, Cypers, & Moon, 2003). Their study included 5,000 students enrolled in nine urban community colleges in Los Angeles. Based on the departure reasons uncovered by research (including lack of clear intentions, fulfillment of educational goals, conflict with work or family, integration in college environment, multiple enrollments), the TRUCCS project deployed a longitudinal analysis to achieve a fuller picture of processes of course dropping and educational attainment. Data were extracted from the students' transcripts and examined over three semesters. Course dropping is defined as a W grade on the transcript, withdrawal being initiated either by instructor or student.

The TRUCCS findings showed that the dropout rates were high for both entering and returning students. Over 32% of the first-time students dropped one or more courses after the census date in their first semester. The data reveals that 43% of students enrolled in 4-6 courses had dropped at least one class. This percentage decreased to 11% for the students enrolled in 1-2

courses. These results show a direct relationship between the probability of dropping and the students' course load. The results showed that the higher the course load, the higher the probability for the students to drop. For example 11% of students enrolled in one or two courses dropped whereas for the students enrolled in four to six courses 43% dropped. The dropout by course type shows that for courses transferable to four-year colleges the rate is higher (65%), with a 26% drop out rate in English (Maxwell et al., 2003).

The characteristics of students did not indicate a major impact on course completion behavior. There is a significant difference at 0.05 level for ethnicity in the dropout rates. No significant difference was found for gender and degree aspiration. An interesting finding of the study was in regard to hours worked. Similar drop rates were found for students without jobs and those with full-time work, and they were less than the rates for the whole sample. A higher drop rate was obtained for students who were employed part-time than for those employed full-time. Maxwell et al. (2003) found a relationship between the number of courses dropped in a semester and the persistence in the following semester.

One of the traditional functions of community colleges is transfer, and the performance of community college transfer students in upper level courses at four-year colleges and universities has long been of high interest to scholars. Montondon and Eikner (1997) compared the performance of native and community college transfer students in an accounting course. One of the measures of success in the accounting class was the completion rate of the course. The results showed that a higher percentage of native students dropped the accounting course (27.8%) than did the two-year community college transfers (21.6%) (Montondon & Eikner, 1997).

In an ERIC review of community college student attrition research, Summers (2003) identified the most common variables studied as they relate to attrition. In the first group, student

characteristics, "age" is a controversial variable as researchers found it as being a predictor of dropout. However, other research as those conducted by DeVecchio in 1972 and Mohammadi in 1994 (cited by Summers, 2003) showed no significant relationship between age and persistence. The literature shows that the majority of studies found no relationship between gender and ethnicity and attrition. The results regarding relationship between socioeconomic status and completion are unclear. A study of the number of hours worked showed that students who worked full-time are more likely to dropout. Other factors that may influence dropout behavior are parents' educational background and demands from the family. Academic factors including high school grades are also predictors of persistence, as are the commitment and clear academic goals (Summers, 2003).

Mohammadi (1996) reported longitudinal findings for students enrolled at Patrick Henry Community College, a rural medium sized college and part of Virginia Community College System. Studying the retention rates after four years for different cohorts, the author concluded that after one year, the retention rates for the white cohort were higher than for the black cohort and slightly higher than other minority groups. However, the white group experienced lower retention rates than blacks after two years, and the "other" minority group had the highest retention rate. Related to gender, male retention rates were higher than female (Mohammadi, 1996).

Harvey-Smith (2002) conducted a literature review of the studies conducted in the last 20 years and looked at retention of African American students, and of African American men in particular, in the US higher education. The review showed that characteristics such as positive self-esteem, self-image, and internal locus of control have in impact on minority students'

retention. The increasing cost of college tuition impacts negatively the retention, financial aid having a major influence on the decision of staying in college.

Distance education research is focused on comparing traditional versus distance education using diverse student outcomes. In his controversial work *The No Significance Difference Phenomenon,* Thomas Russell (2001) reviewed 355 studies that examined traditional education and distance learning, and concluded that there is no difference in student outcomes between the two methods. He also concluded that the technology does not improve learning but rather it was just another method of teaching. Russell's work is considered controversial due to the nature of the studies reviewed, as many of the studies are not original nor did they purport to cross-reference one other.

Russell's review of 365 studies found no significant difference in grade distribution (Johnson, Aragon, Shaik, & Palma-Rivas, 2000; Britton, 1992, as cited by Russell, 2001). No significant difference was found also in final grades or final examination scores for traditional and non-traditional education (Ryan, 2000; Clarke, 1999; Kortemeyer & Bauer, 1999; Schulman & Sims, 1999; Smeaton & Keogh, 1999; Cleveland State University, 1998; LaRose, Gregg, & Eastin, 1998; The WestNet Program, 1998; University of Main System, 1998; Hoey, Pettitt, & Brawner, 1998; Old Dominion University, 1997; Rensselaer Polytechnic Institute, 1997; Wilson, 1996; Souder, 1995; Knott, 1993; Britton, 1992; Seigel & Davis, 1989 as cited by Russell, 2001). Russell's review revealed that retention and completion was similar in both styles of education (Dempsey, Driscoll, & Litchfield, 1993; Phelps, Wells, Ashworth, & Hahn, 1991; Annenberg/CPB Project, 1988, as cited by Russell, 2001).

In an article in *The Chronicle of Higher Education*, Carr (2000) interviewed administrators from two community college districts, DCCCD and Tyler Junior College, both in

Texas, and examined statistics on completion rates for traditional and distance learning courses. Course completion rates were found to be 10 to 20 percentage points higher in traditional courses than in distance learning ones. The LeCroy Center at DCCCD found completion rates 11-15 percent lower than traditional courses, and Tyler reported 58% completion rates for the Internet courses versus 71% in traditional classes. At the University of California at Los Angeles (UCLA), the completion rates for Internet courses was found to be between 50 and 60 percent. The completion rates of Internet courses offered by Kirkwood Community College in Iowa was higher than for older, television-based courses. Demographic factors that may have an impact on retention rates include age, marriage, job changes, pregnancies, contact with instructor, and different learning styles (Carr, 2000).

In the case of developmental students taking distance-learning classes, the same factors seem to have an impact on course completion (Perez & Foshay, 2002). Studying participants from eight community colleges in a PLATO project coordinated by League for Innovation in the Community Colleges, Perez and Foshay (2002) included both faculty and students in the project. Factors that appear to have some impact upon retention of students are faculty contact through email. Other factors are age, interactive and frequent contact, student motivation and time management.

Cohen and Brawer (2003) mention that completion rates are lower in distance learning courses than in traditional classroom, but do not cite any study supporting the claim. Carey (2002) compared student outcomes for a junior-level management information systems course taught online and face-to-face at a small, urban university. Final course grades were used to measure performance. The dropout rates for Internet courses were higher (7.4%) than the face-to-face class (2.8%). However, the results showed no significant difference between the mean

final grades for the two modes of delivery, thus this finding supported Russell's review (Carey, 2002).

Hogan (1997) studied success in Internet courses offered at Technical College of the Lowcountry, a rural community college, in South Carolina. Eleven courses were studied, with eight courses broadcast from the college, one offered on videocassettes, and one received from another college (Hogan, 1997). Student outcomes including average grades, completion rates, and withdrawal rates were compared with traditional courses taught by the same instructor during a previous semester. The results showed that students in distance learning classes received higher grades and distance learning classes had a higher completion rates (75% of the students in distance learning classes were successful completers with only 72% successful completers in traditional classes). Nevertheless, withdrawal rates were higher for distance learning courses, 21% versus 19% in traditional courses. For individual courses, math classes had a lower completion rate for distance learning than traditional, but for psychology course, course completion rate was higher for distance courses than traditional ones.

In a study conducted at Nova Southeastern University in Florida, Fredda (2000) compared successful grades (D or better) and completion rates in thirty-four courses offered both in campus-based and Internet-based formats. The subjects were undergraduates and graduates students enrolled in those courses. The results were different for undergraduates and graduates. The undergraduates were more successful in campus-based courses, with 87% successful grades (versus 77% in distance learning) and 91% completion rate (80% for Internet-based courses). An interesting finding was that graduate students performed better in Internet-based sections, with 95% successful grades (91% for traditional courses) and a completion rate of 96% (91% for campus-based courses) (Fredda, 2000).

A series of dissertations have examined distance education course completion and factors that may affect it. Viola Osborn (2000) established factors that seemed to be indicators of student completion of distributed learning courses at the University of North Texas (UNT). Her sample consisted of 423 students enrolled in 19 different distributed learning courses offered at UNT in fall and summer semesters 1999. The delivery methods for the courses were web-based and video conferencing. She identified eight indicators that can be represented in Likert-scale format and included them in a survey instrument: computer confidence, enrollment encouragement, locus of control, motivation, need for support, and preparation for the course, study habits, and tenacity. Osborn found that at-risk students took more credit hours per semester and worked fewer hours per week, were younger, they did not have experience with distributed learning courses before, and had lower grade point average upon entry into distributed learning course (Osborn, 2000). Her results showed "that educational level, GPA, credit hours taken, study environment, motivation, computer confidence, and number of previous distributed learning courses taken, accounted for most of the predictive power in the discriminant function" (p. 101).

In another dissertation, Deborah Blackner compared students' success in developmental math courses using a traditional classroom format with computer-based courses delivered on-campus and computer-based in a distance instruction format. The institution was North Lake College, an urban community college that is part of the Dallas County Community College District (Blackner, 2000). One of her research questions examined the relationship between age, gender, ethnicity, previous mathematics courses, previous attempts and employment status and exam final grade, final grade, and attrition. The results showed that, in the Beginning Algebra class, gender was significantly correlated with both final exam percentage and final grade percentage. A significant correlation was also observed with age, with older students more likely

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to receive a higher final exam percentage. For the Intermediate Algebra group there was a positive correlation between previous attempts and attrition.

Abdul-Rahman (1994) studied the course completion in distance education courses offered at The University Sains of Malaysia. In gathering the data the researcher used both questionnaires and databases created by the University, and assessed the locus of control and self-concept. The results showed that the variables significantly related to course completion were field of study, rate of progress, ethnicity, and region of residence. The average grade in the course was affected by ethnicity, qualification, occupation, field of study, and study habits (Abdul-Rahman, 1994).

In a study conducted with students enrolled at Maricopa Community College District in Phoenix, Arizona, Parker (1999) looked at predictors of student dropout in distance education courses. The researcher used two instruments, a student information sheet and Rotter Locus of Control Scale. A correlational analysis showed that locus of control was the one variable significantly correlated with attrition. The second highest correlated variable was source of financial assistance including full-time employment, parental support and financial independence. Together the two variables could predict 85% of dropout in distance learning courses. Students who dropped out gave reasons such as employment, family, and lack of computer equipment (Parker, 1999).

After approving an expansion of distance education across the 108 California Community Colleges, a report of the status of distance education was issued in May 2003. The report covers a period of seven years, from 1995 to 2002. During this period, there was a 288% increase in the number of distance education credit and non-credit course sessions, with a 180% increase in the number of students enrolled in those courses. The most important reasons reported for taking a

distance education course were convenience and the need to fulfill requirements for associate degrees or transfer (California Community Colleges Board of Governors, 2003). Between 1995 and 2000, the average completion rate in distance education courses (54%) was below the average completion rate for traditional courses (64%). However an increase in the completion rate was observed for the last four years with 6%, narrowing the gap between the two types of education.

The studies reviewed in this section do not look at differences in student attrition for different types of distance education classes. Also, the results do not seem to be consistent in terms of drop out and success rates due to inconsistent definitions. Inconsistent results were obtained in studies that looked at the impact of students' background variables such as age, gender, and workload. More research is necessary to explain the interaction between demographic variables and course outcomes.

Evaluation of Research in Distance Education

Review of Research in Distance Education

In 1992, Thomas Russell published *No Significant Difference Phenomenon,* a book that reviewed comparative research addressing the difference that technology will bring into the classroom. His hope was to "identify studies that would 'document' the 'fact' that technology improves instruction" (Russell, 2001). The surprising results was a list of studies showing "no significant difference", and as Russell stated "comparative studies also show that people learn as well from traditional print-based correspondence courses as they do from the most slickly produced and/or interactive TeleCourses" (Russell, 2001). *No Significant Difference Phenomenon* (Russell, 2001) includes an annotated bibliography whose huge body of research is

very often cited as an indisputable evidence of "no significant difference" between traditional and distance learning methods of delivery.

Barry Willis (Willis, 1993) believes that the "no difference phenomenon" was found because "distance-delivery technology, whether it be television, computer, or pencil, is a mere vehicle or medium of delivery and has little influence over student performance, as long as its characteristics are appropriate to the task at hand, and the *instructional design* is effective" (p. 17). Phipps and Merisotis (1999) believe that Russell's findings provide an illustration of the problems with research in this domain: considerable cross-referencing, as many papers cite similar research and/or reference each other, and many of the writings cited are not original research studies. They noted that as the book had no intention to mislead the reader, "the book does provide the discerning readers with evidence that care needs to be exercised in evaluating the original research and other documents and articles" (p.18).

The body of research on distance learning has exponentially increased in recent years. Researchers have started to look not only at findings, but also at the quality of the studies (Meyer, 2002; Phipps & Merisotis, 1999). In 1999, Phipps and Merisotis conducted an analysis of problems associated with research in distance education, cautioning readers regarding the quality of the existing research. The purpose of their report was to assess the findings and the quality of the existing research, to discuss the gaps in the presented original research, and to discuss the implications of the findings. A constant finding was that "distance learning courses compare favorably with classroom instruction and enjoy high student satisfaction" (p.13). However, the authors cautioned "the overall quality of the original research is questionable and thereby renders many of the findings inconclusive" (p.18). In their study, Phipps and Merisotis reviewed written material published during 1990s. The focus was on technologies currently used

by the majority of the institutions, including two-way interactive video, one-way prerecorded video, two-way audio/one-way video, and computer-mediated learning. They studied various approaches employed, including descriptive research, case studies, correlational research, and experimental research. The shortcomings of the research found by Phipps and Merisotis (1999) include the following:

1. *Control of extraneous variables*: this is an important flaw especially in the experimental research where the experimenter compares a control group with an experimental one. Without controlling the extraneous variables, other "potential causes" may influence the results.

2. *Randomly selected subjects*: even though random selection of subjects does not guarantee good research, it is considered a good practice and it is better than intact groups. Random sampling is a simple way to control for extraneous variables.

3. *Reliability and validity of the instruments used*: most of the instruments used in the published studies lack this information. It is evident in reviewing these studies that the validity and reliability of the instruments was not determined.

4. *Presence of "reactive effects*: *John Henry Effect* and *Novelty Effect. The John Henry Effect* was introduced in research design by Robert Heinich. This effect appears in research when "the threatened comparison group' works harder when they realized that they are being compared with competing media (Richard E. Clark in Russell (2001) p. ix). The *Novelty Effect* appears when there is increased interest, motivation or participation simply because the participants are doing something different (Phipps & Merisotis, 1999).

Meyer (2002) observes that Phipps and Merisotis are being criticized themselves as being "overly simplistic, inequitable in their criticism (which might also apply to traditional education), inconsistent, contradictory, and holding distance education to a higher burden of proof" (p. 17). However, she agrees that the majority of studies on distance education are poorly designed and inclined toward incomplete analysis. In these studies the intervening forces are ignored, and usually the researcher is also the teacher (Meyer, 2002).

The American Center for the Study of Distance Education (Jung, 1999) reviewed studies published between 1997 and 1999 in international journals, on-line peer-reviewed journals, and magazines. The author found that only 22 articles out of 222, or 10%, employed experimental (true or quasi) designs, out of which 16 or 73% were published in international journals. Reviewing the quality of the articles published in on-line journals and magazines, Jung concludes that the articles from these sources do not report "as many rigorous research studies in the field" when compared with the articles published in international refereed journals (Jung, 1999). In their review, Phipps and Merisotis (1999) found that 51% of the studies used experimental designs and 31% used descriptive designs. Only 5% used correlational designs that compared traditional with nontraditional learning modes.

Meyer (2002) concluded that the critics of the research revealed the researchers/designers of the research were influenced by their own beliefs and that the effectiveness of technology use is irrelevant without understanding its relationship with instructional design. Also, she points out, the research is just hypothesis testing only "as good as the theory that generated the hypothesis and the individuals who design and conduct the research" (p. 18). This was consistent with Phipps and Merisotis findings.

Gaps in Distance Education Research

The review of the research conducted in the field of distance education revealed gaps that should become the focus of the future research.

1. *Student outcomes for programs rather than individual courses should be assessed*: as colleges advertise the availability of completing whole degrees on-line, it is important to assess if students who get their degrees without visiting a college campus compare favorably with their counterparts who completed a traditional degree. In their study, *How College Affect Students,* Pascarella and Terenzini (1991) reviewed numerous studies that showed that college graduates, besides acquiring cognitive and verbal skills, go through psychological changes (identity, self-concept, and relating to others), develop critical thinking skills, develop set of values and attitudes, and undergo through a moral development process (Pascarella & Terenzini, 1991). There is a lack of research showing if graduates of distance learning programs go through the same developmental process (Phipps and Merisotis, 1999). However, Meyer (2002) observed an increase in research addressing these issues, concluding that quality research is needed to resolve these concerns "fairly and without prejudice" (Meyer, 2002 p.51).

2. *Access to higher education*: members of the distance education community often consider that this form of educational delivery provides a larger scale access to higher education for learners, no matter of their location, personal problems, or economical status (Bunker, 2003; Phipps & Merisotis, 1999)

3. *The dropout rates are higher for distance learners*: it seems that higher percentages of students enrolled in distance learning courses dropout before the end of the semester.

This may mean that studies conducted do not take into account these students, targeting only the "successful" ones.

4. *Research focuses on the impact of one technology instead on the interaction of multiple technologies*: this becomes important as the 'third generation" of distance learning systems is used more and more. The 'third generation" illustrates the usage of a combination of technologies (Phipps and Merisotis, 1999).

5. *There is a need to include a conceptual framework*: the conducted distance learning research is not based on a theoretical framework, which may provide a framework for observation and discovery. There is a need of developing theory/theories that can make the research more meaningful (Bunker, 2003; Keegan, 1990; Phipps & Merisotis, 1999).

DCCCD and Distance Education

Located in Dallas County, Texas, a county with a population of 2,218,899 in 2000, the DCCCD is the largest community college system in Texas. The Dallas County Community College District serves a population of approximately 60,000 credit students. The student population matches the county in gender and ethnicity (see Table 4). It has seven comprehensive colleges each separately accredited, offering both general and vocational education. Additionally the DCCCD operates two non-accredited campuses, the Bill Priest Institute for Economic Development, which offers only non-credit, non-degree vocational education and contract training and the LeCroy Center for Educational Telecommunications (LCET) that offers distance education classes. LCET is also a producer of educational videos used for TeleCourses by the DCCCD and by other institutions across the country. As host of the Dallas TeleCollege, it is one of the institutions included in the US Navy College Program Distance Learning

Partnership, offering degrees to Navy personnel, LCET's courses being accredited through

Eastfield College, one of the campuses in DCCCD.

Table 4: A Comparison of Dallas County and Dallas County Community College District
Student Population by Ethnicity and Gender

	DCCCD	Dallas County
Ethnicity		
White	42.9%	44.3%
African American	23.3%	20.1%
Hispanic	21.1%	29.9%
Asian, Pacific Islander	8.5%	3.9%
American Indian	0.6%	0.6%
Other	3.7%	1.8%
Gender		
Male	41.1%	49.9%
Female	58.9%	50.1%

Source: Census 2000 and DCCCD District Office of Research - Facts Brief

The first campus of the DCCCD (initially known as the Dallas County Junior College

District), El Centro College, opened in 1966. This was followed shortly by Eastfield and

Mountain View Colleges (1970), making DCCCD the largest junior college district in Texas at

that time. Richland (1972), North Lake (1977), Cedar Valley (1977), and Brookhaven (1978)

were soon opened in the years that followed. The Instructional Television Center was first

opened in 1974. By 1990, it had been renamed the R. Jan LeCroy Center for Educational

Telecommunications, after the DCCCD's second chancellor, and was moved into a new building

on Richland College's campus. The last campus of the DCCCD, The Bill J. Priest Institute for

Economic Development, named for the District's founding chancellor, opened in 1989 (Neal,

1991).

The first distance education course was a government course, offered in the fall 1972. The course was designed by a group of faculty members and aired on the local public television station, KERA Channel 13. The production of the first TeleCourse was a learning experience for both the students who enrolled and the producers. As government courses were required for the associate's and bachelor's degree as well as for teacher certification, the decision to offer it in a TeleCourse format was considered to be a wise one (Neal, 1991).

The TeleCourse enrollments grew each semester, and other courses were soon added. In fall 1973, 1,021 students were enrolled in the two TeleCourses that were offered (Neal, 1991). The English composition course was added in the fall 1975, as was the Business course "It's Everybody's Business." By the summer of 1976, DCCCD offered a total of 11 television courses, with more courses being created. The enrollment increased accordingly. DCCCD colleges enrolled a total of 3,064 in television courses during the fall semester of 1976. A Psychology course, "Understanding Human Behavior," was offered for the first time in January 1980. "Principles of Accounting" was offered for the first time in 1985 and "Principles of Economics" was added in 1988. All of the TeleCourses were revised or totally redone every few years, with an increased in the quality of the production (Neal, 1991).

The end of the 1980s brought an expansion in the scope of activities for DCCCD's Center for Telecommunications. A new interactive microwave system was installed, with the capacity to provide digital video transmission within DCCCD. The 1990s started with new live interactive instruction being offered through instructional Television Fixed Services (ITFS).

In 1990, Keegan and Rumble created a typology of institutions that offered distance education classes. The Keegan and Rumble typology categorized colleges into seven groups:

(1) autonomous, centrally controlled distance teaching universities;

(2) autonomous, decentralized distance teaching universities;

(3) independent study divisions of a conventional college or university;

(4) the consultation model;

(5) mixed-mode, uni-departmental model – Australian integrated mode;

(6) mixed mode, multi-departmental model;

(7) mixed-mode, multi-institutional model.

The distance learning offerings of the Dallas County Community College District can be classified in the independent study divisions (category 3) of a conventional college or university group using the Keegan and Rumble framework. Every college in the District offers distance education classes in different modes of delivery, with a separate campus, the LCET, coordinating the effort. Individual faculty members are paid a supplemental contract or are granted release time for course development. There is a limitation of the number of distance education classes that a student can take, based on the approval of the THECB. DCCCD does not offer a complete degree program purely through distance education. Dallas TeleCollege is a separate entity and it does not follow this pattern. It represents the virtual campus of DCCCD and all the courses are offered on-line. Dallas TeleCollege gives the students the opportunity to earn a complete associate's degree on-line.

Core Curriculum in the Dallas County Community College District

In 1997 the Texas 75th Legislature passed the S.B. No. 148, "An act relating to the curricula of certain institutions of higher education" (Texas Education Code, 1997). The bill stipulates that each higher education institution "shall adopt a core curriculum of no less than 42 credit hours, including specific courses comprising the curriculum" (Sec.61.822b). Core curriculum was defined to mean, "the curriculum in liberal arts, humanities, and sciences and

political, social, and cultural education are required to complete before receiving an academic undergraduate degree" (Sec. 61.821(1)). The same bill also regulates the transfer of the core from one public institution to any other public institution. For a student who "successfully completes the 42-hour core curriculum at an institution of higher education, that block of courses may be transferred to any other institution of higher education and must be substituted for the receiving institution's core curriculum" (Sec.61.822c). The Texas Administrative Code required that "(c) Institutions shall begin to honor student transfer courses and core curricula beginning in fall 1998, and must implement the core curriculum requirement by the fall of 1999 (Texas Administrative Code, 2001). The core curriculum for each institution must satisfy the "Core Curriculum: Assumptions and Defining Characteristics adopted by the Texas Higher Education Coordinating Board (THECB) (Texas Administrative Code, 2003).

A report of the Texas Higher Education Coordinating Board (Texas Higher Education Coordinating Board, 1998) suggested basic intellectual competencies that should be included in the core curriculum: reading, writing, speaking, listening, critical thinking, and computer literacy. The law did not attempt to prescribe a set of courses, so the THECB issued regulations that allowed each institution to decide on its own core as long as the courses belonged to recommended distributional academic components: communication, mathematics, natural sciences, humanities, visual and performing arts, and social and behavioral sciences.

In 1997, the THECB adopted *Principles of Good Practice* for credit classes offered electronically (Texas Higher Education Coordinating Board, 1997). There are many similarities among courses offered in the classroom and at a distance. All courses available electronically are also available in the conventional classroom setting. Academic standards for all programs and courses are the same for on-campus courses and for those offered electronically. Qualified

faculty are to supervise both types of courses, and required student learning in programs/courses offered electronically are required to be comparable to those expected of student enrolled in on-campus programs/courses. Regarding the evaluation and assessment, the document requires that the institution evaluate the educational effectiveness of programs/courses by assessing the learning outcomes, student retention, and student and faculty satisfaction. Every new electronically delivered course seeking approval from THECB must "demonstrate that all courses adhere to the *Principles*" (Texas Higher Education Coordinating Board, 2002).

In the fall 1997, a Core Curriculum Committee, including representatives from all seven campuses, was formed within DCCCD to review the core and to recommend changes necessary to be in compliance with THECB and SACS. In January of 1999, the DCCCD Board of Trustees approved the revised core curriculum. Almost a year later, in December 1999, the Community and Technical College Division of Texas Higher Education Coordinating Board (THECB) approved a 48 credit hours curriculum for DCCCD (Dallas County Community College District, 2001). In a report generated in 2000, "Report and Recommendations of the Core Evaluation Committee DCCCD, August 14, 2000" (Dallas County Community College District, 2001), the DCCCD devised its plan for the years to come to implement and evaluate the new core. Discipline committees were formed for each course offered in the core to "decide on the specific basic intellectual competencies, perspectives, and exemplary outcomes for specific courses and core component categories" (p. 5). As all DCCCD colleges were represented on these discipline committees, the decision was that the students enrolled in these courses would acquire these core competencies no matter which one of the DCCCD colleges offered the course. The colleges themselves were supposed to be involved in "the design of overall measures and key indicators that demonstrate the extent to which the exemplary objectives, perspectives, and intellectual

competencies are being met" (p.6). The newly adopted core subjects and required hours are

presented in Table 5 below. For a complete list of courses required for core completion see

Appendix A.

Table 5: Dallas County Community College District Core Curriculum, 2003 - 2004

Subject Area	Required Credit Hours
Communication	9
Mathematics	3
Lab Sciences	8
Social and Behavioral Sciences	15
Humanities, Visual and Performing Arts	9
Institutional options	4
Total Credit Hours	48

Source: DCCCD 2003-2004 Catalog

All core courses are college level courses that require students to have passed, be exempt

from, or have waived from the Texas Academic Skills Program (TASP) or the Texas Success

Initiative (TSI). The TASP was established in 1987 under Texas Education Code Section 51.306.

The purpose of introducing the TASP program was to ensure that all students attending public

universities and colleges in the State of Texas had the necessary skills in reading, writing, and

mathematics upon entry. Students were not to be permitted to enroll in college level courses

without evidencing mastery of those basic skills. Proficiency in those areas could be

demonstrated with high enough scores on the ACT Assessment® (ACT®, ACT, Inc,

http://www.act.org), the Scholastic Aptitude Test (SAT®, The College Board,

http://www.collegeboard.com), the Texas Assessment of Academic Skills (TAAS), or the TASP

test. As it was assumed that a student with low scores on the placement test will not be able to

complete a college level course, it was up the institution to determine if students would be

allowed to enroll in developmental education classes only, or developmental and college level

courses at the same time. All students enrolled in distance learning courses were supposed to

meet all TASP requirements as they did for on-campus courses (Texas Higher Education

Coordinating Board, 2001).

Beginning on December 3, 2004, new rules and regulations came into effect. A new

program, the Texas Success Initiative (TSI) for Texas public institutions of higher education,

replaced TASP (Texas Higher Education Coordinating Board, 2003a). Under §4.59 "an

institution shall determine when a student is ready to perform freshman-level academic

coursework on an individual basis according to the needs of the student." The readiness for

college-level courses may be determined based on performance in developmental education,

performance in appropriate non-developmental coursework, performance on assessment

instruments as approved by THECB, and other indicators as determined by the institution

(§4.59). The approved assessment instruments are ASSET[®] (offered by ACT, Inc,

http://www.act.org), COMPASS[®] (offered by ACT, Inc, http://www.act.org), ACCUPLACER[®]

(offered by The College Board, http://www.collegeboard.com), and THEA (Texas Higher

Education Assessment) (§4.56). It is generally assumed that the students who attended

developmental classes would have better performance in college level courses than the students

who did not.

Distance Education Course Delivery Formats Offered at DCCCD

The Dallas County Community College District consists of seven campuses that offer

distance education courses and Dallas TeleCollege. Dallas TeleCollege, operated by LCET, is

the "virtual campus" of DCCCD, which allows students to enroll and complete courses without

coming to the campus buildings. The presence of Dallas TeleCollege in DCCCD increases the

access to higher education of mature, nontraditional students who are not able to attend courses on campus. The types of courses offered by Dallas TeleCollege include TeleCourse, TeleCourse Plus, and Internet which are described below.

TeleCourse, instructional television (ITV), or broadcast educational television is an open access service, which is available for everybody who is interested. The oldest form is the broadcasting by the major public broadcasting organizations such as the Public Broadcasting Service (PBS). The production standards are high, but large budgets are necessary for their production (Bates, 1995). Students need to have access to local cable, in order to access the broadcasted programs (Dallas County Community College District, 2003b). As the television material can be recorded on and replayed from a tape, students may use a video player to watch the courses (DCCCD, 2003b). Videocassettes store images in a linear form, meaning that a student has to wind the cassette to access the information located in the middle or the end of the tape. The advantages of this form of delivery are that it has a low cost, it is standardized, and it is broadly available (Bates, 1995).

The TeleCourses offered in DCCCD are one-way video, asynchronous. The students have the opportunity to communicate with the instructor using telephone, fax, or mail or email. Beside the pre-produced video series the students are required to use print materials, such as in the form of textbooks and instructional guide. The courses include campus-based requirements such as orientation and review sessions. Testing is done at each campuses' Testing Center (Dallas County Community College District, 2003b).

There are certain advantages in offering instructional television courses. They are not intimidating, since most students grew up watching TV. The TV courses provide visuals and motion at the same time, which can make it captivating for the audience. Televised learning can

also be a useful tool for taking students visually to new environments, and can be used effectively as a motivational tool, and for introducing and reviewing concepts.

There are also disadvantages to using ITV. Video production is often a time-consuming and expensive proposition. When the course does not have any interactive capabilities the instructional effectiveness may decrease. A revision of the course is difficult and often quite expensive to do once the production is completed (Willis, 1993). Usually the pre-produced video or TV series is used for several years before a new one is produced.

Internet courses at DCCCD are offered using only computers and computer peripherals. The students are required to have reliable Internet access and the latest version of a browser (Dallas County Community College District, 2003b). If a student does not have a computer or Internet connection, he/she can use the computers on campus or local library. The "online classroom is used to deliver instruction, facilitate interactions between faculty and students" (p.4). No visit to a physical campus is required, however, as testing and orientation are performed online. The class interaction is accomplished through email and discussion boards. In addition to the published material on the web site, the student is required to use printed materials such as textbooks. Usually the content of the course is divided into blocks or modules. The students review the content, takes a test, and moves on to the next module. The Internet instruction can provide interaction and involvement for students and for the instructor (Simonson et al., 2003).

The TeleCourse Plus format combines the Internet classroom with a pre-recorded video. The students are required to use a pre-produced video series with print materials. In addition they are required to have Internet access and a reliable computer (Dallas County Community College District, 2003b). This form of delivery is, in fact, an Internet course using video as learning

resource.

Table 6: Characteristics of Traditional and Selected Distance Learning Methods of Instruction at Dallas County Community College District, year 2004

	Traditional Method	Distance Learning		
		TeleCourse	TeleCourse Plus	Internet
Classroom Instruction	Y	N	N	N
On-line Instruction	N	N	Y	Y
Videos	N	Y	Y	N
Print Materials	Y	Y	Y	Y
Internet	N	N	Y	Y
Email	N	N	Y	Y
Campus Orientation	Y	Y	Y	N
Campus Testing	Y	Y	Y	N
Review Sessions	N	Y	Y	N

Note: Y = Yes; N = No
Source: DCCCD Catalog 2003-2004

Over the past decade, the increase in the number of students enrolled in distance education classes exceeded by far the enrollment in traditional classes. Reports generated by DCCCD District Office of Research shows an increase in enrollments from 9,032 in 1997-1998 to 28,235 in 2002-2003, an increase of 213%. The highest increase observed is for Internet courses, from 1,025 enrollments in 1997-1998 to 17,866 in 2002-2003, an increase of 1643% (Massey, 2004). In fall 2002, the completion rate in DCCCD for distance learning courses was 68% and the success rate was 49%. The Internet courses had higher completion (74.5%) and success (54%) rates than TeleCourse and TeleCourse Plus courses (completion rate: 60.5%; success rate: 44%) (DCCCD District Office of Research, 2003a). In 2001-2002, 40% of the DCCCD enrollment was in distance learning classes, up 17% compared with previous year.

Distance education and its unique characteristics seem to fit the modern learner and its life style. Student body is changing, with more and more adults enrolled in classes formerly reserved for traditional students. With technology developing continuously, the learning opportunities go beyond a classroom. New systems were used as they appeared, without much need of selection. The multitude of methods in existence today requires educators to make informed decisions regarding the course offerings and the approach used in education. However, more research is needed to explore how new teaching methods may be incorporated in the learning process to assure a maximum effectiveness of the processes.

CHAPTER 3

METHODOLOGY

Introduction

This study compared course outcomes for distance learning courses with those of traditional courses offered by DCCCD. As no study was found that looked separately at the different modes of delivery of distance learning courses at publicly controlled community colleges, this study compared the course completion, dropout, and success rates for different formats of delivery of distance learning courses. Since multiple characteristics of the student body, the institution, and the individual courses have been found to influence course outcomes, the study looked at the relationship among the most common factors that influence the performance of students in the distance learning courses studied.

The purpose of this study is to investigate the relationship between the instructional delivery methods and course outcomes, as measured by dropout rate, completion rate, and success rate. As students are individuals with unique characteristics, an assessment of the background information brought into the classroom showed the impact they have on the course outcomes.

A panel of three experienced educational researchers has reviewed the methodology described below and their suggestions have been incorporated into the study design. As the data used in the study was collected from the Dallas County Community College District (DCCCD) student database, the project and the methodology were submitted for approval to the Chancellor's Cabinet, a group that includes all of the presidents of DCCCD colleges. The Cabinet formally granted its approval on May 3, 2004.

Sample

Courses

  The Dallas County Community College District student database (Colleague) was used to generate the sample for this study. Each course offered through the college campuses and the Dallas TeleCollege represented one portion of the overall sample for this study.

  As there is a considerable difference in the number of distance education courses offered from one semester to the next, the most recent available semester was selected. The courses selected for inclusion in the study were offered by DCCCD during fall 2003 semester.

  The selection of courses was determined according to instructional method. Four different methods of instruction were recognized as being common: traditional face-to-face classroom instruction and three distance learning formats: TeleCourse, TeleCourse Plus, and Internet. Eleven such courses were identified being offered in all four identifiable instructional methods available in DCCCD. No courses offered via the delivery methods of Live Interactive Television, Individualized Distance Learning, and multimedia format were examined, as a much reduced number of courses were offered using these instructional methods.

  The 11 specific courses elected for this study were Composition I (ENGL 1301), Composition II (ENGL 1302), American Government I (GOVT 2301), American Government II (GOVT 2303), Principles of Economics I (ECON 2301), Principles of Economics II (ECON 2302), Principles of Accounting I (ACCT 2301), Principles of Accounting II (ACCT 2302), Introduction to Business (BUSI 1301), Business Law (BUSI 2301), and Introduction to Psychology (PSYC 2301). These are the only eleven courses offered in both traditional classroom format and the three distance learning formats of Internet, TeleCourse, and TeleCourse Plus.

All 11 courses selected were either core curriculum courses (ENGL 1301, ENGL 1302, GOVT 2301, GOVT 2303, ECON 2301, ECON 2302, and PSYC 2301) or transfer courses (ACCT 2301, ACCT 2302, BUSI 1301, BUSI 2301). Discipline committees including faculty members from each college determined intellectual competencies and course objectives for all courses offered, theoretically allowing no differences in content or requirements between the methods of instruction. This information allowed reaching the conclusion that differences in outcomes are due to the differences in methods of instruction and not differences in content or requirements. The sheets illustrating intellectual competencies and course objectives for the courses selected are found in Appendix A.

Participants

The research sample for this study consisted of the students enrolled in seven campuses of the DCCCD and Dallas TeleCollege (also part of DCCCD), in 11 specific courses offered during the fall 2003 semester. The resultant participant database was stratified into two levels: by course, and by student ID (which is not the SSN). Results were not reported at the individual student level, and were reported at the class level.

The total enrollment in DCCCD for the fall 2003 semester was 61,508 students, generating a total of 9,586,904 contact hours. The population of the district is diverse in gender and ethnicity (see Table 4). The average student age for fall 2003 was 28. The majority of the students are enrolled part-time (69.5%) and live in the district area (81.2%). The data source for distance education and course enrollment is Colleague database, the live management system used by DCCCD. The data source for DCCCD enrollment is produced by District Office of Research (DCCCD District Office of Research, 2003c; DCCCD District Service Center, 2003a, 2003b). Nationally, 9.0% of the students enrolled at a 2-year public institution are enrolled in

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distance education (National Center for Education Statistics, 2002a). The distance-learning

enrollment in DCCCD fits into the national pattern (Table 7). The course enrollment figures for

the 11 selected courses can be seen in Table 8.

Table 7: DCCCD and National Enrollment

	Total Headcount	Distance Education Total Enrollment
DCCCD (Fall 2003)	61,508	11%
National (1999 - 2000)	5,339,449	9%

Source: DCCCD District Service Center, Students Enrolled in Distance Learning
Fall 2003 Report (XDLR1)
National Center Education Statistics, Condition of Education Report NCES 2002-011

Data Collection Procedures

The necessary data was extracted by the researcher from the DCCCD main reporting

system. Colleague, a Datatel product, is a live database system that houses student, human

resources, and finance information for the DCCCD. Data was mined from Colleague and

downloaded into a SAS (Statistical Analysis System) file for analysis. No participation of any

instructor or student was required. No identifiers were present. Only the secondary data for the

selected courses from the Colleague database was utilized. As reported earlier, two levels of data

were extracted: course level and student level data.

Course data was obtained from course information files in the Colleague system. The

information for each class included location, the method of instruction, time of day (day or night)

and the day(s) of week (weekday or weekend) when the course is offered, instructor and

instructor status (full-time faculty, adjunct faculty, or full-time administrator), certified

enrollment (the 12th day enrollment reported to the Texas Higher Education Coordinating

Table 8: Enrollment by Course and Method of Instruction, General and Non-general Education Transfer Courses

| Courses | Traditional Method | | Non-traditional Method | | | | | | | | | | | Total |
| | | | DE | | TV | | | TVP | | | INET | | | |
	#	%	#	%	#	% Total	% DE	#	% Total	% DE	#	% Total	% DE	
							General Education Courses							
ENGL-1301	7004	93.7%	471	6.3%	246	3.3%	52.2%	65	0.9%	13.8%	160	2.1%	34.0%	7475
ENGL-1302	3168	90.7%	326	9.3%	177	5.1%	54.3%	66	1.9%	20.2%	83	2.4%	25.5%	3494
GOVT-2301	4520	91.4%	426	8.6%	216	4.4%	50.7%	187	3.8%	43.9%	23	0.5%	5.4%	4946
GOVT-2302	2729	89.4%	324	10.6%	183	6.0%	56.5%	102	3.3%	31.5%	39	1.3%	12.0%	3053
ECON-2301	2003	89.0%	248	11.0%	74	3.3%	29.8%	89	4.0%	35.9%	85	3.8%	34.3%	2251
ECON-2302	866	84.6%	158	15.4%	38	3.7%	24.1%	54	5.3%	34.2%	66	6.4%	41.8%	1024
PSYC-2301	4410	91.5%	412	8.5%	186	3.9%	45.1%	19	0.4%	4.6%	207	4.3%	50.2%	4822
							Non- General Education Transfer Courses							
ACCT-2301	1233	83.8%	238	16.2%	84	5.7%	35.3%	60	4.1%	25.2%	94	6.4%	39.5%	1471
ACCT-2302	436	81.8%	97	18.2%	33	6.2%	34.0%	28	5.3%	28.9%	36	6.8%	37.1%	533
BUSI-1301	1008	84.7%	182	15.3%	42	3.5%	23.1%	24	2.0%	13.2%	116	9.7%	63.7%	1190
BUSI-2301	458	77.6%	132	22.4%	37	6.3%	28.0%	21	3.6%	15.9%	74	12.5%	56.1%	590
Total	27835	90.2%	3014	9.8%	1316	4.3%	43.7%	715	2.3%	23.7%	983	3.2%	32.6%	30849

Source: Colleague Database, DCCCD accessed May 2004

Board), number of withdrawals, and grade distribution. From the instructional departments that deliver, information was obtained regarding requirements including orientation and on-campus testing.

Information available at the student level included number of credit hours attempted, number of credit hours completed, placement tests scores, withdrawal history, financial aid, grades, and GPA. Other available information came from the Student Information Profile form, a self-reported survey administered to the student at the time of registration and maintained in Colleague by the DCCCD. A sample Student Information Profile form can be found in Appendix B. Other self reported information found in Colleague includes residency status, high school graduation or GED status, and ethnicity and gender. Because DCCCD has an open-door policy, the prospective students are not required to declare previous degrees attained, so this information may not be available for all the students included in the current study. Research performed by the District Office of Research (2003) shows that in fall 2003 semester 2.9% of the students enrolled had an associate degree and 4.4% had a bachelor degree or higher (DCCCD District Office of Research, 2003b).

<div align="center">Theoretical Framework</div>

Astin's Input-Environment-Output (I-E-O) Model was employed to the analysis in this study. The preference for Astin's model was based on the naturalistic character of the study and the need to control the input variables due to the lack of randomization of the sample. The "input" refers to the background variables, personal characteristics that the students bring on campus. "Environment" is represented by the experiences in the classroom, in the present study instructional methods. "Output" represents the end results achieved in the course, for the present study being expressed by completion rate, success rate, and dropout rate.

Measures

Independent variables (Input)

    Course Level

1. Method of instruction

2. Schedule of classes

3. Teaching load of instructor

4. Course characteristics (including orientation or on-campus testing)

    Student Level

1. Age

2. Gender

3. Ethnicity

4. Work load

5. Dependents

6. Income

7. Credit hours completed

8. GPA

9. Family educational attainment

10. Placement test scores (TASP or TSI – reading)

11. Previous distance learning classes

Methods of Delivery (Environment)

1. Traditional, face-to-face instruction

2. TeleCourse

3. TeleCourse Plus

4. Internet

Dependent variables (Output)

1. Completion rate, where completer is defined as a student that receives a grade other than W.

2. Dropout rate, where the dropouts include students that formally withdrew from the class with a grade of W

3. Success rate, where success is represented by grades of A, B, or C.

Answering the Research Questions

1. What is the difference, if any, between course outcomes for different types of distance learning courses?

Hypothesis 1a: There is no difference between the completion rates for Internet and TeleCourses.

Hypothesis 1b: There is no difference between the completion rates for Internet and TeleCourses Plus.

Hypothesis 1c: There is no difference between the completion rates for TeleCourses and TeleCourses Plus.

Hypothesis 1d: There is no difference between the dropout rates for Internet and TeleCourses.

Hypothesis 1e: There is no difference between the dropout rates for Internet and TeleCourses Plus.

Hypothesis 1f: There is no difference between the dropout rates for TeleCourses and TeleCourses Plus.

Hypothesis 1g: There is no difference between the success rates for Internet and TeleCourses.

Hypothesis 1h: There is no difference between the success rates for Internet and TeleCourses Plus.

Hypothesis 1i: There is no difference between the success rates for TeleCourses and TeleCourses Plus.

2. What is the difference, if any, between course outcomes for traditional and distance learning courses?

Hypothesis 2a: There is no difference between the completion rates for traditional and distance learning courses.

Hypothesis 2b: There is no difference between completion rates for traditional and Internet courses.

Hypothesis 2c: There is no difference between completion rates for traditional and TeleCourses.

Hypothesis 2d: There is no difference between completion rates for traditional and TeleCourses Plus.

Hypothesis 2e: There is no difference between the dropout rates for traditional and distance learning courses.

Hypothesis 2f: There is no difference between dropout rates for traditional and Internet courses.

Hypothesis 2g: There is no difference between dropout rates for traditional and TeleCourses.

Hypothesis 2h: There is no difference between dropout rates for traditional and TeleCourses Plus.

Hypothesis 2i: There is no difference between the success rates for traditional and distance learning courses.

Hypothesis 2j: There is no difference between success rates for traditional and Internet courses.

Hypothesis 2k: There is no difference between success rates for traditional and TeleCourses.

Hypothesis 2l: There is no difference between success rates for traditional and TeleCourses Plus.

3. What student characteristics influence the course outcomes in distance learning courses?

4. What course characteristics influence the course outcomes in distance learning courses?

Data Analysis

All data was reported in aggregate form to protect privacy of the students. The data for Research Question One (What is the difference, if any between outcomes for different types of distance education courses?) was found in student database as number of students enrolled in the class and number of students that dropped the class. The grade distribution for each class also provided information regarding the number of students who were successful (earned grades of A, B, or C) or received a W. The completion, dropout, and success rates were expressed as percentages. MANOVA and ANOVA were used to determine the differences between the groups.

- Descriptive analysis was used to describe the demographics of the sample and determine the completion rates for the courses. ANOVA was used for determining whether

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differences exist between mode of delivery for course completion, dropout and success rates.

- Multi-variate Analysis of Variance (MANOVA) was used to look at the equality of different groups used. The use of MANOVA protected against an artificially inflated Type I error (Gall, Borg, & Gall, 1996)

- Correlational statistics was used to find out the relationship between attrition and individual or course characteristics.

- Multiple regression and General Linear Model (GLM) was used to explain the effect of independent variables on final grades, and subsequently on the success and dropout rates. Because academic achievement is influenced by a multitude of factors, regression is necessary to assess the effects of any research factor by partialling that factor from the effects of any desired set of factors.

- Correlation was used to find a relationship between students' characteristics and course outcomes.

- Correlation was used to find a relationship between course characteristics and course outcomes.

CHAPTER 4

ANALYSIS OF RESULTS

Introduction

This study answered four research questions comparing the efficacy of traditional and three distance learning modes of instruction as measured by determined course outcomes: completion, dropout, and success rates. Research Question One addressed nine hypotheses and Research Question Two 12 hypotheses. Research Questions Three and Four explored for relationships between course and student characteristics and course outcomes. They referred to variables mentioned in relationship with Astin's input – environment – output (I-E-O) model of assessment in higher education. The chapter presents information on the research sample, and data appertaining the research questions.

Research Sample

Sample by Courses

The selection of courses was based on instructional method. Four different methods of instruction were recognized as being common: traditional face-to-face classroom format, and three distance learning formats: TeleCourse, TeleCourse Plus, and Internet instruction. Eleven such courses were identified being offered in all four identifiable instructional methods available in Dallas County Community College District (DCCCD). The courses elected for this study were Composition I (ENGL 1301), Composition II (ENGL 1302), American Government I (GOVT 2301), American Government II (GOVT 2303), Principles of Economics I (ECON 2301), Principles of Economics II (ECON 2302), Principles of Accounting I (ACCT 2301), Principles of Accounting II (ACCT 2302), Introduction to Business (BUSI 1301), Business Law (BUSI 2301), and Introduction to Psychology (PSYC 2301). No science course was included in the

study as there were no science classes offered via all four formats during the 2003 fall semester. All seven colleges in DCCCD offered all 11 courses selected in all four methods of delivery, with the exception of Dallas TeleCollege. Dallas TeleCollege offered only Internet and TeleCourse Plus formats.

The largest number of sections was offered in the traditional method, on-campus lecture instruction (84.3%). In distance education, TeleCourses were offered more (39.9%) than TeleCourse Plus (31.8%) and Internet (28.3%). The number of sections offered for each course can be found in Table 9.

In addition to the regular classes starting on August 25, 2003 and ending December 11, 2003, the DCCCD offered classes that had variable lengths, from three to 20 weeks long. Table 10 illustrates the number of sections offered by course length.

During fall 2003 semester Eastfield College and Richland College offered the lowest percentages of distance learning classes, whereas Cedar Valley College and El Centro College offered the highest. Dallas TeleCollege, accredited through Eastfield Colleges, offered only Internet and TeleCourse Plus courses (see Table 11).

Table 9: Number of Sections Offered for Each Course by Method of Instruction, DCCCD, Fall 2003

| Courses | Total | | Traditional Classes | | Non-traditional Classes - Distance Education | | | | | | | |
| | | | | | Total Distance Education | | TeleCourse | | TeleCourse Plus | | Internet | |
	#	%	#	%	#	%	#	% Dist. Ed.	#	% Dist. Ed.	#	% Dist. Ed.
General Education Courses												
ENGL-1301	321	100.0%	300	93.5%	21	6.5%	10	47.6%	4	19.0%	7	33.3%
ENGL-1302	156	100.0%	138	88.5%	18	11.5%	8	44.4%	6	33.3%	4	22.2%
GOVT-2301	124	100.0%	105	84.7%	19	15.3%	7	36.8%	11	57.9%	1	5.3%
GOVT-2302	86	100.0%	70	81.4%	16	18.6%	7	43.8%	6	37.5%	3	18.8%
ECON-2301	72	100.0%	59	81.9%	13	18.1%	5	38.5%	5	38.5%	3	23.1%
ECON-2302	48	100.0%	36	75.0%	12	25.0%	5	41.7%	5	41.7%	2	16.7%
PSYC-2301	111	100.0%	95	85.6%	16	14.4%	7	43.8%	1	6.3%	8	50.0%
Non- General Education Transfer Courses												
ACCT-2301	64	100.0%	46	71.9%	18	28.1%	5	27.8%	5	27.8%	8	44.4%
ACCT-2302	35	100.0%	20	57.1%	15	42.9%	5	33.3%	7	46.7%	3	20.0%
BUSI-1301	58	100.0%	42	72.4%	16	27.6%	6	37.5%	4	25.0%	6	37.5%
BUSI-2301	29	100.0%	19	65.5%	10	34.5%	5	50.0%	1	10.0%	4	40.0%

Source: Colleague Database, DCCCD accessed July 2004.

Table 10: Percentage of Sections Offered by Course Length Measured in Number of Weeks, DCCCD, Fall 2003

No of Weeks	3	4	6	7	8	9	10	12	13	14	15	16	17	20
General Education Courses	0.3%	1.6%	0.7%	0.3%	1.4%	0.4%	0.4%	0.5%	1.1%	2.3%	1.2%	87.7%	1.3%	0.7%
Non- General Education Transfer Courses	0.5%				1.6%		3.2%			3.8%	2.7%	86.6%	1.6%	

Note: A regular semester-long course has 16 weeks
Source: Colleague Database, DCCCD accessed July 2004.

Table 11: Number of Sections Offered by Each College by Method of Instruction, DCCCD, Fall 2003

College	Total		Traditional Classes		Non-traditional Classes - Distance Education							
					Total Distance Education		TeleCourse		TeleCourse Plus		Internet	
	#	%	#	%	#	%	#	% Dist. Ed.	#	% Dist. Ed.	#	% Dist. Ed.
Bookhaven	184	100.0%	155	84.2%	29	15.8%	11	37.9%	10	34.5%	8	27.6%
Cedar Valley	71	100.0%	56	78.9%	15	21.1%	8	53.3%	2	13.3%	5	33.3%
Eastfield	168	100.0%	153	91.1%	15	8.9%	12	80.0%	1	6.7%	2	13.3%
El Centro	71	100.0%	58	81.7%	13	18.3%	11	84.6%	1	7.7%	1	7.7%
Mountain View	129	100.0%	112	86.8%	17	13.2%	8	47.1%	4	23.5%	5	29.4%
North Lake	173	100.0%	155	89.6%	18	10.4%	11	61.1%		0.0%	7	38.9%
Richland	265	100.0%	241	90.9%	24	9.1%	9	37.5%	12	50.0%	3	12.5%
TeleCollege	43	100.0%		0.0%	43	100.0%		0.0%	25	58.1%	18	41.9%

Source: Colleague Database, DCCCD accessed July 2004.

Sample by Students

The students included in the study were enrolled in the selected courses during the fall 2003 semester. The total headcount was 20,580 students, with 12.4% enrolled in distance learning courses. The group had more females than males, with a predominance of white students, followed by African American and Hispanic. The comparison of the selected groups showed that the ethnic composition matched the DCCCD fall 2003 students (DCCCD District Office of Research, 2003c). Gender configuration was also consistent with that of DCCCD students enrolled during fall 2003 semester (Table 12).

Table 12: Gender and Ethnicity for Dallas County Community College District, DCCCD, Fall 2003

	DCCCD		Group Examined in the Study	
	#	%	#	%
Total Enrollment	61508	100.0%	20580	100.0%
Gender				
Female	36233	58.9%	11411	55.4%
Male	25275	41.1%	9169	44.6%
Ethnicity				
White	25780	41.9%	8769	42.6%
African American	14005	22.8%	4126	20.0%
Hispanic	12662	20.6%	4404	21.4%
Asian; Pacific Islander	5083	8.3%	1817	8.8%
American Indian; Alaskan	337	0.5%	100	0.5%
Non Res Alien/Foreign	2194	3.6%	849	4.1%
Unknown/Not Reported	1447	2.4%	515	2.5%

Source: Colleague Database, DCCCD accessed July 2004
　　DCCCD District Office of Research - Facts Brief

The data presented in Table 13 demonstrates that distance learning students are predominantly females (65.2%), white (48.1%), and between 21 and 35 years old (68.3%). The data presented demonstrates that distance-learning students had demographic characteristics that are different then either the day or night/weekend students found on table 13, below. ANOVA results showed significant difference between these groups, with a calculated $F(2, 22328) = 93.92$, $p < .01$ for gender and $F(2, 22333) = 25.19$, $p < .01$ for ethnicity.

The data in Table 14 offers information regarding family status and employment of the students in the selected group. A high percentage of distance learning (39.8%) and night/weekend (42.8%) students worked more than 35 hours per week compared with day students (14.7%). As the information included in Table 14 is not mandatory, a high percentage of the students did not provide it. However, for the group with the information available, a higher percentage of distance learning students were single parents with custody of a minor child (14.2%) than in night/weekend and day groups. Distance learning students were homemakers, primarily working at home at a higher percentage than the other students.

Table 13: Fall 2003 Enrollments by Number and Percentage of Students at DCCCD, by Gender, Ethnicity, and Age

	All		Distance Learning Internet, TeleCourse, TeleCourse Plus		Traditional Methods Day		Night/Weekend		All	
	#	%	#	% Total	#	%	#	%	#	% Total
Total Enrollment	20580	100.0%	2553	12.4%	13848	100.0%	5935	100.0%	19783	96.1%
Gender										
Female	11411	55.4%	1664	65.2%	7296	52.7%	3557	59.9%	11411	55.4%
Male	9169	44.6%	889	34.8%	6552	47.3%	2378	40.1%	9169	44.6%
Ethnicity										
White	8769	42.6%	1229	48.1%	5997	43.3%	2259	38.1%	8769	42.6%
African American	4126	20.0%	634	24.8%	2631	19.0%	1304	22.0%	4126	20.0%
Hispanic	4404	21.4%	323	12.7%	2818	20.3%	1443	24.3%	4404	21.4%
Asian; Pacific Islander	1817	8.8%	189	7.4%	1329	9.6%	510	8.6%	1817	8.8%
American Indian; Alaskan	100	0.5%	17	0.7%	63	0.5%	30	0.5%	100	0.5%
Non Res Alien/Foregn	849	4.1%	109	4.3%	633	4.6%	267	4.5%	849	4.1%
Unknown/Not Reported	515	2.5%	52	2.0%	377	2.7%	122	2.1%	515	2.5%
Age										
less than 15	5	0.0%	1	0.0%	3	0.0%	1	0.0%	5	0.0%
16-20	8241	40.0%	372	14.6%	6272	45.3%	1270	21.4%	8241	40.0%
21-25	7125	34.6%	890	34.9%	4871	35.2%	2297	38.7%	7125	34.6%
26-30	2316	11.3%	536	21.0%	1260	9.1%	1031	17.4%	2316	11.3%
31-35	1293	6.3%	316	12.4%	684	4.9%	582	9.8%	1293	6.3%
36-40	645	3.1%	191	7.5%	328	2.4%	289	4.9%	645	3.1%
41-45	465	2.3%	115	4.5%	223	1.6%	221	3.7%	465	2.3%
46-50	276	1.3%	77	3.0%	116	0.8%	142	2.4%	276	1.3%
51+	213	1.0%	54	2.1%	91	0.7%	102	1.7%	213	1.0%

Source: Colleague Database, DCCCD accessed July 2004.

Table 14: Fall 2003 Enrollments by Number and Percentage of Students at DCCCD, by Employment Status and Family Status

| | All | | Distance Learning Internet, TeleCourse, TeleCourse Plus | | Traditional Methods | | | | | |
| | | | | | Day | | Night/Weekend | | All | |
	#	%	#	% Total	#	%	#	%	#	% Total
Total Enrollment	20580	100.0%	2553	12.4%	13848	100.0%	5935	100.0%	19783	96.1%
					Employment Status					
Not employed outside home	2890	100.0%	348	12.0%	1982	14.3%	560	9.4%	2542	88.0%
Unemployed-seeking employment	2273	100.0%	226	9.9%	1585	11.4%	462	7.8%	2047	90.1%
1-20 hrs/week	3628	100.0%	254	7.0%	2843	20.5%	531	8.9%	3374	93.0%
21-34 hrs/week	3956	100.0%	354	8.9%	2787	20.1%	815	13.7%	3602	91.1%
35+ hrs/week	5597	100.0%	1015	18.1%	2042	14.7%	2540	42.8%	4582	81.9%
Unknown/Not Reported	3992	100.0%	356	8.9%	2609	18.8%	1027	17.3%	3636	91.1%
					Family Status					
Single parent with custody minor child	2066	100.0%	363	14.2%	1073	7.7%	630	10.6%	1703	8.3%
Homemaker primarily working at home	654	100.0%	132	5.2%	396	2.9%	126	2.1%	522	2.5%
Divorced, separated, widowed	1087	100.0%	165	6.5%	594	4.3%	328	5.5%	922	4.5%
Unknown/Not Reported	18529	100.0%	1893	74.1%	11785	85.1%	4851	81.7%	16636	80.8%

Source: Colleague Database, DCCCD accessed July 2004.

Answering the Research Questions

The first step in analyzing the data was to plot the frequency distribution of dropout,

completion, and success rates. The histograms revealed important information about the shape of

the frequency polygon. In a normal distribution, the measure of central tendency used is the

mean, whereas in a skewed distribution the mean loses its meaning (Gall et al., 1996; Hinkle,

Wiersma, & Jurs, 1998; Huck, 2000). In a skewed distribution, the median is recommended, as it

is less affected by extreme scores (Hinkle et al., 1998).

Figures 1, 2, and 3 in Appendix C illustrate the frequency distribution of the dropout rate,

completion rate, and success rate. The dropout rate data were not symmetrical (Figure 1). The

dropout rate had a positively skewed distribution. The completion rate is negatively skewed

(Figure 2). Similarly, the success rate (illustrated in Figure 3) showed a negatively skewed

distribution.

Research Question 1: What is the difference, if any between course outcomes for different types

of distance learning courses?

One-way analysis of variance (ANOVA) performed for completion rate, dropout rate,

and success rate showed statistically significant differences due to the three distance learning

methods of instruction (Tables 15, 16, and 17). The calculated F ratio was higher than the critical

value $F(2, 171) = 4.71$, indicating the need for further investigation. The hypotheses *1a* to *1i*

were used to clarify the source of the difference. The analysis was conducted at a significance

level of $p < .05$.

Table 15: Summary ANOVA for Completion Rate of Distance Learning Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.41	2	0.20	5.49	0.00
Within Groups	6.36	171	0.04		
Total	6.77	173			

Source: Colleague Database, DCCCD accessed July 2004.

Table 16: Summary ANOVA for Dropout Rate of Distance Learning Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.41	2	0.20	5.49	0.00
Within Groups	6.36	171	0.04		
Total	6.77	173			

Source: Colleague Database, DCCCD accessed July 2004.

Table 17: Summary ANOVA for Success Rate of Distance Learning Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.54	2	0.27	5.84	0.00
Within Groups	7.86	171	0.05		
Total	8.39	173			

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1a: There is no difference between the completion rates for Internet and TeleCourses.

A one-way ANOVA was used to test the hypothesis whether there were no differences between completion rates for Internet and TeleCourse courses. The calculated F ratio equaled 12.63 and exceeded the critical value of $F_{(1, 117)}$ with a probability less than .01. Therefore, the hypothesis was rejected.

Table 18: Summary ANOVA for Completion Rates of Internet and TeleCourse Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.38	1	0.38	12.63	0.00
Within Groups	3.53	117	0.03		
Total	3.91	118			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics showed that completion rates for Internet courses were higher than for TeleCourses (Table 19). Completion rates by specific type of course showed that the highest completion rate was in GOVT- 2302 for Internet courses, and ECON - 2301 for TeleCourse courses (see Table 20).

Table 19: Completion Rates for Internet and TeleCourse Courses at DCCCD, Fall 2003

	Internet	TeleCourse
Mean	72.4%	60.9%
Median	75.0%	63.3%
Std. Deviation	16.6%	17.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 20: Completion Rates for Internet and TeleCourse Courses by Type of Course at DCCCD, Fall 2003

| | Internet | | TeleCourse | |
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	75.4%	78.6%	67.5%	70.7%
ENGL-1302	68.2%	72.1%	69.6%	70.3%
GOVT-2301	60.9%	60.9%	59.7%	60.0%
GOVT-2302	83.2%	76.2%	65.5%	66.7%
ECON-2301	72.4%	71.4%	71.2%	69.6%
ECON-2302	65.8%	65.8%	54.4%	50.0%
PSYC-2301	79.8%	79.3%	60.6%	61.5%
Non-General Education Transfer Courses				
ACCT-2301	50.9%	50.0%	42.1%	41.2%
ACCT-2302	81.1%	80.0%	44.2%	50.0%
BUSI-1301	80.9%	87.7%	59.6%	66.4%
BUSI-2301	78.0%	79.7%	62.1%	58.3%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1b: There is no difference between the completion rates for Internet and TeleCourses Plus.

A one-way ANOVA was used to test the hypothesis 1b. The calculated F ratio equaled 1.04 and was less than the critical value of $F_{(1, 102)}$. Therefore, the hypothesis was narrowly retained.

Table 21: Summary ANOVA for Completion Rates of Internet and TeleCourse Plus Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.04	1	0.04	1.04	0.31
Within Groups	4.15	102	0.04		
Total	4.19	103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates for Internet courses were higher than for TeleCourses Plus (Table 22). Completion rates by type of course demonstrated that the highest completion rate was in GOVT- 2302 for Internet courses and ECON - 2302 for TeleCourses Plus courses (see Table 23).

Table 22: Completion Rates for Internet and TeleCourse Plus Courses, DCCCD, Fall 2003

	Internet	TeleCourse Plus
Mean	72.4%	68.3%
Median	75.0%	72.0%
Std. Deviation	16.6%	22.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 23: Completion Rates for Internet and TeleCourse Plus Courses by Type of Course at DCCCD, Fall 2003

	Internet		TeleCourse Plus	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	75.4%	78.6%	81.4%	71.4%
ENGL-1302	68.2%	72.1%	78.9%	78.9%
GOVT-2301	60.9%	60.9%	67.5%	69.2%
GOVT-2302	83.2%	76.2%	71.2%	71.6%
ECON-2301	72.4%	71.4%	62.4%	55.6%
ECON-2302	65.8%	65.8%	86.9%	91.7%
PSYC-2301	79.8%	79.3%	84.2%	84.2%
Non-General Education Transfer Courses				
ACCT-2301	50.9%	50.0%	43.5%	41.7%
ACCT-2302	81.1%	80.0%	55.2%	70.0%
BUSI-1301	80.9%	87.7%	70.4%	74.2%
BUSI-2301	78.0%	79.7%	71.4%	71.4%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1c: There is no difference between the completion rates for TeleCourses and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 1c. The calculated F ratio equaled 4.18 and exceeded the critical value of $F(1, 123)$ with a probability less than .05. Therefore, the hypothesis was rejected.

Table 24: Summary ANOVA for Completion Rate TeleCourse and TeleCourse Plus Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.17	1	0.17	4.18	0.04
Within Groups	5.04	123	0.04		
Total	5.21	124			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates for TeleCourses were lower than for TeleCourses Plus (Table 25). Completion rates by type of courses demonstrated that ECON - 2302 evidenced the highest completion rate for TeleCourse Plus and ECON - 2301 for TeleCourse courses (see Table 26).

Table 25: Completion Rates for TeleCourse and TeleCourse Plus Courses at DCCCD, Fall 2003

	TeleCourse	TeleCourse Plus
Mean	60.9%	68.3%
Median	63.3%	72.0%
Std. Deviation	17.9%	22.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 26: Completion Rates for TeleCourse and TeleCourse Plus Courses by Type of Course at DCCCD, Fall 2003

	TeleCourse		TeleCourse Plus	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	67.5%	70.7%	81.4%	71.4%
ENGL-1302	69.6%	70.3%	78.9%	78.9%
GOVT-2301	59.7%	60.0%	67.5%	69.2%
GOVT-2302	65.5%	66.7%	71.2%	71.6%
ECON-2301	71.2%	69.6%	62.4%	55.6%
ECON-2302	54.4%	50.0%	86.9%	91.7%
PSYC-2301	60.6%	61.5%	84.2%	84.2%
Non-General Education Transfer Courses				
ACCT-2301	42.1%	41.2%	43.5%	41.7%
ACCT-2302	44.2%	50.0%	55.2%	70.0%
BUSI-1301	59.6%	66.4%	70.4%	74.2%
BUSI-2301	62.1%	58.3%	71.4%	71.4%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1d: There is no difference between the dropout rates for Internet and TeleCourses.

A one-way ANOVA was used to test the hypothesis that there is no difference between dropout rates for Internet and TeleCourse courses. The calculated F ratio equaled 12.63 and exceeded the critical value of $F(1, 117)$ with a probability less than .01. Therefore, the hypothesis was rejected.

Table 27: Summary ANOVA for Dropout Rate of Internet and TeleCourse Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.38	1	0.38	12.63	0.00
Within Groups	3.53	117	0.03		
Total	3.91	118			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics showed that dropout rates for Internet courses were lower than for TeleCourses (Table 28). Dropout rates by specific type of course showed that the highest dropout rate was in ACCT- 2301 for both Internet and TeleCourse courses (see Table 29).

Table 28: Dropout Rates for Internet and TeleCourse Courses at DCCCD, Fall 2003

	Internet	TeleCourse
Mean	27.6%	39.1%
Median	25.0%	36.8%
Std. Deviation	16.6%	17.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 29: Dropout Rates for Internet and TeleCourse Courses by Type of Course at DCCCD, Fall 2003

| | Internet | | TeleCourse | |
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	24.6%	21.4%	32.5%	29.3%
ENGL-1302	31.8%	27.9%	30.4%	29.7%
GOVT-2301	39.1%	39.1%	40.3%	40.0%
GOVT-2302	16.8%	23.8%	34.5%	33.3%
ECON-2301	27.6%	28.6%	28.8%	30.4%
ECON-2302	34.2%	34.2%	45.6%	50.0%
PSYC-2301	20.2%	20.7%	39.4%	38.5%
Non-General Education Transfer Courses				
ACCT-2301	49.0%	50.0%	57.8%	58.8%
ACCT-2302	18.9%	20.0%	55.8%	50.0%
BUSI-1301	19.0%	12.3%	40.3%	33.6%
BUSI-2301	22.0%	20.2%	37.9%	41.7%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1e: There is no difference between the dropout rates for Internet and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 1e. The calculated F ratio equaled 1.04 and was less than the critical value of $F_{(1, 102)}$. Therefore, the hypothesis was narrowly retained.

Table 30: Summary ANOVA for Dropout Rates of Internet and TeleCourse Plus Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.04	1	0.04	1.04	0.31
Within Groups	4.15	102	0.04		
Total	4.19	103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates for Internet courses were lower than for

TeleCourses Plus (Table 31). Dropout rates by type of course demonstrated that the highest

dropout rate was in ACCT- 2301 for both Internet and TeleCourse Plus courses (see Table 32).

Table 31: Dropout Rates for Internet and TeleCourse Plus Courses at DCCCD, Fall 2003

	Internet	TeleCourse Plus
Mean	27.6%	31.7%
Median	25.0%	28.0%
Std. Deviation	16.6%	22.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 32: Dropout Rates for Internet and TeleCourse Plus Courses by Specific Type of Course at DCCCD, Fall 2003

	Internet		TeleCourse Plus	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	24.6%	21.4%	18.7%	18.0%
ENGL-1302	31.8%	27.9%	21.1%	21.1%
GOVT-2301	39.1%	39.1%	32.5%	30.8%
GOVT-2302	16.8%	23.8%	28.8%	28.4%
ECON-2301	27.6%	28.6%	37.6%	44.4%
ECON-2302	34.2%	34.2%	13.1%	8.3%
PSYC-2301	20.2%	20.7%	15.8%	15.8%
Non-General Education Transfer Courses				
ACCT-2301	49.0%	50.0%	56.5%	58.3%
ACCT-2302	18.9%	20.0%	44.8%	30.0%
BUSI-1301	19.0%	12.3%	29.6%	25.8%
BUSI-2301	22.0%	20.2%	28.6%	28.6%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1f: There is no difference between the dropout rates for TeleCourses and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 1f. The calculated F ratio equaled 4.18

and exceeded the critical value of $F(1, 123)$ with a probability less than .05. Therefore, the

hypothesis was rejected.

Table 33: Summary ANOVA for Dropout Rates of TeleCourse and TeleCourse Plus Courses at
DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.17	1	0.17	4.18	0.04
Within Groups	5.04	123	0.04		
Total	5.21	124			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates for TeleCourse Plus were lower than for

TeleCourses (Table 34). Dropout rates by type of course demonstrated that the highest dropout

rate was in ACCT- 2301 for both TeleCourse and TeleCourse Plus courses (see Table 35).

Table 34: Dropout Rates for TeleCourse and TeleCourse Plus Courses at DCCCD, Fall 2003

	TeleCourse	TeleCourse Plus
Mean	39.1%	31.7%
Median	36.8%	28.0%
Std. Deviation	17.9%	22.9%

Source: Colleague Database, DCCCD accessed July 2004.

Table 35: Dropout Rates for TeleCourse and TeleCourse Plus Courses by Specific Type of Course at DCCCD, Fall 2003

	TeleCourse		TeleCourse	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	32.5%	29.3%	18.7%	18.0%
ENGL-1302	30.4%	29.7%	21.1%	21.1%
GOVT-2301	40.3%	40.0%	32.5%	30.8%
GOVT-2302	34.5%	33.3%	28.8%	28.4%
ECON-2301	28.8%	30.4%	37.6%	44.4%
ECON-2302	45.6%	50.0%	13.1%	8.3%
PSYC-2301	39.4%	38.5%	15.8%	15.8%
Non-General Education Transfer Courses				
ACCT-2301	57.8%	58.8%	56.5%	58.3%
ACCT-2302	55.8%	50.0%	44.8%	30.0%
BUSI-1301	40.3%	33.6%	29.6%	25.8%
BUSI-2301	37.9%	41.7%	28.6%	28.6%

Note: TV: telecourse; TVP: telecourse plus
Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1g: There is no difference between the success rates for Internet and

TeleCourses.

A one-way ANOVA was used to test hypothesis 1g. The calculated F ratio equaled 12.36

and exceeded the critical value of $F_{(1, 117)}$ with a probability less than .01. Therefore, the

hypothesis was rejected.

Table 36: Summary ANOVA for Success Rates of Internet and TeleCourse Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.53	1	0.53	12.36	0.00
Within Groups	4.98	117	0.04		
Total	5.51	118			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics showed that success rates for Internet courses were higher than for

TeleCourses (Table 37). Success rates by specific type of course showed that the highest success

rate was in GOVT- 2302 for Internet and ENGL - 1302 for TeleCourse courses (see Table 38).

Table 37: Success Rates for Internet and TeleCourse Courses at DCCCD, Fall 2003

	Internet	TeleCourse
Mean	52.8%	39.3%
Median	53.3%	42.9%
Std. Deviation	22.0%	19.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 38: Success Rates for Internet and TeleCourse Courses by Specific Type of Course at DCCCD, Fall 2003

	Internet		TeleCourse	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	63.4%	68.2%	46.6%	48.9%
ENGL-1302	53.3%	57.5%	56.3%	57.8%
GOVT-2301	56.5%	56.5%	45.0%	44.7%
GOVT-2302	74.9%	71.4%	53.7%	54.1%
ECON-2301	35.4%	33.3%	38.0%	37.5%
ECON-2302	38.4%	38.4%	26.2%	33.3%
PSYC-2301	66.2%	67.7%	41.8%	42.9%
Non-General Education Transfer Courses				
ACCT-2301	28.0%	29.2%	16.7%	17.6%
ACCT-2302	46.3%	46.7%	17.5%	12.5%
BUSI-1301	53.9%	56.9%	25.4%	22.5%
BUSI-2301	62.2%	69.7%	41.2%	41.7%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1h: There is no difference between the success rates for Internet and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 1h. The calculated F ratio equaled 4.73 and exceeded the critical value of $F(1, 102)$ with a probability less than .05. Therefore, the hypothesis was rejected.

Table 39: Summary ANOVA for Success Rates of Internet and TeleCourse Plus Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.24	1	0.24	4.73	0.03
Within Groups	5.20	102	0.05		
Total	5.44	103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for Internet courses were higher than for TeleCourse Plus (Table 40). Success rates by type of courses demonstrated that the highest success rate was in GOVT- 2302 for Internet courses and PSYC - 2301 for TeleCourse Plus courses (see Table 41).

Table 40: Success Rates for Internet and TeleCourse Plus Courses at DCCCD, Fall 2003

	Internet	TeleCourse Plus
Mean	52.8%	43.1%
Median	53.3%	46.7%
Std. Deviation	22.0%	23.1%

Source: Colleague Database, DCCCD accessed July 2004.

Table 41: Success Rates for Internet and TeleCourse Plus Courses by Specific Type of Course at DCCCD, Fall 2003

	Internet		TeleCourse Plus	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	63.4%	68.2%	64.9%	64.8%
ENGL-1302	53.3%	57.5%	58.0%	60.8%
GOVT-2301	56.5%	56.5%	50.3%	50.0%
GOVT-2302	74.9%	71.4%	55.1%	56.8%
ECON-2301	35.4%	33.3%	36.6%	35.3%
ECON-2302	38.4%	38.4%	59.2%	58.3%
PSYC-2301	66.2%	67.7%	68.4%	68.4%
Non-General Education Transfer Courses				
ACCT-2301	28.0%	29.2%	21.8%	29.2%
ACCT-2302	46.3%	46.7%	15.2%	0.0%
BUSI-1301	53.9%	56.9%	23.6%	11.5%
BUSI-2301	62.2%	69.7%	23.8%	23.8%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 1i: There is no difference between the success rates for TeleCourses and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 1i. The calculated F ratio equaled 1.02 and was less than the critical value of $F_{(1, 123)}$. Therefore, the hypothesis was narrowly retained.

Table 42: Summary ANOVA for Success Rate of TeleCourse and TeleCourse Plus Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.05	1	0.05	1.02	0.31
Within Groups	5.54	123	0.05		
Total	5.58	124			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for TeleCourses were lower than for TeleCourses Plus (Table 43). Success rates by specific type of course demonstrated that the highest success rate was in PSYC - 2301 for TeleCourse Plus and ENGL - 1302 for TeleCourse courses (see Table 44).

Table 43: Success Rates for TeleCourse and TeleCourse Plus Courses at DCCCD, Fall 2003

	TeleCourse	TeleCourse Plus
Mean	39.3%	43.1%
Median	42.9%	46.7%
Std. Deviation	19.6%	23.1%

Source: Colleague Database, DCCCD accessed July 2004.

Table 44: Success Rates for TeleCourse and TeleCourse Plus Courses by Specific Type of Course at DCCCD, Fall 2003

	TeleCourse		TeleCourse Plus	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	46.6%	48.9%	64.9%	64.8%
ENGL-1302	56.3%	57.8%	58.0%	60.8%
GOVT-2301	45.0%	44.7%	50.3%	50.0%
GOVT-2302	53.7%	54.1%	55.1%	56.8%
ECON-2301	38.0%	37.5%	36.6%	35.3%
ECON-2302	26.2%	33.3%	59.2%	58.3%
PSYC-2301	41.8%	42.9%	68.4%	68.4%
Non-General Education Transfer Courses				
ACCT-2301	16.7%	17.6%	21.8%	29.2%
ACCT-2302	17.5%	12.5%	15.2%	0.0%
BUSI-1301	25.4%	22.5%	23.6%	11.5%
BUSI-2301	41.2%	41.7%	23.8%	23.8%

Source: Colleague Database, DCCCD accessed July 2004.

Research Question 2: What is the difference, if any, between course outcomes for traditional and

distance learning courses?

Hypothesis 2a: There is no difference between the completion rates for traditional and

distance learning courses.

A one-way ANOVA was used to test hypothesis 2a. The calculated F ratio equaled

127.69 and exceeded the critical value of F(1, 1102), at a significance level of $p<.05$. Therefore,

the hypothesis was rejected.

Table 45: Summary ANOVA for Completion Rate of Distance Learning and Traditional Courses
at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.77	1	2.77	127.69	0.00
Within Groups	23.90	1102	0.02		
Total	26.67	1103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates for distance learning were lower

than for traditional courses (Table 46). Completion rates by type of course demonstrated that the

highest completion rate was in ENGL - 1301 for distance learning and GOVT - 2302 for

traditional courses (see Table 47).

Table 46: Completion Rate of Distance Learning and Traditional Courses at DCCCD, Fall 2003

	Distance Learning	Trad. Method
Mean	66.5%	80.2%
Median	69.6%	82.6%
Std. Deviation	19.8%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 47: Completion Rates of Distance Learning and Traditional Courses by Specific Type of Course at DCCCD, Fall 2003

	Distance Learning		Traditional Methods	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	72.8%	72.7%	82.8%	84.0%
ENGL-1302	72.4%	73.2%	74.8%	77.3%
GOVT-2301	64.3%	66.7%	83.9%	84.4%
GOVT-2302	70.9%	69.2%	86.7%	87.8%
ECON-2301	68.1%	70.4%	74.4%	77.5%
ECON-2302	69.9%	67.9%	73.3%	75.2%
PSYC-2301	71.6%	72.1%	83.3%	84.3%
Non-General Education Transfer Courses				
ACCT-2301	46.4%	47.5%	70.0%	68.6%
ACCT-2302	56.7%	63.2%	83.4%	80.4%
BUSI-1301	70.3%	73.9%	79.0%	82.8%
BUSI-2301	69.4%	71.4%	74.2%	80.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2b: There is no difference between completion rates for traditional and

Internet courses.

A one-way ANOVA was used to test hypothesis 2b. The calculated F ratio equaled 15.16 and exceeded the critical value of $F_{(1, 977)}$, at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 48: Summary ANOVA for Completion Rate of Internet and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.29	1	0.29	15.16	0.00
Within Groups	18.45	977	0.02		
Total	18.74	978			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates for Internet were lower than for traditional courses (Table 49). Completion rates by specific type of course demonstrated that the highest completion rate was in ENGL - 1301 for distance learning and GOVT - 2302 for traditional courses (see Table 50).

Table 49: Completion Rate of Internet and Traditional Courses at DCCCD, Fall 2003

	Internet	Traditional Method
Mean	72.4%	80.2%
Median	75.0%	82.6%
Std. Deviation	16.6%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 50: Completion Rates of Internet and Traditional Courses by Type of Course at DCCCD, Fall 2003

	Internet		Traditional Methods	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	75.4%	78.6%	82.8%	84.0%
ENGL-1302	68.2%	72.1%	74.8%	77.3%
GOVT-2301	60.9%	60.9%	83.9%	84.4%
GOVT-2302	83.2%	76.2%	86.7%	87.8%
ECON-2301	72.4%	71.4%	74.4%	77.5%
ECON-2302	65.8%	65.8%	73.3%	75.2%
PSYC-2301	79.8%	79.3%	83.3%	84.3%
Non-General Education Transfer Courses				
ACCT-2301	50.9%	50.0%	70.0%	68.6%
ACCT-2302	81.1%	80.0%	83.4%	80.4%
BUSI-1301	80.9%	87.7%	79.0%	82.8%
BUSI-2301	78.0%	79.7%	74.2%	80.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2c: There is no difference between completion rates for traditional and

TeleCourses.

A one-way ANOVA was used to test hypothesis 2c. The calculated F ratio equaled

125.64 and exceeded the critical value of F(1, 998), at a significance level of $p<.05$. Therefore,

the hypothesis was rejected.

Table 51: Summary ANOVA for Completion Rate of TeleCourse and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.43	1	2.43	125.64	0.00
Within Groups	19.34	998	0.02		
Total	21.78	999			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates for TeleCourses were lower than for

traditional courses (Table 52). Completion rates by type of course demonstrated that the highest

completion rate was in ENGL - 1301 for TeleCourses and GOVT - 2302 for traditional courses

(see Table 53).

Table 52: Completion Rate of TeleCourse and Traditional Courses at DCCCD, Fall 2003

	TeleCourse	Traditional Method
Mean	60.9%	80.2%
Median	63.3%	82.6%
Std. Deviation	17.9%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 53: Completion Rates of TeleCourse and Traditional Courses by Type of Course, DCCCD, Fall 2003

	Internet		Traditional Methods	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	67.5%	70.7%	82.8%	84.0%
ENGL-1302	69.6%	70.3%	74.8%	77.3%
GOVT-2301	59.7%	60.0%	83.9%	84.4%
GOVT-2302	65.5%	66.7%	86.7%	87.8%
ECON-2301	71.2%	69.6%	74.4%	77.5%
ECON-2302	54.4%	50.0%	73.3%	75.2%
PSYC-2301	60.6%	61.5%	83.3%	84.3%
Non-General Education Transfer Courses				
ACCT-2301	42.1%	41.2%	70.0%	68.6%
ACCT-2302	44.2%	50.0%	83.4%	80.4%
BUSI-1301	59.6%	66.4%	79.0%	82.8%
BUSI-2301	62.1%	58.3%	74.2%	80.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2d: There is no difference between completion rates for traditional and

TeleCourses Plus.

A one-way ANOVA was used to test the hypothesis 2d. The calculated F ratio equaled

36.11 and exceeded the critical value of $F_{(1, 983)}$, at a significance level of $p<.05$. Therefore,

the hypothesis was rejected.

Table 54: Summary ANOVA for Completion Rate of TeleCourse Plus and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.73	1	0.73	36.11	0.00
Within Groups	19.96	983	0.02		
Total	20.70	984			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that completion rates by specific courses for TeleCourse Plus were lower than for traditional courses (Table 55). Completion rates by specific type of course demonstrated that the highest completion rate was in ECON - 2302 for TeleCourses Plus and GOVT - 2302 for traditional courses (see Table 56).

Table 55: Completion Rate of TeleCourse Plus and Traditional Courses, DCCCD, Fall 2003

	TeleCourse Plus	Traditional Methods
Mean	68.3%	80.2%
Median	72.0%	82.6%
Std. Deviation	22.9%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 56: Completion Rates of TeleCourse Plus and Traditional Courses by Type of Course at DCCCD, Fall 2003

	TeleCourse Plus		Traditional Methods	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	81.4%	71.4%	82.8%	84.0%
ENGL-1302	78.9%	78.9%	74.8%	77.3%
GOVT-2301	67.5%	69.2%	83.9%	84.4%
GOVT-2302	71.2%	71.6%	86.7%	87.8%
ECON-2301	62.4%	55.6%	74.4%	77.5%
ECON-2302	86.9%	91.7%	73.3%	75.2%
PSYC-2301	84.2%	84.2%	83.3%	84.3%
Non-General Education Transfer Courses				
ACCT-2301	43.5%	41.7%	70.0%	68.6%
ACCT-2302	55.2%	70.0%	83.4%	80.4%
BUSI-1301	70.4%	74.2%	79.0%	82.8%
BUSI-2301	71.4%	71.4%	74.2%	80.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2e: There is no difference between the dropout rates for traditional and distance learning courses.

A one-way ANOVA was used to test the hypothesis 2e. The calculated F ratio equaled 127.69 and exceeded the critical value of $F_{(1, 1102)}$, at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 57: Summary ANOVA for Dropout Rate of Distance Learning and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.77	1	2.77	127.69	0.00
Within Groups	23.90	1102	0.02		
Total	26.67	1103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates for distance learning were higher than for traditional courses (Table 58). Dropout rates by type of courses demonstrated that the highest dropout rate was in ACCT - 2301 for both distance learning and traditional courses (see Table 59).

Table 58: Dropout Rate of Distance Learning and Traditional Courses at DCCCD, Fall 2003

	Distance Learning	Traditional Methods
Mean	33.5%	19.8%
Median	30.4%	17.4%
Std. Deviation	19.8%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 59: Dropout Rates of Distance Learning and Traditional Courses by Type of Course at DCCCD, Fall 2003

	Distance Learning		Traditional Methods	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	27.2%	27.3%	17.2%	16.0%
ENGL-1302	27.6%	26.8%	25.2%	22.7%
GOVT-2301	35.7%	33.3%	16.1%	15.6%
GOVT-2302	29.1%	30.8%	13.3%	12.2%
ECON-2301	31.9%	29.6%	25.6%	22.5%
ECON-2302	30.1%	32.1%	26.7%	24.8%
PSYC-2301	28.4%	27.9%	16.7%	15.7%
Non-General Education Transfer Courses				
ACCT-2301	53.6%	52.5%	30.0%	31.4%
ACCT-2302	43.3%	36.8%	16.6%	19.6%
BUSI-1301	29.7%	26.1%	21.0%	17.2%
BUSI-2301	30.6%	28.6%	25.8%	20.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2f: There is no difference between dropout rates for traditional and Internet courses.

A one-way ANOVA was used to test hypothesis 2f. The calculated F ratio equaled 15.16 and exceeded the critical value of $F(1, 977)$, at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 60: Summary ANOVA for Dropout Rate of Internet and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.29	1	0.29	15.16	0.00
Within Groups	18.45	977	0.02		
Total	18.74	978			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates for Internet were higher than for traditional courses (Table 61). Dropout rates by type of course demonstrated that the highest dropout rate was in ACCT - 2301 for both Internet and traditional courses (see Table 62).

Table 61: Dropout Rate of Internet and Traditional Courses at DCCCD, Fall 2003

	Internet	Traditional Methods
Mean	27.6%	19.8%
Median	25.0%	17.4%
Std. Deviation	16.6%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 62: Dropout Rates of Internet and Traditional Courses by Type of Course, DCCCD, Fall 2003

	Internet		Traditional Method	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	24.6%	21.4%	17.2%	16.0%
ENGL-1302	31.8%	27.9%	25.2%	22.7%
GOVT-2301	39.1%	39.1%	16.1%	15.6%
GOVT-2302	16.8%	23.8%	13.3%	12.2%
ECON-2301	27.6%	28.6%	25.6%	22.5%
ECON-2302	34.2%	34.2%	26.7%	24.8%
PSYC-2301	20.2%	20.7%	16.7%	15.7%
Non-General Education Transfer Courses				
ACCT-2301	49.1%	50.0%	30.0%	31.4%
ACCT-2302	18.9%	20.0%	16.6%	19.6%
BUSI-1301	19.1%	12.3%	21.0%	17.2%
BUSI-2301	22.0%	20.3%	25.8%	20.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2g: There is no difference between dropout rates for traditional and

TeleCourses.

A one-way ANOVA was used to test hypothesis 2g. The calculated F ratio equaled 125.64 and exceeded the critical value of F(1, 998), at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 63: Summary ANOVA for Dropout Rates of TeleCourse and Traditional Courses, DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.43	1	2.43	125.64	0.00
Within Groups	19.34	998	0.02		
Total	21.78	999			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates for TeleCourses were higher than for traditional courses (Table 64). Dropout rates by type of course demonstrated that the highest dropout rate was in ACCT - 2301 for both Internet and traditional courses (see Table 65).

Table 64: Dropout Rates of TeleCourse and Traditional Courses, DCCCD, Fall 2003

	TeleCourse	Traditional Method
Mean	39.1%	19.8%
Median	36.8%	17.4%
Std. Deviation	17.9%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 65: Dropout Rates of TeleCourse and Traditional Courses by Type of Course, DCCCD, Fall 2003

| | TeleCourse | | Traditional Method | |
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	32.5%	29.3%	17.2%	16.0%
ENGL-1302	30.4%	29.7%	25.2%	22.7%
GOVT-2301	40.3%	40.0%	16.1%	15.6%
GOVT-2302	34.5%	33.3%	13.3%	12.2%
ECON-2301	28.8%	30.4%	25.6%	22.5%
ECON-2302	45.6%	50.0%	26.7%	24.8%
PSYC-2301	39.4%	38.5%	16.7%	15.7%
Non-General Education Transfer Courses				
ACCT-2301	57.9%	58.8%	30.0%	31.4%
ACCT-2302	55.8%	50.0%	16.6%	19.6%
BUSI-1301	40.4%	33.6%	21.0%	17.2%
BUSI-2301	37.9%	41.7%	25.8%	20.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2h: There is no difference between dropout rates for traditional and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 2h. The calculated F ratio equaled 36.11 and exceeded the critical value of $F_{(1, 983)}$, at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 66: Summary ANOVA for Dropout Rate of TeleCourse Plus and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.73	1	0.73	36.11	0.00
Within Groups	19.96	983	0.02		
Total	20.70	984			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that dropout rates by specific course for TeleCourse Plus were higher than for traditional courses (Table 67). Dropout rates by specific type of course demonstrated that the highest dropout rate was in ACCT - 2301 for both TeleCourses Plus and traditional courses (Table 68).

Table 67: Dropout Rate of TeleCourse Plus and Traditional Courses at DCCCD, Fall 2003

	TeleCourse Plus	Traditional Method
Mean	31.7%	19.8%
Median	28.0%	17.4%
Std. Deviation	22.9%	13.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 68: Dropout Rates of TeleCourse Plus and Traditional Courses by Type of Course at DCCCD, Fall 2003

	TeleCourse Plus		Traditional Method	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	18.7%	18.0%	17.2%	16.0%
ENGL-1302	21.1%	21.1%	25.2%	22.7%
GOVT-2301	32.5%	30.8%	16.1%	15.6%
GOVT-2302	28.8%	28.4%	13.3%	12.2%
ECON-2301	37.6%	44.4%	25.6%	22.5%
ECON-2302	13.1%	8.3%	26.7%	24.8%
PSYC-2301	15.8%	15.8%	16.7%	15.7%
Non-General Education Transfer Courses				
ACCT-2301	56.5%	58.3%	30.0%	31.4%
ACCT-2302	44.8%	30.0%	16.6%	19.6%
BUSI-1301	29.6%	25.8%	21.0%	17.2%
BUSI-2301	28.6%	28.6%	25.8%	20.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2i: There is no difference between the success rates for traditional and

distance learning courses.

A one-way ANOVA was used to test hypothesis 2i. The calculated F ratio equaled 73.61

and exceeded the critical value of $F_{(1, 1102)}$, at a significance level of $p<.05$. Therefore, the

hypothesis was rejected.

Table 69: Summary ANOVA for Success Rate of Distance Learning and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.37	1	6.37	173.61	0.00
Within Groups	40.44	1102	0.04		
Total	46.81	1103			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for distance learning were lower than for

traditional courses (Table 70). The course demonstrating the highest success rate for both

distance learning and traditional courses was PSYC – 2301 (see Table 71).

Table 70: Success Rate of Distance Learning and Traditional Courses at DCCCD, Fall 2003

	Distance Learning	Traditional Method
Mean	44.3%	65.2%
Median	46.4%	66.7%
Std. Deviation	22.0%	18.6%

Note: DE: distance learning; TRAD: traditional course
Source: Colleague Database, DCCCD accessed July 2004.

Table 71: Success Rates of Distance Learning and Traditional Courses by Specific Type of Course at DCCCD, Fall 2003

| | Distance Learning | | Traditional Method | |
	Mean	Median	Mean	Median
	General Education Courses			
ENGL-1301	55.7%	58.3%	68.9%	69.6%
ENGL-1302	56.2%	60.8%	60.1%	63.1%
GOVT-2301	48.7%	50.0%	71.5%	73.7%
GOVT-2302	58.2%	57.5%	73.4%	75.5%
ECON-2301	36.9%	35.3%	56.3%	56.0%
ECON-2302	42.0%	42.0%	58.7%	58.4%
PSYC-2301	55.6%	60.8%	64.6%	65.9%
	Non-General Education Transfer Courses			
ACCT-2301	23.1%	22.0%	53.2%	51.0%
ACCT-2302	22.2%	25.0%	66.2%	63.7%
BUSI-1301	35.6%	30.7%	59.6%	59.5%
BUSI-2301	47.9%	48.6%	59.0%	64.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2j: There is no difference between success rates for traditional and Internet courses.

A one-way ANOVA was used to test hypothesis 2j. The calculated F ratio equaled 20.23 and exceeded the critical value of $F_{(1, 977)}$, at a significance level of $p<.05$. Therefore, the hypothesis was rejected.

Table 72: Summary ANOVA for Success Rate of Internet and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.71	1	0.71	20.23	0.00
Within Groups	34.37	977	0.04		
Total	35.08	978			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for Internet were lower than for traditional courses (Table 73). Success rates by type of course demonstrated that the highest success rate was in GOVT - 2301 for both Internet and traditional courses (Table 74).

Table 73: Success Rates of Internet and Traditional Courses at DCCCD, Fall 2003

	Internet	Traditional Method
Mean	52.8%	65.2%
Median	53.3%	66.7%
Std. Deviation	22.0%	18.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 74: Success Rates of Internet and Traditional Courses by Type of Course at DCCCD, Fall 2003

	Internet		Traditional Method	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	63.4%	68.2%	68.9%	69.6%
ENGL-1302	53.3%	57.5%	60.1%	63.1%
GOVT-2301	56.5%	56.5%	71.5%	73.7%
GOVT-2302	74.9%	71.4%	73.4%	75.5%
ECON-2301	35.4%	33.3%	56.3%	56.0%
ECON-2302	38.4%	38.4%	58.7%	58.4%
PSYC-2301	66.2%	67.7%	64.6%	65.9%
Non-General Education Transfer Courses				
ACCT-2301	28.0%	29.2%	53.2%	51.0%
ACCT-2302	46.3%	46.7%	66.2%	63.7%
BUSI-1301	53.9%	56.9%	59.6%	59.5%
BUSI-2301	62.2%	69.7%	59.0%	64.0%

Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2k: There is no difference between success rates for traditional and

TeleCourses.

A one-way ANOVA was used to test hypothesis 2k. The calculated F ratio equaled

125.32 and exceeded the critical value of F(1, 998), at a significance level of $p<.05$. Therefore,

the hypothesis was rejected.

Table 75: Summary ANOVA for Success Rates of TeleCourse and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.36	1	4.36	125.32	0.00
Within Groups	34.71	998	0.03		
Total	39.07	999			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for TeleCourses were lower than for

traditional courses (Table 76). Success rates by type of course demonstrated that the highest

success rate was in GOVT - 2301 for both Internet and traditional courses (see Table 77).

Table 76: Success Rates of TeleCourse and Traditional Courses at DCCCD, Fall 2003

	TeleCourse	Traditional Method
Mean	39.3%	65.2%
Median	42.9%	66.7%
Std. Deviation	19.6%	18.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 77: Success Rates of TeleCourse and Traditional Courses by Type of Course at DCCCD, Fall 2003

| | TeleCourse | | Traditional Method | |
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	46.6%	48.9%	68.9%	69.6%
ENGL-1302	56.3%	57.8%	60.1%	63.1%
GOVT-2301	45.0%	44.7%	71.5%	73.7%
GOVT-2302	53.7%	54.1%	73.4%	75.5%
ECON-2301	38.0%	37.5%	56.3%	56.0%
ECON-2302	26.2%	33.3%	58.7%	58.4%
PSYC-2301	41.8%	42.9%	64.6%	65.9%
Non-General Education Transfer Courses				
ACCT-2301	16.7%	17.6%	53.2%	51.0%
ACCT-2302	17.5%	12.5%	66.2%	63.7%
BUSI-1301	25.4%	22.5%	59.6%	59.5%
BUSI-2301	41.2%	41.7%	59.0%	64.0%

Note: TV: telecourse; TRAD: traditional course
Source: Colleague Database, DCCCD accessed July 2004.

Hypothesis 2l: There is no difference between success rates for traditional and

TeleCourses Plus.

A one-way ANOVA was used to test hypothesis 2l. The calculated F ratio equaled 70.81

and exceeded the critical value of $F(1, 983)$, at a significance level of $p<.05$. Therefore, the

hypothesis was rejected.

Table 78: Summary ANOVA for Success Rate of TeleCourse Plus and Traditional Courses at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.52	1	2.52	70.81	0.00
Within Groups	34.93	983	0.04		
Total	37.44	984			

Source: Colleague Database, DCCCD accessed July 2004.

Descriptive statistics indicated that success rates for TeleCourse Plus were lower than for traditional courses (Table 79). Success rates by type of course demonstrated that the highest success rate was in PSYC - 2301 for TeleCourse Plus and ENGL – 1301 for traditional courses (see Table 80).

Table 79: Success Rate of TeleCourse Plus and Traditional Courses at DCCCD, Fall 2003

	TeleCourse Plus	Traditional Method
Mean	43.1%	65.2%
Median	46.7%	66.7%
Std. Deviation	23.1%	18.6%

Source: Colleague Database, DCCCD accessed July 2004.

Table 80: Success Rates of TeleCourse Plus and Traditional Courses by Type of Course, DCCCD, Fall 2003

	TeleCourse Plus		Traditional Method	
	Mean	Median	Mean	Median
General Education Courses				
ENGL-1301	64.9%	64.8%	68.9%	69.6%
ENGL-1302	58.0%	60.8%	60.1%	63.1%
GOVT-2301	50.3%	50.0%	71.5%	73.7%
GOVT-2302	55.1%	56.8%	73.4%	75.5%
ECON-2301	36.6%	35.3%	56.3%	56.0%
ECON-2302	59.2%	58.3%	58.7%	58.4%
PSYC-2301	68.4%	68.4%	64.6%	65.9%
Non-General Education Transfer Courses				
ACCT-2301	21.8%	29.2%	53.2%	51.0%
ACCT-2302	15.2%	0.0%	66.2%	63.7%
BUSI-1301	23.6%	11.5%	59.6%	59.5%
BUSI-2301	23.8%	23.8%	59.0%	64.0%

Source: Colleague Database, DCCCD accessed July 2004.

Research Question 3: What student characteristics influence the course outcomes in distance

learning courses?

The students included in the analysis were students enrolled in the selected distance

learning courses, with the instructional method TeleCourse, TeleCourse Plus, and Internet. Sixty-

five percent of the students were females and 35% were males. Forty-eight percent of the

students were white, 25% were African – American and 13% were Hispanic.

The dropout students had a grade point average (GPA) between 2.5 and 2.9, and had

completed over 30 credit hours (see Table 81). The successful students had a GPA greater than

3.0 and had completed over 40 credit hours. There was no difference in the average number of

hours the students were enrolled in that semester or in their age. An ANOVA test (Table 83)

illustrated a significant difference between completers and dropouts for GPA and completed

credits at *p<.01*.

Table 81: Dropout, Completer, and Successful Students by GPA, Age, Completed Credits, and
Semester Load at DCCCD, Fall 2003

	Dropouts		Completers		Successful	
	Mean	Median	Mean	Median	Mean	Median
GPA	2.5	2.7	2.7	2.9	3.1	3.2
Age	28	25	28	26	29	27
Completed Credits	37	32	43	39	46	42
Semester Load	10	10	10	10	10	10

Note: GPA: Grade Point Average; Semester Load: Enrollment per semester
Source: Colleague Database, DCCCD accessed July 2004.

A one-way ANOVA showed that there was no significant difference between TASP

reading scores for completers and dropout groups. Due to the high number of TASP scores

missing from the data it was recoded and the missing scores replaced with the mean. Mean

scores for students that were successful in the course compared with mean scores for completers and dropouts are presented in Table 83.

No significant difference was found between completers and dropouts based on previous distance learning courses attended (see Table 84).

Table 82: Summary ANOVA Table for Completer and Dropout Students by GPA, Age, Completed Credits, and Semester Load at DCCCD, Fall 2003

Rate	Source	Sum of Squares	df	Mean Square	F	Sig.
GPA	Between Groups	24.19	1	24.19	20.00	0.00
	Within Groups	3074.48	2542	1.21		
	Total	3098.67	2543			
Age	Between Groups	267.79	1	267.79	3.83	0.05
	Within Groups	177609.39	2541	69.90		
	Total	177877.18	2542			
Completed	Between Groups	23802.11	1	23802.11	19.72	0.00
Credits	Within Groups	3068604.80	2542	1207.16		
	Total	3092406.91	2543			
Semester	Between Groups	6.87	1	6.87	0.39	0.53
Load	Within Groups	44656.63	2542	17.57		
	Total	44663.50	2543			

Note: GPA: Grade Point Average; Semester Load: Enrollment per semester
Source: Colleague Database, DCCCD accessed July 2004.

Table 83: Summary ANOVA Table for Completer and Dropout Students by TASP Reading Scores, DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	812.68	99	8.21	1.00	0.48
Within Groups	20133.72	2453	8.21		
Total	20946.41	2552			

Source: Colleague Database, DCCCD accessed July 2004.

Table 84: Summary ANOVA Table for Completer and Dropout Students by Previous Distance Learning Courses Attended, DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.72	11	0.07	0.30	0.99
Within Groups	466.99	2123	0.22		
Total	467.71	2134			

Source: Colleague Database, DCCCD accessed July 2004.

Only 660 students out of 2553 students enrolled in distance learning classes provided information regarding the family status. The results obtained using this group were deemed not generalized to the whole sample of students enrolled in distance education courses in fall 2003. As the reasons for not providing the data was unknown to the researcher, the results obtained were applied only to the small group selected.

Table 85: Dropout, Completer, and Successful Students by Family Status at DCCCD, Fall 2003

	Completers	Dropouts	Success
Single parent with custody of minor child	52.3%	60.7%	47.6%
Homemaker primarily working at home	22.8%	13.7%	27.7%
Divorce, separated or widowed, having lost the income of spouse	24.8%	25.6%	24.7%

Source: Colleague Database, DCCCD accessed July 2004.

The one-way ANOVA result was significant, $F(2, 259) = 13.59$, $p < .01$, and showed that family status had an impact upon the final grade in the distance learning course. ANOVA result was significant also on student status as a completer or dropout, $F(2, 259) = 3.93$, $p < .05$.

A larger group of students, 86.1%, provided information about their employment while they attended college. Table 86 provides information regarding employment for completer,

dropout, and successful students in fall 2003 semester. Almost half of the completers and/or successful students worked more than 35 hours per week. One-way ANOVA results were significant for both grade $F(4, 2196) = 10.8$, $p < .01$ and for students' status $F(4, 2196) = 9.6$, $p < .01$ when compared for employment status.

Table 86: Dropout, Completer, and Successful Students by Employment Status, DCCCD, Fall 2003

	Completers	Dropouts	Success
Not employed outside home	18.3%	10.8%	18.8%
Unemployed seeking employment	9.9%	10.8%	9.6%
Employed 1-20 hours/week	10.5%	13.7%	10.8%
Employed 21-34 hours/week	13.8%	20.8%	12.5%
Employed 35+ hours/week	47.4%	43.9%	48.3%

Source: Colleague Database, DCCCD accessed July 2004.

Fifteen percent (14.6%) of the students enrolled in distance learning courses demonstrated poverty level based on their income level and the number of dependents. However the income or the number of dependents did not have an impact upon course outcomes. One-way ANOVA results were not significant at .01 or .05 levels (see Table 87 and Table 88).

Table 87: Summary ANOVA Table for Completer and Dropout Students by Income at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.47	8	0.18	0.85	0.56
Within Groups	445.89	2050	0.22		
Total	447.36	2058			

Source: Colleague Database, DCCCD accessed July 2004.

Table 88: Summary ANOVA Table for Completer and Dropout Students by Number of Dependents at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	71.28	6	11.88	1.43	0.20
Within Groups	17880.80	2154	8.30		
Total	17952.08	2160			

Source: Colleague Database, DCCCD accessed July 2004.

For the group of students classified as first generation (N = 445), approximately half (69.4%) were females, white (47.2%), and their age was between 20 and 30 years old (58.2%). About twenty percent (19.1%) of the first generation students were enrolled full-time (12 and above credit hours per semester), and 86.8% were enrolled in at least one three credit- hour distance learning course. Sixty-eight percent (68.1%) were completers, and 50.3% earned grades of A, B, and C.

A correlation analysis was performed to study the relationship between course outcomes and student characteristics. The whole correlation matrix can be found in Appendix C, Table A. Grades were negatively correlated with GPA, gender, family status, income, age, and completed credit hours. The factors were significantly correlated at $p<.01$ and $p<.05$.

A forced entry regression analysis was performed on grade as a measure of course outcome. The predictor variables GPA, gender, age, income, family status, completed credit hours, dependents, semester load, ethnicity, employment, and previous distance learning courses attended.

Table 89: Model Summary for Regression Analysis

Model	R	R Square	Adjusted R	Error of Estimate
1	0.372	0.139	0.121	2.739

Predictors: (Constant), previous distance learning courses, dependents, income, semester load, gender, age, ethnicity, completed credits, employment, family status, GPA
Dependent Variable: Grade
Source: Colleague Database, DCCCD accessed July 2004.

R-square indicated that approximately 14% of the variance of grade was explained by the variance of the combined predictor variables. R^2 is significant at $p<.01$ (Table 90).

Table 90: ANOVA Table for Regression Model

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	658.11	11	59.82	7.97	0.00
Within Groups	4090.06	545	7.51		
Total	4748.17	556			

Predictors: (Constant), previous distance learning courses, dependents, income, semester load, gender, age, ethnicity, completed credits, employment, family status, GPA
Dependent Variable: Grade
Source: Colleague Database, DCCCD accessed July 2004.

Research Question 4: What course characteristics influence the course outcomes in distance learning courses?

Course characteristics considered for analysis and their codes are illustrated in Table 91. All courses analyzed in this section included distance learning courses using Internet, TeleCourse, and TeleCourse Plus formats of delivery.

A study of completion, dropout, and success rates revealed that the distance learning courses taught by full-time faculty had a higher completion rate than the courses taught by part-time faculty or full-time administrators. However, the success rate was higher for courses taught

by full-time administrators than for the courses taught by full-time and part-time faculty (see Table 92). The completion rate was the highest for the eight week courses, with the success rate being the highest for the six week courses (Table 93).

Table 91: Variable Coding for Course Characteristics

	Definition of Measure
Faculty Status	1 = Full-time Faculty
	2 = Part-time Faculty
	3 = Full-time Administrators
Start Date	0 = Regular Start Date (8/25/2003)
	1 = Start date later than regular start date
Length of Course	Number of weeks
Videos	0 = No videos used
	1 = Videos used in course
Internet	0 = No Internet required
	1 = Internet required
Email	0 = No email communication required
	1 = Email communication required
Campus Orientation	0 = Orientation on campus mandatory
	1 = No orientation on campus required
Campus Testing	0 = Testing done on campus
	1 = Testing done on-line

Source: Colleague Database, DCCCD accessed July 2004.

Table 92: Completion, Dropout, and Success Rates by Faculty Status at DCCCD, Fall 2003

	Completion Rate		Dropout Rate		Success Rate	
	Mean	Median	Mean	Median	Mean	Median
Full - Time Faculty	76.4%	81.0%	23.6%	19.0%	44.2%	46.0%
Part - Time Faculty	75.7%	76.7%	24.3%	23.3%	41.9%	41.5%
Full - Time Administrator	67.0%	65.9%	33.0%	34.1%	52.9%	55.0%

Source: Colleague Database, DCCCD accessed July 2004.

Table 93: Completion, Dropout, and Success Rates by Course Length at DCCCD, Fall 2003

Course Length	Completion Rate		Dropout Rate		Success Rate	
	Mean	Median	Mean	Median	Mean	Median
6 weeks	77.4%	81.8%	22.6%	18.2%	66.7%	67.0%
8 weeks	90.1%	90.1%	9.9%	9.9%	43.0%	43.0%
10 weeks	69.3%	74.1%	30.7%	25.9%	25.0%	17.0%
13 weeks	81.1%	78.0%	18.9%	22.0%	43.3%	41.0%
14 weeks	72.3%	67.9%	27.7%	32.1%	30.8%	36.5%
15 weeks	85.8%	86.2%	14.2%	13.8%	31.4%	36.0%
16 weeks	75.6%	80.0%	24.4%	20.0%	45.2%	47.0%
17 weeks	60.7%	68.3%	39.3%	31.7%	49.8%	46.5%

Note: Regular course length = 16 weeks; Courses of 12 and 18 weeks long were not included
Source: Colleague Database, DCCCD accessed July 2004.

As Dallas County Community College District, through LeCroy Center for Educational Telecommunications is a major production facility for production of videos nationally, the effect of video use on course outcomes is of interest. The description of data in Table 95 indicated that the use of videos had a positive impact on success rate.

Table 94: Completion, Dropout, and Success Rates by Use of Videos at DCCCD, Fall 2003

	Completion Rate		Dropout Rate		Success Rate	
	Mean	Median	Mean	Median	Mean	Median
No videos required	75.5%	77.8%	24.5%	22.2%	52.8%	53.0%
Videos required	75.9%	80.0%	24.1%	20.0%	41.0%	43.0%

Source: Colleague Database, DCCCD accessed July 2004.

Table 95: Summary ANOVA for Course Outcomes by Use of Videos at DCCCD, Fall 2003

Rate	Source	Sum of Squares	df	Mean Square	F	Sig.
Completion	Between Groups	0.00	1	0.00	0.02	0.88
Rate	Within Groups	5.12	172	0.03		
	Total	5.12	173			
Dropout	Between Groups	0.00	1	0.00	0.02	0.88
Rate	Within Groups	5.12	172	0.03		
	Total	5.12	173			
Success	Between Groups	0.49	1	0.49	10.67	0.00
Rate	Within Groups	7.90	172	0.05		
	Total	8.39	173			

Source: Colleague Database, DCCCD accessed July 2004.

A correlation analysis was performed to study the relationship between course outcomes and course characteristics. The whole correlation matrix can be found in Appendix C, Table B. No characteristics were correlated with completion and dropout rates. The success rate was significantly correlated with use of email, Internet, and videos, testing on campus, and faculty status.

A General Linear Model (GLM) was run to assess the relationship between the variables. The Levene Test of Equality of Error Variances tests the hypothesis the error variance of the dependent variable was equal across groups (see Appendix C, Table C). The high significance levels showed that the equal variances assumption was not violated. The test of between–the-subjects effects showed a significant effect upon the success rate and no effect on the other outcomes. However, the significance was low and the partial Eta Squared coefficient showed that the effect on success rate was not marked (Appendix C, Table D).

A regression analysis was performed on success rate. The predictor variables were length of course in number of weeks, testing on campus, faculty status, and Internet.

Table 96: Model Summary for Regression Analysis

Model	R	R Square	Adjusted R	Error of Estimate
1	0.258	0.067	0.045	0.215

Predictors: (Constant), No.weeks, Testing on campus, Faculty status, Internet
Dependent Variable: Success rate
Source: Colleague Database, DCCCD accessed July 2004.

R-square indicated that approximately 7% of the variance of the success rate was explained by the variance of the combined predictor variables. R^2 is significant at $p<.05$ (Table 97).

Table 97: ANOVA Table for Regression Model, by Method of Instruction at DCCCD, Fall 2003

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.55983	4	0.14	3.02	0.02
Residual	7.82857	169	0.05		
Total	8.3884	173			

Predictors: (Constant), No.weeks, Testing on campus, Faculty status, Internet
Dependent Variable: Success rate
Source: Colleague Database, DCCCD accessed July 2004.

Testing of Astin's I-E-O Model

In his book *Assessment for Excellence: The Philosophy and Practice of Assessment and Evaluation in Higher Education* (1993) Alexander W. Astin "for those readers who are interested in applying the I-E-O model in practice, the remainder of the appendix covers what I consider to be the fundamental statistical and analytical concepts needed to apply the model to real data" (p. 255). Astin's model postulated that input variables had an effect upon course outcomes. He

recommended the use of common statistical methods such as correlation, regression and/or factor analysis. Astin suggests basic statistics to determine the variability, followed by correlation. If a positive correlation is found, the environmental effects will be determined using regression analysis.

A significant correlation was found between student characteristics (GPA, gender, family status, income, age, and completed credit hours) and course characteristics (use of email, Internet, videos, testing on campus, faculty status) and course outcomes. However, the correlations were not strong, with a value around 0.2.

For course characteristics as input variables, the statistical analysis showed that they had no effect on completion and dropout rates. However, there is a significant effect on success rate, with $F(4, 169) = 3.02$, $p < .05$. Regression analysis result was significant also for success rate by method of instruction, $F(1, 172) = 4.67$, $p < .05$.

For student characteristics, the course outcome was considered the grade obtained in the class. There is a significant effect of predictor variables (input variables) upon grade in the class, $F(11, 545) = 7.97$, $p < .01$ (see Table 90).

CHAPTER 5

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter outlines the findings based upon the analysis of data presented in Chapter 4. Based upon the findings and the literature presented in Chapter 2, conclusions and recommendations for practice and future research are presented.

Introduction

The study compared outcomes for distance learning courses with those of traditional courses offered by the seven campuses of Dallas County Community College District (DCCCD). A major community college district, DCCCD served approximately 65,000 credit students in the fall 2003 semester.

The course outcomes were defined as completion rate (the student received a grade other than W), dropout rate (the student received a grade equal with W) and success rate (the student received a grade of A, B, or C). Eleven courses offered during the fall 2003 semester were selected for the study. The methods of instruction employed for each course were traditional classroom lecture/discussion and distance learning formats of Internet, TeleCourse and TeleCourse Plus. Internet courses are delivered on-line, using Internet access and a browser, TeleCourse uses one-way videos or public broadcasting, and TeleCourse Plus is a hybrid between Internet and TeleCourse courses.

Seven of the courses selected were part of the core curriculum approved by Texas Higher Education Coordinating Board (THECB) while four other courses were completely transferable. Data were collected from the DCCCD Colleague system. Two types of specific data were extracted: course data and individual student data. Course data included location, method of

instruction, time of day (day or night) and the day(s) of the week (weekday or weekend) when

the course was offered, length of course, instructor's status (adjunct or full-time faculty, full-time

administrator), certified enrollment in the 12th day of class, number of withdrawals, and grade

distribution. In addition to the information found in the DCCCD system, course requirements

including the use of email, videos and Internet, orientation and testing on campus were added as

variables. The student data included demographic variables such as age, gender, ethnicity, family

status, employment and academic variables including number of credit hours completed, number

of distance learning credit hours completed, grade point average (GPA), grades, placement test

scores, previous degrees held, withdrawal history, and financial aid. The theoretical framework

for ensuring sound statistical analysis was Astin's student engagement model.

The study addressed the weaknesses of the research in distance learning as outlined by

Phipps and Merisotis (1999). This was not an experimental study. No control group was present.

It is difficult to have a control group in education research, as no one can forbid the educational

process to take place. Learning is a complex process and many variables may have an effect

upon the results. The selection of the sample was done using the class as a unit. Due to the

relatively small number of distance education courses and sections offered, with a diverse

number of students enrolled in each, a randomly selected sample may have reduced the number

of individuals involved and affect the results. The study of the distribution of the outcomes

among the different types of instructional methods showed that the distribution was skewed but

similar. No negative effects, such as novelty or John Henry effects, were found to be present in

this study. At the time of the study, all courses included in the investigation had been completed

and grades had been submitted, and no student or instructor was aware that the outcomes of the

courses were studied. The research design was reviewed by a panel of experts and formally

approved by the DCCCD Cabinet.

The study also filled gaps in distance education research found in previous studies.

Access is a very important issue in higher education and distance learning seems to overcome

many of the obstacles. The study looked at the enrollment in distance learning course of women

and minorities, students who worked full-time, and students who were single parents with

dependents. The course outcomes defined in the study included success rate as it did dropout

rate. Also the study looked at the impact of one-way video, Internet, and email together upon the

course outcomes, using Astin's theory of engagement as its conceptual framework.

Findings

Finding 1: Distance learning students at DCCCD represent a distinctive student group that resembles neither day nor the night/weekend students.

In terms of demographic student characteristics, the DCCCD student body as a whole

presents more ethnic diversity than the sub-group of distance-learning students. More than half

of the DCCCD students were minorities (53%), yet a higher percentage of white students were

enrolled in non-traditional courses than minority students. Distance-learning students as a group

resembled night/weekend students, but different when exposed to statistical analysis. There is an

evident difference between day students and distance learning students. Table 98 illustrates the

demographic characteristics of the three groups.

From these data, it is clear that distance-learning courses provide a means for adult

students who work full-time to pursue their education. DCCCD students enrolled in distance

education courses typically worked more than 35 hours per week and/or were single parents with

custody of a minor child. They were nontraditional students in need of the flexibility offered by

non-traditional courses. This finding is consistent with the research literature, that has consistently demonstrated that distance education learners are older, more often females, primarily employed, and taking care of families (Carr, 2000; Cohen & Brawer, 2003; Daugherty & Funke, 1998; Perez & Foshay, 2002).

Some may believe that distance education students resemble night and weekend students. This perception however, based largely on anecdotal evidence, was not supported by the data in the sample studied. ANOVA showed significant difference between the distance learning and night/weekend student groups in terms of gender ($F(1, 8481) = 20.85$, $p<.01$) and ethnicity ($F(1, 8486) = 50.67$, $p<.01$). The percentages presented in Table 98 illustrate that in both groups more than half the students either worked more than 35 hours/week or were not employed outside home, with the distance-learning students having a higher percentage of students being at home. This may suggest that the distance-learning students may be either working at home or taking care of minor children, an issue that certainly merits further investigation.

The low number of minority students, especially Hispanics, enrolled in distance learning courses may have been due to the lack of ownership of a computer or access to the Internet. Clearly, if one has to visit a DCCCD campus to access technology to use Internet, the benefits of the technology are much reduced. In a report released in 2000, the U.S. Department of Commerce showed that fewer Hispanics (23.7%) and Blacks (29.3%) had access to the Internet than Whites (50.3%) and Asians/Pacific Islanders (49.4%) (US Department of Commerce, 2000). The same report reveals that 65.6% of the Asian/Pacific Islander and 55.7% of the White households owned computers versus Hispanics (33.7%), and Blacks (32.6%). Hispanics and Blacks also may have lacked computer skills necessary to fulfill requirements in the courses.

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Table 98: Demographic Characteristics of DCCCD Students included in the Study for Fall 2003

| | Distance Learning | | Traditional Methods | | | |
| | | | Day | | Night/Weekend | |
	#	%	#	%	#	%
Total Enrollment	2553	100.0%	13848	100.0%	5935	100.0%
			Gender			
Female	1664	65.2%	7296	52.7%	3557	59.9%
Male	889	34.8%	6552	47.3%	2378	40.1%
			Ethnicity			
White	1229	48.1%	5997	43.3%	2259	38.1%
African American	634	24.8%	2631	19.0%	1304	22.0%
Hispanic	323	12.7%	2818	20.3%	1443	24.3%
Asian; Pacific Islander	189	7.4%	1329	9.6%	510	8.6%
Other	178	7.0%	1073	7.7%	419	7.1%
			Age			
less than 21	373	14.6%	6275	45.3%	1271	21.4%
21-25	890	34.9%	4871	35.2%	2297	38.7%
26-35	852	33.4%	1944	14.0%	1613	27.2%
36+	437	17.1%	758	5.5%	754	12.7%
			Employment Status			
Not employed outside home	348	13.6%	1982	14.3%	560	9.4%
Unemployed-seeking employment	226	8.9%	1585	11.4%	462	7.8%
1-20 hrs/week	254	9.9%	2843	20.5%	531	8.9%
21-34 hrs/week	354	13.9%	2787	20.1%	815	13.7%
35+ hrs/week	1015	39.8%	2042	14.7%	2540	42.8%
Unknown/Not Reported	356	13.9%	2609	18.8%	1027	17.3%
			Family Status			
Single parent with custody minor child	363	14.2%	1073	7.7%	630	10.6%
Homemaker primarily working at home	132	5.2%	396	2.9%	126	2.1%
Divorced, separated, widowed	165	6.5%	594	4.3%	328	5.5%
Unknown/Not Reported	1893	74.1%	11785	85.1%	4851	81.7%

Source: Colleague Database, DCCCD accessed July 2004.

It is not unusual to find minority students from low-income communities who need the support and motivation they could expect typically to receive from the instructor in a face-to-face class setting. Further research is necessary to better identify specific reasons for lower numbers of minority students enrolled in distance learning courses.

Finding 2: There are differentiated completion rates based on type of methods of instruction. The completion rates for Internet courses are higher than for TeleCourse and TeleCourse Plus methods of instruction. The highest dropout rate was found in TeleCourses, followed by TeleCourse Plus and Internet courses.

The finding in the literature were confirmed in this study (Carey, 2002; Carr, 2000; Hogan, 1997; Russell, 2001, 2004) that the students were more likely to complete traditional, face-to-face instruction courses than they were to complete distance-learning courses, Internet, TeleCourse, or TeleCourse Plus. The completion rate for traditional courses offered by DCCCD was 80% versus 67% in distance learning. Based on the definition used in DCCCD, a student completed the class if he or she received a grade other than "W". A student who received a grade of "F" failed the class but is considered a completer. In view of these definitions, the completion/ dropout rates may be studied in view of the number of "F" grades awarded, so that a high completion rate may not seem appropriately positive where a high number of students failed the course.

This study added to the body of research information about completion rates of different distance learning methods of instruction, information not found easily in the literature. The highest completion rate was found in the Internet courses (72.3%), followed by TeleCourse Plus (68.5%), and TeleCourse (60.9%). Even though videos are an important part of TeleCourse Plus and TeleCourse instructional formats, they do not seem to have an effect on completion rate. The

expectation was that the videos might serve to increase the completion rate in the TeleCourse Plus format compared to Internet courses. The statistical analysis showed that the presence of videos did not have such an impact upon completion rate in any of the courses. Table 99 illustrates the completion and dropout rates in different methods of delivery.

Table 99: Summary Table for Completion and Dropout Rates in Courses Offered in DCCCD, Fall 2003

	Completion Rate		Dropout Rate	
	Mean	SD	Mean	SD
Traditional Courses	80.2%	13.6%	19.8%	13.6%
Internet Courses	72.4%	16.6%	27.6%	16.6%
TeleCourses	60.9%	17.9%	39.1%	17.9%
TeleCourse Plus	68.5%	22.7%	31.5%	22.7%

Note: SD is standard deviation
Source: Colleague Database, DCCCD accessed July 2004.

A plausible explanation of the high completion rate in Internet courses and high dropout rate in TeleCourses may be the amount or level of interaction that takes place in the class during the semester, both between the students and instructor, and between the students in the class. Even though the statistical analysis showed that email did not have an impact upon the course outcomes, the use of email as a required means of communication in TeleCourse Plus and the Internet formats may increase the interaction between the instructor and students. There is no formal process for tracking the number of emails exchanged between the instructor and the students within DCCCD. However, it would be helpful if such information could be received from instructors regarding the number of emails traded between students and instructor during the course of a semester. The instructor could maintain the confidentiality and privacy of the students by simply providing aggregate numbers. Also, on-line support software including Blackboard or WebCT include features such as chat room, discussion board, digital drop box,

that may increase the ease and amount of interaction, while keeping track of the levels of instruction on a non-invasive basis. Further research is necessary to determine the amount and the quality of interaction between the instructor and students in the different types of distance learning instructional methods.

A higher completion rate was found in shorter courses. The shorter period of time required to study the material seemed to help students focus better on the material and assignments, resulting in the completion of the course. The success rate was lower for the same shorter courses, meaning that the students' goal may have been to go through the course, and not necessarily to earn a high grade. Further research may show if students enrolled in shorter courses plan to enter in high competitive programs including nursing, where grades and GPA are important. Also, students enrolled in shorter distance learning courses in community colleges, especially courses starting after the start of the semester, may be students co-enrolled at 4-year universities who need these courses for transferring credit, a process that often occurs without their GPA being affected.

The highest dropout rates were found for courses 17 weeks in length. They were longer than the regular 16 weeks courses, ending in January and not in December such as the traditional courses. The reason for this may be related to the course being in session during the winter break, as the course period is extended past the traditional Christmas and New Year holidays. *Finding 3: The study found that more than half of the students enrolled in Internet courses were successful, but still at lower rate than in the traditional courses. The lowest success rate was found in the TeleCourses, with the TeleCourse Plus falling between the two extremes.*

Table 100: Summary Table for Success Rates in Courses Offered in DCCCD, Fall 2003

	Success Rate	
	Mean	SD
Traditional Courses	65.7%	19.9%
Internet Courses	52.8%	22.0%
TeleCourses	39.3%	19.6%
TeleCourse Plus	43.1%	13.1%

Note: SD is standard deviation
Source: Colleague Database, DCCCD accessed July 2004.

In the DCCCD, a successful student is defined as a student who earned an A, B, or C in the class. The completion of the class does not mean a "success", just that the student was still in the class at the end of the semester. Since many colleges do not use this definition of success, these findings could not be compared with similar results found in the literature. Other measures of success include specific course completion or satisfactory performance in subsequent courses. Further research using DCCCD definition of success at other community colleges and four-year universities would be interesting for the results that may be generated.

The higher success rate in Internet courses with the lower success rates in TeleCourse Plus and TeleCourses followed the same pattern as the completion and dropout rate results. The statistical analysis showed that course characteristics had an impact on success rates even though they did not influence completion/dropout rates. Put differently, even though the presence of videos did not influence the students to remain in the class, they helped the students to be successful. The videos added visual, auditory, and action-oriented or kinesthetic learning opportunities that enabled the students to grasp the information beyond that provided by their textbooks. Therefore, the students were better able to earn the higher grades.

Finding 4: Distance learning courses taught by full-time faculty had higher completion rates than the ones taught by adjunct faculty or full-time administrators.

The statistical analysis in this research project illustrated that distance learning courses taught by full-time faculty demonstrated higher completion rates than ones taught by adjunct faculty. An interesting finding was that, although courses taught by full-time administrators had a lower completion rate, the success rate was higher. The explanation may be that full-time administrators were more aware of the importance of grades for admission in different programs or transfer to a 4-year institution. It may be that full-time faculty may have been focused more on working with the students in their particular courses and helping them to continue their progress until completion. It may also be that full-time faculty are more attuned with their students learning styles and are more able to offer personalized instruction than adjunct instructors or administrators. Through the nature of their jobs, administrators and faculty are aware of different services and resources offered by DCCCD than the adjunct faculty. It may be that a higher completion and success rates in classes taught by the full-time employees reflect better counseling than instructor's teaching experience. Further research may reveal interesting information regarding relationships between faculty load and students' success in the course.

Finding 5: Higher completion rates were observed in government and economics courses, for both traditional and distance learning courses, than accounting. High dropout rates were observed in the accounting course, for both traditional and distance learning courses.

Among the 11 courses analyzed in this study, the highest completion rate by course was observed in American Government II (GOVT 2302) for Internet and traditional courses, Principles of Economics I (ECON 2301) for TeleCourses, and Principles of Economics II

(ECON 2302) for TeleCourse Plus. The lowest completion rates were for Principles of Accounting I and II (ACCT 2301 and 2302) for all types of distance learning (See Table 101).

Government and Economics courses are courses that help student define themselves and their role in society. They are designed to increase the students' knowledge about interactions among institutions, institutions and individuals, events, and ideas. Common educational objectives for the three courses mentioned above are related to citizenship, role of the United States in the world, and contemporary social issues (see Appendix A). In the distance learning courses, the economics students may have benefited from the advantage of having visual, auditory, and kinesthetic elements provided by the videos. By the nature of their course, government students may have benefited from the interactions that occurred through chat rooms, emails and bulletin boards. In the same time, the high level of completion of these courses may have been less related to the method of instruction or the quality of instruction and/or faculty, and more related to the topics of the courses and their relevance to everyday life of the students. It may be possible to find more relevant examples to apply the knowledge in Economics and Government than in Accounting.

The highest dropout rate was observed for Principles of Accounting I (ACCT 2301) course for all instructional methods. Due to the fact that this finding applied to both distance learning and traditional courses, the high withdrawal rate from the course may not have anything to do with the methods of instruction, but rather with the structure of the course. A review of the topics covered and the student involvement in the course may be helpful in discovering reasons

Table 101: Summary Table for Completion, Dropout and Success Rates in Courses Offered at DCCCD, Fall 2003

Courses	Drop Rate		Completion Rate		Success Rate	
	Distance Learning	Traditional	Distance Learning	Traditional	Distance Learning	Traditional
ACCT-2301	53.6%	30.0%	46.4%	70.0%	23.1%	53.2%
ACCT-2302	43.3%	16.6%	56.7%	83.4%	22.2%	66.2%
BUSI-1301	29.7%	21.0%	70.3%	79.0%	35.6%	59.6%
BUSI-2301	30.6%	25.8%	69.4%	74.2%	47.9%	59.0%
ECON-2301	31.9%	25.6%	68.1%	74.4%	36.9%	56.3%
ECON-2302	30.1%	26.7%	69.9%	73.3%	42.0%	58.7%
ENGL-1301	27.2%	17.2%	72.8%	82.8%	55.7%	68.9%
ENGL-1302	27.6%	25.2%	72.4%	74.8%	56.2%	60.1%
GOVT-2301	35.7%	16.1%	64.3%	83.9%	48.7%	71.5%
GOVT-2302	29.1%	13.3%	70.9%	86.7%	58.2%	73.4%
PSYC-2301	28.4%	16.7%	71.6%	83.3%	55.6%	64.6%
Average Total Courses	33.4%	21.3%	66.6%	78.7%	43.8%	62.9%
Average General Education Courses	30.0%	20.1%	70.0%	79.9%	50.5%	64.8%
Average Non-General Education Courses	39.3%	23.3%	60.7%	76.7%	32.2%	59.5%

Source: Colleague Database, DCCCD accessed July 2004.

Table 102: Standard Deviation: Summary Table for Completion, Dropout and Success Rates in Courses Offered at DCCCD, Fall 2003

| Courses | Drop Rate | | | | Completion Rate | | | | Success Rate | | | |
| | Distance Learning | | Traditional | | Distance Learning | | Traditional | | Distance Learning | | Traditional | |
	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD
ACCT-2301	53.6%	19.2%	30.0%	14.5%	46.4%	19.2%	70.0%	14.5%	23.1%	16.2%	53.2%	16.8%
ACCT-2302	43.3%	36.1%	16.6%	8.7%	56.7%	36.1%	83.4%	8.7%	22.2%	21.0%	66.2%	15.7%
BUSI-1301	29.7%	25.1%	21.0%	13.0%	70.3%	25.1%	79.0%	13.0%	35.6%	24.6%	59.6%	18.0%
BUSI-2301	30.6%	22.1%	25.8%	18.7%	69.4%	22.1%	74.2%	18.7%	47.9%	26.6%	59.0%	22.6%
ECON-2301	31.9%	13.8%	25.6%	14.6%	68.1%	13.8%	74.4%	14.6%	36.9%	9.6%	56.3%	18.0%
ECON-2302	30.1%	17.6%	26.7%	19.8%	69.9%	17.6%	73.3%	19.8%	42.0%	22.6%	58.7%	21.0%
ENGL-1301	27.2%	14.4%	17.2%	11.9%	72.8%	14.4%	82.8%	11.9%	55.7%	20.1%	68.9%	17.6%
ENGL-1302	27.6%	10.7%	25.2%	14.7%	72.4%	10.7%	74.8%	14.7%	56.2%	15.4%	60.1%	18.1%
GOVT-2301	35.7%	11.2%	16.1%	11.5%	64.3%	11.2%	83.9%	11.5%	48.7%	13.9%	71.5%	18.3%
GOVT-2302	29.1%	11.1%	13.3%	8.9%	70.9%	11.1%	86.7%	8.9%	58.2%	15.7%	73.4%	17.0%
PSYC-2301	28.4%	11.5%	16.7%	9.7%	71.6%	11.5%	83.3%	9.7%	55.6%	15.4%	64.6%	15.4%

Source: Colleague Database, DCCCD accessed July 2004.

behind the students' dropout. Accounting is a specialized course attended by students who typically wish to major in accounting. The preparedness of the students at the time they take the course may be in question as well. Further research in this area may answer questions regarding the design of transfer courses and their pertinence to the role of community college, and is clearly justified in light of such rates of dropout and low rates of success.

A high gap in the dropout between traditional and distance education in courses such as Accounting (25.1%) and Government (17.7%) (Table 101) strongly suggests that community college students should be attending only face-to-face classroom instruction for these courses, as they seemed to benefit more from the contact with the instructor. Accounting and Business courses are a first step toward preparing students for workforce. It is possible that the continuous contact with the instructor and his/her experience in the field may increase the motivation of the students to complete the course.

Finding 6: High success rates were observed in a mixture of courses, for both traditional and distance learning courses.

The success rate was high for GOVT 2302 for traditional courses and PSYC 2301 (Introduction in Psychology) for distance learning courses. More specifically, a high success rate was found for GOVT 2302 (65.3%) in Internet courses, ENGL 1302 (46.7%) in TeleCourses, and PSYC 2301 (68.4%) for TeleCourse Plus. A large gap in the success between traditional and distance education in courses such as Accounting suggested that the traditional structure of the course should be used as a model for the distance education methods. More attention should also be paid to the success rates of students enrolled in distance education courses including Accounting and Business. Increasingly, the professionals in these fields do their work on-line, sometimes from their own homes. Assessing the comfort level of students working in these

conditions and connecting such data to success in distance education class may be the first step toward increasing success and lowering the large gap found between distance learning and traditional formats in this study.

Courses with high success rates, such as Government and Psychology, were social and behavioral sciences courses. The activities for these courses promote critical thinking, reading, writing, and listening, major requirements in the job market. These objectives, together with the real life social and individual issues discussed in the course, may motivate the students to be successful. As mentioned previously, it may be possible that the students are more comfortable to find relevant examples to apply the knowledge in Economics and Government than in Accounting.

Finding 7: The dispersion of scores is higher for the three distance learning formats (Internet, TeleCourse, TeleCourse Plus) than for traditional face-to-face classroom instruction.

The measure used for this finding was standard deviation (SD). Standard deviation is preferred as an index for dispersion because it is based upon all the rates in the groups studied (Hinkle et al., 1998; Huck, 2000). Table 102 shows not only the average rates for each course in distance learning and traditional methods, but also their standard deviations.

An interesting case is the difference that appears in the standard deviation for ECON 2301. Whereas the standard deviations for the distance learning and traditional delivery formats were nearly equal for the drop and completion rates, for the success rate, the dispersion for the distance format was half as a large as that of the traditional format. Perhaps this occurred because the average success rate was so much lower for the distance format over the traditional format, indicating that the dispersion was tighter for a smaller success rate.

BUSI-1301 offers another example of the impact of dispersion on the success rate for the course. The traditional format for this course averaged a success rate that was a full 24 percentage points higher than the distance-learning format. The dispersion spread for the distance-learning format was 6.6 percentage points lower. This result suggests that, at worst, the distance format success rate for BUSI-1301 was 11% at its best while the traditional format success rate was 41.6% at worst. Therefore, the spread of difference between the worst cases for success in BUSI-1301 for the distance learning and traditional formats was 30.6%. This finding seems to implicate a number of issues for this course.

Between the Accounting I and II (ACCT – 2301 and ACCT-2302), more than half the students enrolled in the distance learning format for Accounting I dropped the course, a higher percentage than for Accounting II in the same delivery. However, the standard deviation for the Accounting II drop rate was approximately double the one calculated for Accounting I. Additionally, Accounting II offered via traditional format experienced a much lower drop rate than that of the distance-learning format. Further, Accounting II's standard deviation for the traditional format drop rate was a mere 8.7% while the distance learning format demonstrated a 36.1% spread. This finding demonstrates reason for great concern about the presentation and format of the accounting courses during the first weeks of class when students were inclined to drop the course.

Finding 8: Even though age, gender, and ethnicity do not have an impact upon the course outcomes, the profile of the completers and dropouts may assist advisors and counselors in helping students decide which method of instruction best suits them.

Findings in the literature showed that females (Blackner, 2000; Sydow & Sandel, 1998), and white (Mohammadi, 1996) students are more likely to complete the courses. The present

study found that 32% of the white female students and 18% of the African American females completed courses investigated. In general 67% of the women enrolled in distance education courses were completers. Also, the statistics by ethnicity showed that 28% of white, 24% of African American, and 11% of Hispanic students completed their courses.

Age was not found to be a predictor of course outcomes in the present study, nor it was found to be in prior research (Summers, 2003). Blackner (2000) found a correlation between age and final exam percentage. The present study also found a correlation between age and grade in the course. The similar findings may be due to similar populations, as Blackner studied the students enrolled in one of the DCCCD colleges, which were included in the present study. The percentage of students dropping courses demonstrated an inverse relationship with the age, with only 16% of the students over 36 years old being dropouts, versus 44% for the age between 20 and 25 years of age. This may mean lower commitment among younger students, an area for further study.

Finding 9: Previous degrees attained and semester loads of more than 12 credit hours per semester have a positive influence on course outcomes.

Anecdotal information and previous research (Fredda, 2000) suggested that previous degrees attained increased the completion rate in distance education courses. Among the present findings, 46.6% of the community college students holding previously earned bachelor's level or higher degrees completed their courses. A similar result was obtained for the students who already possessed an associate degree, with 27.6% being completers.

Full-time students were more likely to complete the courses assessed in this study. This finding is different than the result obtained by Maxwell, Hagedorn, Cypers, and Moon (2003) in the TRUCCS project. They found a direct relationship between the probability of dropping and

the course load. The present study found that a strikingly large percentage (73%) of the students dropping the distance learning courses were enrolled in 12 credit hours or less. Further research is necessary to determine relationship between low semester course load and withdrawal from courses.

Finding 10: Employment and family status played a significant role in the students' status at the end of the semester.

Employment and family status are the most cited reasons by the students for dropping out. Parker (1999) found full-time employment as a predictor of student dropout in distance education courses. Summers (2003) also found that students who worked full-time were more likely to dropout. Conklin (1997) and Maxwell et al. (2003) found that work schedule conflicts as the top reason given by students who dropped courses.

The results in this study showed that employment and the number of hours worked per week had a significant impact upon course outcomes. Even though the percentage of students working 35+ hours per week and completing courses (47.4%) is almost equal with the students with the same workload but dropping the course (43.9%), the impact of employment on course outcomes was significant. The National Center for Education Statistics found that 38.9% of the students enrolled in two-year public institutions worked full-time, and 26.8% had dependents (Horn & Carroll, 1996). Students often report that working has a negative effect on grades. About 40% of the non-traditional students versus 25% of traditional students reported an effect of employment on grades. Employment while enrolling in school may limit the class schedule (46%), the number of classes that could be taken (39%) or the choice of classes (33%) (National Center for Education Statistics, 2002b).

An interesting result was obtained for the successful students. Forty-eight percent of the successful students worked more than 35 hours per week. This finding suggests that students who work full-time drop the class if they were not successful. They seemed to care about the grade they earned in the class more than completing it.

Family status considered in the DCCCD application form was single parent with custody of a minor child, homemaker primarily working at home, and divorced, separated, or widowed, having lost the income of a spouse. The results of the present study showed that family status had an impact on course outcomes (completion, dropout, and success rates), whereas the impact of dependents on course outcomes was not significant. Sixty-one percent of the students dropping the course were single parent, with custody of a small child, and 26% were divorced, separated, or widowed. In terms of dependents, the results from the smaller sample that provided the information showed that 49% had no dependents and other 34% had one or two dependents. With regards to income, 15% of the students earned less than $8,050 annual family income, and 44% earned $27,851 or more. For the whole sample, 14% were at the poverty level versus 86% who were not. This finding is consistent with the findings in the TRUCCS project, where Maxwell et al. (2003) found that family conflict is another important reason for the students to drop the course.

Conclusions

The data obtained in this study profiled the students with different outcomes in distance education courses. As a reminder of the limitations of the study, while the following conclusions may have relevance to urban community colleges, they should not be generalized to other community colleges outside of Dallas County Community College District.

Conclusion 1: The students enrolled in distance learning courses in DCCCD in fall 2003 constitute a distinctive group, that differed from the other two groups (day and night/weekend students) at a significance level p<.01.

Contrary to the expectations, the distance-learning group has different characteristics than the night/weekend students, and were far different compared with the day students. A closer look at the demographic information available may help counselors with advising students who want to enroll in distance learning courses as an alternative to traditional courses.

It seems that the distance learning courses are a better fit for people who have other commitments but are willing to continue their education. A flexible schedule is always a desired characteristic for a course, but it requires and, at the same time teaches students to be independent and be decision makers. The student has an active role in his/her learning, which models better the real life situations. It may be that the reason why distance-learning students are older, more prepared to take on the commitment to learning is that they may be more independent and better prepared to function without direct guidance of an instructor.

Conclusion 2: Significant differences in completion rates exist within the 11 distance learning courses examined in this study. The completion rates are different based on course, method of instruction, and length of course.

The data (Table 101) showed that the completion rates are different based on the type of course offered. In distance learning, the highest completion rates for all methods of instruction combined are in English Composition I and II and Psychology. Both are reading –based courses, and the performance is evaluated through writing samples. It seems that the combination of reading and writing fits well with the way distance learning courses are taught in DCCCD. For traditional courses, the highest completion rates are seen in Government I and II, where face-to-

face discussions regarding events and concepts may be both beneficial and motivational for the students. The high success rates in the same courses suggest that the students completing these courses are motivated enough to be also successful (grades received were A, B, C).

The lowest completion rates in distance learning courses for all methods of instruction were found in Principles of Accounting I and II. As completion rates are around just 50% the question is why they are still offered in the distance-learning format, especially with a high completion rate (77% average) for the same courses in the traditional classroom instruction.

Conclusion 3: High dropout rates combined with high standard deviation suggest problematic heterogeneity, in terms of outcomes, for any course.

Data showed that, for distance learning, non-general education courses, such as Accounting and Business, have higher dropout rates than general education ones, with a higher dispersion of values. An interesting case occurred for Accounting, a two-semester non-general education, and transferable course. In the first half of the course more than 50% of the students dropped, compared with about 40% drop rate in Accounting II. However, the success rate was about half of the completion rate. It may be that students prefer to withdraw if they are not successful, instead of receiving low grades or failing the course. The high dropout rate combined with a high standard deviation merits further investigation, especially if the courses were in the same department. Further investigation is needed to evaluate the course objectives and the course design.

Conclusion 4: Employment and family status have an impact upon the student performance in the courses studied.

The data analysis demonstrated that the employment, defined by the number of hours worked per week, had an impact upon the performance in distance learning courses. The same

finding applied for the family status, defined as single mother with custody of a small child, homemaker primarily working at home, and divorced, separated, or widowed, having lost the income of a spouse. Data did not support the claim that income has an impact upon course outcomes for the sample studied, the results of family status and hours of employment seem to suggest that. Both family status and employment are measures of financial needs/income, so that an influence of the two measures upon performance in distance learning courses implies impact of income upon performance in the above mentioned courses. For distance learning students, earning the income needed and fulfilling the dream of going to school is likely a strong motivating factor for positive outcomes. The data also suggests that single parents with a minor child may prefer distance-learning courses, likely justified by the ability to avoid childcare costs.

There may be other reasons why students may prefer distance-learning classes. Full-time employment and/or not employed outside home may suggest an unwillingness to pay gas and/or parking fees when there is another option, or even avoiding an extra car payment. A flexible schedule may be a plus, as students have the freedom of choosing their own hours for studying, taking tests, and communicating with faculty.

<div align="center">Recommendations for Research</div>

Recommendation 1: A national study of distance learning outcomes is needed for all types of community colleges.

This study should be replicated for more than one community college and/or community college district. The findings implied a change in the distribution of financial resources, including the decrease in the amount of dollars spent on acquiring or producing educational videos or hiring more full-time faculty able to teach distance education courses. Due to these findings, researchers should establish if the results are valid for all community colleges in the

United States. The study should take into consideration the characteristics of urban, suburban and rural community colleges and the communities they serve. In its digital divide reports, the U.S Department of Commerce found that the rural households are significantly less likely to own computers as compared to their urban or suburban counterparts, and that 30.0% of the population in rural areas versus 21.8% nationally used the Internet for school access outside of the home (US Department of Commerce, 1999). A national study is needed that selects a number of general education courses offered in different distance education formats and compare their outcomes across the community colleges studied.

Recommendation 2: A study comparing 2- or 4-year private institutions, especially University of Phoenix, to verify if the findings for community college students may apply to senior institutions, is needed.

With the expansion of the University of Phoenix and the increase in distance learning courses at 4-year institutions, it is important to see if the same results will be obtained in a study of senior institutions. Such results will assess the efficacy not only of undergraduate courses as this one has attempted, but also the effectiveness of graduate courses. The age of distance-learning students may fit the graduate student image. The research may provide information about the effectiveness of these types of courses for graduate students. However, the results may show if distance-learning courses may not be more appropriate for graduate courses.

Further research is recommended for private institutions. As it is known, there is a difference between the students enrolled in public and private institutions with regard to family income, family background, and academic background of the students. Since private institutions can be more selective and are definitely more expensive in cost than public institutions in general

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and community colleges in particular, the demographic characteristics of the students included in the courses under study may vary from those of the present study.

The present study may be replicated for a group of students enrolled in undergraduate or graduate courses in a certain semester. As TeleCourses seem to be offered more by community colleges (Meyer, 2003), a limitation of this study would be the use of a restricted number of distance learning methods of instruction, offered by 4-year universities.

Recommendation 3: Research is needed to assess enrollment patterns of minority students in distance learning courses. As the amount of interaction is important for course outcomes, the study should put in evidence how interaction plays a role in minority students' performance and course outcomes.

As this study showed that fewer Hispanic and African American students were enrolled in distance learning, further research is necessary to assess reasons behind the decision to enroll or not enroll in distance learning courses. Even though it seems that distance learning courses may fit the needs of minority students, allowing them more flexibility to work or/and to take care of their families, they still prefer to enroll in on-campus courses. The reason may be that those courses are more structured and the students have more motivation to complete, but further research should determine why minority students prefer traditional courses. It may be they lack computer and Internet access due to monetary limitations. A survey at the time of enrollment in a distance learning class would be helpful in collecting information about reasons for enrolling in these nontraditional courses. A withdrawal survey for those who drop the course may also give information about as to the courses do not fit the students, especially minorities. Focus groups can be employed as a method of gathering information, but they are difficult to organize, especially with students who are not located close to the campus.

Further research is necessary to determine exactly the amount and level of interaction that takes place in Internet, TeleCourse, and TeleCourse Plus course. Using surveys and focus groups, followed by an experimental study, a researcher could collect information from both students and instructors regarding the amount of contact that takes place in a course. A good start will be to define what interaction/contact means so that the reporting will be accurate and similar between the individuals.

Recommendation 4: To understand better the reasons for dropout, research addressing student objectives for the courses taken is needed. This is a hot topic area, but in the same time not well investigated, student intent may change the interpretation of the outcomes.

More and better research is needed to assess the students' reasons for dropping out. Research is also needed to find out why students enrolled in the distance learning courses in the first place and what expectations they had at the beginning of the course. This information may help advisors to guide students who want to enroll in these types of courses, but for the wrong reasons, such as the assumption that students may have about it being easier to pass the class when it is offered via on-line format.

As a number of completers may fail the course, a look at the ratio between completers and the number of students failing the course may give information about the internal policies of the college regarding withdrawal and the reason students have for dropping out.

The results in the study showed that females are both dropouts and completers. Further research is needed to clarify at what point in the semester they decided to drop the course. It would be interesting to know if the dropout behavior has anything to do with not fulfilling the requirements in the course or the decision to drop came early in the semester. The data for this study should be available in the main system at DCCCD and other community colleges for the

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date the student dropped the course. Regarding the performance in the course as a reason of withdrawal, collaboration between the faculty and researcher would also be beneficial.

Recommendation 5: Instructional design research is necessary, to close the large gap between course outcomes offered in distance learning and traditional learning formats.

As some results in course outcomes suggested that maybe a flaw in the design of the course is present, more research regarding the design of transfer courses and effective methods of teaching may be beneficial for community colleges. Most of the faculty teaching the distance learning courses also teaches the same subjects in the traditional format. They may need to change their style of teaching and the course design when using the distance learning format.

Recommendations for Practice

Recommendation1: *Enrollment trends in the last years (213% in the last five years) suggest an increase in interest for distance learning courses, which offer greater flexibility than the traditional classroom ones. Colleges should consider increasing the number of Internet courses offered, as it seems that students are more successful using this instructional method than TeleCourses.*

Presently, more TeleCourses are offered in DCCCD, and the videos used are professionally designed and created. Financial resources should be allocated for the conception of Internet courses comparable with the videos, created by professionals with the help of faculty. This will give a consistency between sections of the same course and also continuity from on level to another.

Data suggests that performance in shorter distance education courses is better than in regular length courses. As shorter courses offer more flexibility, colleges may consider offering a higher number of shorter courses, of about 8 weeks in length, taught by full-time faculty. This

seems to be an amount of time appropriate to engage the students' attention and energy, without compromising the outcomes of the course. Further research in this area, using a higher number of sections, may help administration in scheduling distance learning classes.

Recommendation 2: DCCCD should implement processes to allow the collection of better student information in order to improve the success rates of students in distance learning format courses.

Even though community colleges are open-door institutions, better records can and should be collected. Beside the mandatory information required by the state or federal agencies, colleges should collect better data regarding employment, family situation, and students' background. Such information will help colleges to plan better student support activities and better advising process for registration.

Recommendation 3: DCCCD faculty should use the newest learning technologies, for example email as means of communication, because they need to be mentors and role models in the new era of learning. In addition, it is likely that the use of email in communication may increase the performance of students in class.

DCCCD should encourage and reward its faculty to use more technology in and outside of the classroom. At a time when the students use chat rooms on the Internet, emails, instant messenger, and text messages on cell phones, the use of postal mail does not seem efficient anymore. The students expect a quick response to their questions, plus the certainty that the instructor received the work sent. Use of email in communicating with students should be mandatory. As colleges offer free email to their enrolled students, there is no impediment to this measure. Students from families with low income have access to Internet through public or college library, someone else's computer or the computer at work.

Recommendation 4: DCCCD should establish benchmarks for both dropout rate and standard deviation of dropout rate.

As the values found in this study for dropout rate in selected distance learning courses are high, the administrators should determine a maximum value for dropout rate that is acceptable for a given course. Mechanisms should be in place to "trigger" a review process for courses that present higher dropout rates than those considered acceptable. Administrators and faculty should look not only at the rate of withdrawal, but also at other measures such as standard deviation and/or range that would give information regarding the consistency of enrollment in the course.

Recommendation 5: Faculty and administrators, especially counselors, should give students complete information about the amount of work required in a distance-learning course, so that the students may make an educated decision at the time of enrollment.

Anecdotal evidence shows that a popular belief between students is that distance learning courses require less work, that they are "easy". The literature shows that the performance in a course improves as the amount of interaction between student and instructor increases. In distance learning courses students and instructor do not have the "class time", when the student is removed from his everyday activities and immerses him/herself in the class activities. There is an extra effort required from the student in distance learning classes, to be part of the virtual class.

When Alexander W. Astin first published his theory of student engagement in 1984, he started by defining engagement. For him, student involvement or engagement meant the amount of effort a student was willing to put into the learning process. In his view, the student was supposed to be an active participant in achieving the desired learning, shifting the focus from what the instructor does in the classroom to what the student does to achieve his/her goal. Astin

pointed that educators had to compete with other forces in the student's life, and that the student's energy and time use is influenced by his or her personal agenda and background characteristics. According to Astin, learning outcomes are influenced by the share of time and energy students allocate to education versus family, friends, and work. Astin considered involvement any activity the students had on campus and classroom, and that the act of dropping out was the ultimate form of non-involvement (Astin, 1984)

Distance learning courses represent a classroom environment that can maximize involvement. In order to be successful in distance learning, students must be willing to spend significant time learning on their own. The duty of the faculty and administrators therefore is to make students understand what engagement is and what it means for each individual student. To improve the outcomes in distance learning courses and, ultimately, overall programs should and must be a goal of the administration of community colleges. Distance education seems to be the "way" of the future, no matter what the opinion of the organization is or might be. The flexibility and the speed of these processes may be more suitable to the 21st century system than the traditional educational system.

APPENDIX A

COMPONENT AREA OF SOCIAL AND BEHAVIORAL SCIENCES

The objective of a social and behavioral science component of a core curriculum is to increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity. The exemplary educational objectives are:

- To employ the appropriate methods, technologies, and data that social and behavioral scientists use to investigate the human condition.
- To examine social institutions and processes across a range of historical periods, social structures, and cultures.
- To use and critique alternative explanatory systems or theories.
- To develop and communicate alternative explanations or solutions for contemporary social issues.
- To analyze the effects of historical, social, political, economic, cultural, and global forces on the areas under study.
- To comprehend the origins and evolution of U.S. and Texas political systems, with a focus on the growth of political institutions, the constitutions of the U.S. and Texas, federalism, civil liberties, and civil and human rights.
- To understand the evolution and current role of the U.S. in the world.
- To differentiate and analyze historical evidence (documentary and statistical) and differing points of view.
- To recognize and apply reasonable criteria for the acceptability of historical evidence and social research.
- To analyze, critically assess, and develop creative solutions to public policy problems.
- To recognize and assume one's responsibility as a citizen in a democratic society by learning to think for oneself, by engaging in public discourse, and by obtaining information through the news media and other appropriate information sources about politics and public policy.
- To identify and understand differences and commonalties within diverse cultures.

The following social and behavioral science courses include the above exemplary educational objectives: History 1301, 1302, Government 2301, 2302, Anthropology 2346, 2351, Economics 1303, 2301, 2302, 2311, Psychology 2301, 2314, 2316, Sociology 1301, 1306, and 2319.

The DCCCD core of 48 credit hours is composed of the following courses:

COMMUNICATIONS – 9 credit hours
(Select each of the following)
- English 1301: *A grade of "C" or better required*
- English 1302, and

- Speech 1311* *or* any Foreign Language Course 1311 or higher, or American Sign Language course
  *Students must select Speech 1311 if seeking an AA or AS degree. A grade of "C" or better is required if you select Speech 1311.

MATHEMATICS – 3 credit hours
(Select one from the following)
- Math 1314, 1324, 1332, 1333, 1348, 1414, 2342, 2412, 2442, or higher level. *A grade of "C" or better required.*

LAB SCIENCES – 8 credit hours
(Select two from the following)
- Biology 1406, 1407, 1408, 1409; Chemistry 1405, 1407, 1411, 1412; Geology 1401, 1403, 1404, 1445; Physics 1401, 1402, 1405, 1407, 1411, 1412, 1415, 1417, 2425, 2426.
  Note: This requirement cannot be met by using the following combinations:
- Biology 1406 and 1408;
- Chemistry 1405 and 1411;
- Physics 1401 and 1405;
- Physics 1401 and 2425;
- Physics 1405 and 2425.

SOCIAL/BEHAVIORAL SCIENCES –
15 credit hours
(Select each of the following)
- History 1301, 1302;
- Government 2301, 2302
  (Select one from the following)
- Anthropology 2346, 2351; Economics 1303, 2301, 2302, 2311; Psychology 2301, 2314, 2316; Sociology 1301, 1306, 2319

HUMANITIES/ VISUAL AND PERFORMING ARTS –
9 credit hours
(Select one from each of the three groupings)

I.
- Arts 1301, 1303, 1304
- Dance 2303
- Drama 1310, 2366
- Humanities 1301
- Music 1306, 1308, 1309

II.
- English 2321, 2322, 2323, 2326, 2327, 2328, 2331, 2332, 2333

III.
- Cultural Studies 2370
- History 2321, 2322, 2380, 2381
- Philosophy 1301, 2306, 2307, 2316, 2317
- Religion 1304
  OTHER– 4 credit hours
  (Select each from the following)
- Physical Education 1164 *and*
- Computer Science 1300 *or* higher level COSC course.

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Core Area Exemplary Educational Objectives
COMMUNICATION, COMPOSITION, SPEECH, MODERN LANGUAGE

The objective of a communication component of a core curriculum is to enable the student to communicate effectively in clear and correct prose in a style appropriate to the subject, occasion, and audience.

LIST OF ALL COURSES RECOMMENDED AND IDENTIFIED COMPETENCIES

Competencies								Course Number	Course Title
	2	3	4	5	6				
X	X	X	X	X				ENGL 1301	Composition I
X	X	X	X	X	X			ENGL 1302	Composition II
X			X					1311	Beginning Chinese/French/German/Japanese/Portuguese/Spanish
X			X					1411	Beginning Chinese/French/German/Italian/Japanese/Portuguese/Russian/Spanish
X			X					1412	Beginning Chinese/French/German/Italian/Japanese/Portuguese/Russian/Spanish
X	X	X	X	X	X			SPCH 1311	Introduction to Speech Communication

EXEMPLARY EDUCATIONAL OBJECTIVES

6 – To develop the ability to research and write a documented paper and/or to give an oral presentation.

5 – To understand and apply basic principles of critical thinking, problem solving, and technical proficiency in the development of exposition and argument.

4 – To participate effectively in groups with emphasis on listening, critical and reflective thinking, and responding.

3 – To understand and appropriately apply modes of expression, i.e., descriptive, expositive, narrative, scientific, and self-expressive, in written, visual, and oral communication.

2 – To understand the importance of specifying audience and purpose and to select appropriate communication choices.

1 – To understand and demonstrate writing and speaking processes through invention, organization, drafting, revision, editing, and presentation.

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Core Area Exemplary Educational Objectives
SOCIAL AND BEHAVIORAL SCIENCES

The objective of a social and behavioral science component is to increase student's knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity.

LIST OF ALL COURSES RECOMMENDED AND IDENTIFIED COMPETENCIES

Competencies												Course Number	Course Title
1	2	3	4	5	6	7	8	9	10	11	12		
	X	X		X			X	X			X	ANTH 2346	Intro to Anthropology
	X	X	X	X			X	X			X	ANTH 2351	Intro to Cultural Anthropology
X	X	X	X		X	X	X	X	X	X		ECON 1303	Economics of Social Issues
X	X	X	X		X	X	X	X	X	X		ECON 2301	Principles of Economics I
X	X	X	X		X	X	X	X	X	X		ECON 2302	Principles of Economics II
X	X	X	X		X	X	X	X	X	X		ECON 2311	Economics of Global Issues
			X	X	X	X			X	X	X	GOVT 2301	American Government
			X	X	X	X			X	X	X	GOVT 2302	American Government
	X		X		X	X	X				X	HIST 1301	History of the United States
	X		X		X	X	X				X	HIST 1302	History of the United States
X	X	X	X	X			X	X		X	X	PSYC 2301	Introduction to Psychology
X	X	X	X	X			X	X		X	X	PSYC 2314	Developmental Psychology
X	X	X	X	X			X	X		X	X	PSYC 2316	Psychology of Personality
	X	X								X	X	SOCI 1301	Introduction to Sociology
	X	X					X		X	X		SOCI 1306	Social Problems
		X		X						X	X	SOCI 2319	Race, Ethnicity and Community

Exemplary Educational Objectives

12 – To **identify** and understand differences and commonalities within diverse cultures.

11 – To **recognize** and assume one's responsibility as a citizen in a democratic society by learning to think for oneself, by engaging in public discourse, and by obtaining information through the news media and other appropriate information sources about politics and public policy.

10 – To **analyze**, critically assess, and develop creative solutions to public policy problems.

9 – To **recognize** and apply reasonable criteria for the acceptability of historical evidence and social research.

8 – To **differentiate** and analyze historical evidence (documentary and statistical) and differing points of view.

7 – To **understand** the evolution and current role of the U.S. in the world.

6 – To **comprehend** the origins and evolution of U.S. and Texas political systems, with a focus on the growth of political institutions, the constitutions of the U.S. and Texas, federalism, civil liberties, and civil and human rights.

5 – To **analyze** the effects of historical, social, political, economic, cultural, and global forces on the area under study.

4 – To **develop** and communicate alternative explanations or solutions for contemporary social issues.

3 – To **use** and critique alternative explanatory systems or theories.

2 – To **examine** social institutions and processes across a range of historical periods, social structures, and cultures.

1 – To **employ** the appropriate methods, technologies, and data that social and behavioral scientists use to investigate the human condition.

Task Force Chair_____   Dean _____

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Core Curriculum Intellectual Competencies

COMMUNICATIONS									
LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES									
Competencies							Course Number	Course Title	
1	2	3	4	5	6				
X	X			X	X			ENGL 1301	Composition I
X	X			X	X			ENGL 1302	Composition II
X	X	X	X					1311	Beginning Chinese/French/German/Japanese/Portuguese/Spanish
X	X	X	X					1411	Beginning Chinese/French/German/Italian/Japanese/Portuguese/Russian/Spanish
X	X	X	X					1412	Beginning Chinese/French/German/Italian/Japanese/Portuguese/Russian/Spanish
X	X	X	X	X	X			SPCH 1311	Introduction to Speech Communication

MATH									
				X				MATH 1314	College Algebra
				X				MATH 1316	Plan Trigonometry
				X				MATH 1324	Mathematics for Business
				X				MATH 1325/1425	Business Calculus with Application
				X				MATH 1332	College Mathematics I
				X				MATH 1333	College Mathematics II
				X				MATH 1348	Analytic Geometry
				X				MATH 1414	College Algebra
				X				MATH 2305	Discrete Mathematics
				X				MATH 2315	Calculus III
				X				MATH 2412	Precalculus
				X				MATH 2414	Calculus II
				X				MATH 2318/2418	Linear Algebra
				X				MATH 2320/2420	Differential Equations
				X				MATH 2342/2442	Introductory Statistics
				X				MATH 2513	Calculus I

NATURAL SCIENCES									
X	X	X	X	X	X			BIOL 1306	General Biology
X	X	X	X	X	X			BIOL 1407	General Biology
X	X	X	X	X	X			BIOL 1408	Biological Science
X	X	X	X	X	X			BIOL 1409	Biological Science
X			X	X				CHEM 1405	Introductory Chemistry I
X			X					CHEM 1407	Introductory Chemistry II
X			X	X				CHEM 1411	General Chemistry I

						Course	Title
X			X	X		CHEM 1412	General Chemistry II
X	X	X	X	X	X	GEOL 1401	Earth Science
X	X	X	X	X	X	GEOL 1403	Physical Geology
X	X	X	X	X	X	GEOL 1404	Historical Geology
X	X	X	X	X	X	GEOL 1445	Oceanography
X		X	X	X	X	PHYS 1401	Introductory General Physics
X		X	X	X	X	PHYS 1402	Introductory General Physics
X		X	X	X		PHYS 1405	Concepts in Physics
X		X	X	X		PHYS 1407	Concepts in Physics
X	X		X	X	X	PHYS 1411	Fundamentals of Astronomy
X	X		X	X	X	PHYS 1412	General Introductory Astronomy
X			X	X		PHYS 1415	Physical Science
X			X	X		PHYS 1417	Physical Science
X	X	X	X	X	X	PHYS 2425	General Physics
X	X	X	X	X	X	PHYS 2426	General Physics

SOCIAL/BEHAVIORAL SCIENCES							
X	X			X		ANTH 2346	Intro to Anthropology
X	X		X	X		ANTH 2351	Intro to Cultural Anthropology
X	X		X	X	X	ECON 1303	Economics of Social Issues
X	X		X	X	X	ECON 2301	Principles of Economics I
X	X		X	X	X	ECON 2302	Principles of Economics II
X	X		X	X	X	ECON 2311	Economics of Global Issues
X	X	X	X	X	X	GOVT 2301	American Government
X	X	X	X	X	X	GOVT 2302	American Government
X	X		X	X		HIST 1301	History of the United States
X	X		X	X		HIST 1302	History of the United States
X	X	X	X	X	X	PSYC 2301	Introduction to Psychology
X	X	X	X	X	X	PSYC 2314	Developmental Psychology
X	X	X	X	X	X	PSYC 2316	Psychology of Personality
X	X			X		SOCI 1301	Introduction to Sociology
X	X			X		SOCI 1306	Social Problems
X	X			X		SOCI 2319	Race, Ethnicity and Community

HUMANUTIES/VISUAL AND PERFORMING ARTS							
X	X	X	X	X	X	ARTS 1301	Art Appreciation
X	X	X	X	X	X	ARTS 1303	Survey of Art History
X	X	X	X	X	X	ARTS 1304	Survey of Art History
						CULT 2370	Cultural Studies
X	X	X	X	X	X	DANC 2303	Dance Appreciation

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1	2	3	4	5	6	7	8	Course	Title
X	X	X	X	X				DRAM 1310	Introduction to Theatre
X	X	X	X	X				DRAM 2366	Development of the Motion Pictures
X	X			X				ENGL 2321	British Literature
X	X			X				ENGL 2322	British Literature
X	X			X				ENGL 2323	British Literature
X	X			X				ENGL 2326	American Literature
X	X			X				ENGL 2327	American Literature
X	X			X				ENGL 2328	American Literature
X	X			X				ENGL 2331	World Literature
X	X			X				ENGL 2332	World Literature
X	X			X				ENGL 2333	World Literature
X	X		X	X				HIST 2321	World Civilizations
X	X		X	X				HIST 2322	World Civilizations
X	X		X	X				HIST 2380	Heritage of Mexico
X	X		X	X				HIST 2381	African-American History
X	X		X	X				HUMA 1301	Introduction to the Humanities
X	X	X	X	X	X			MUSI 1306	Music Appreciation
X	X	X	X	X				MUSI 1308	Music Literature
X	X	X	X	X				MUSI 1309	Music Literature
X	X	X	X	X				PHIL 1301	Introduction to Philosophy
X	X	X	X	X				PHIL 2306	Ethics
X	X	X	X	X				PHIL 2307	Social and Political Philosophy
X	X	X	X	X				PHIL 2316	History of Ancient Philosophy
X	X	X	X	X				PHIL 2317	History of Modern Philosophy
X	X	X	X	X				RELI 1304	Major World Religions

INSTITUTIONAL OPTIONS

1	2	3	4	5	6	Course	Title
X	X	X	X	X	X	COSC 1300	Computer Literacy
X	X	X	X	X	X	COSC 1315	Computer Science I
X	X	X	X	X	X	COSC 1401	Microcomputer Concepts and Applications
X	X	X	X	X	X	BCIS 1405	Business Computer Applications
X	X	X	X	X	X	PHED 1164	Physical Fitness

COMPETENCY REFERENCES

6 - COMPUTER LITERACY understand our technological society, use computer based technology in communication, solving problems, acquiring information

5 - CRITICAL THINKING think and analyze at a critical level

4 - LISTENING analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing, reading - above 12th grade level

3 - SPEAKING ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience above 12th grade level

2 - WRITING the ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience - above 12th grade level

1 - READING the ability to analyze and interpret a variety of printed materials - books, documents, and articles - above 12th grade level

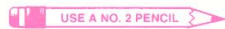Task Force Chair_____   Dean _____

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APPENDIX B

Student Information Profile
Dallas County Community College District

Please Print

Name: (Last Name)   **(First Name)**   **(Middle Initial)**

PLEASE take the time to carefully answer the questions below. The purpose of these questions is to help determine if you have any need for campus services or special assistance to increase your success in college. Your responses are voluntary and in no way affect your admission or enrollment into Dallas County Community Colleges. THANK YOU.

USE A NO. 2 PENCIL

CORRECT MARK   INCORRECT MARKS

Social Security Number:

Date of Birth
Mo. | Day | Year

Gender
- Male
- Female

1. Reason for attending: *(Mark All That Apply)*

- Non-degree or Personal Interest (1)
- Certificate (2)
- Associate degree (3)
- Job related (7)
- Transfer for Bachelor's degree (4)
- Uncertain (5)
- Continuing Education (6)

2. My major area of interest or study is: *(Mark Only One)*

- Business (52)
- Education (13)
- Liberal Arts/Fine Arts (24)
- Social Services (45)
- Computers (11)
- Engineering/Math (14)
- Non-Degree Seeking (98)
- Technologies (80)
- Continuing Education (97)
- Health/Medical (51)
- Science (40)
- Undecided (99)

3. Mark One response that Indicates your race/ethnicity:

- White, Non-Hispanic (1)
- Asian/Pacific Islander (4)
- International/Non-Immigrant (6)
- Black, Non-Hispanic (2)
- American Indian/ Alaskan Native (5)
- Other (7)
- Hispanic (3)

4. Is English your primary language?

- Yes (1) or
- No (2)

5. I have a disability or medical condition: *(Mark All That Apply)*

- Learning (1)
- Mental (2)
- Physical (3)
- None

6. Please indicate the number of dependents (excluding yourself) and the total annual family taxable income:

(Mark Only One):   *(Mark Only One):*

- None (0)
- Three (3)
- Six or More (6)
- One (1)
- Four (4)
- Two (2)
- Five (5)

- less than $8,050 (1)
- $13,651 - $16,450 (4)
- $22,051 - $24,850 (7)
- $ 8,051 - $10,850 (2)
- $16,451 - $19,250 (5)
- $24,851 - $27,850 (8)
- $10,851 - $13,650 (3)
- $19,251 - $22,050 (6)
- $27,851 or more (9)

7. Employment Status while I am taking classes: *(Mark Only Only <u>One</u>)*

- ▭ I will not be employed outside the home (1)
- ▭ I am unemployed/laid off and seeking employment (2)
- ▭ I will be employed outside the home 1 to 20 hours per week (3)
- ▭ I will be employed outside the home 21 to 34 hours per week (4)
- ▭ I will be employed outside the home 35 or more hours per week (5)

8. My family status is: *(Mark <u>All</u> That Apply)*

- ▭ a single parent with custody of a minor child (1)
- ▭ a homemaker primarily working at home (2)
- ▭ divorced, separated or widowed, having lost the income of a spouse (3)
- ▭ none of the above

9. Parents Highest Level of Education:

Mother *(Mark Only <u>One</u>)*

- ▭ Received a bachelor's degree from College (1)
- ▭ Attended College (2)
- ▭ Graduated from High School (3)
- ▭ Attended High School (4)
- ▭ Do not know (9)

Father *(Mark Only <u>One</u>)*

- ▭ Received a bachelor's degree from College (1)
- ▭ Attended College (2)
- ▭ Graduated from High School (3)
- ▭ Attended High School (4)
- ▭ Do not know (9)

10. Please indicate all Activities/Programs in which you have participated or have interest: *(Mark <u>All</u> That Apply)*

- ▭ Athletics (10)
- ▭ Band/Orchestra (11)
- ▭ Choir (12)
- ▭ Dance/Drill Team (13)
- ▭ Drama/Theater (14)
- ▭ Newspaper/Yearbook (15)
- ▭ Student Clubs (16)
- ▭ None of the above

- ▭ General/Vocational High School courses (80)
- ▭ College Preparatory courses (81)
- ▭ Honors courses and/or Advanced Placement courses (82)
- ▭ Tech/Prep (83)
- ▭ Other Education Program (99)

11. Please indicate all topics in which you have interest: *(Mark <u>All</u> That Apply)*

- ▭ Child Care Information (01)
- ▭ Choosing a major/career (02)
- ▭ Cooperative Education Programs (03)
- ▭ Credit for Life/Work Experience (04)
- ▭ Disability Services (05)
- ▭ Finding Employment (06)
- ▭ Health Services (07)
- ▭ Honors Program (08)
- ▭ International Programs/Study Abroad (09)
- ▭ Math skills (10)
- ▭ Library Research skills (11)
- ▭ Returning Adult Programs (12)

- ▭ Reading skills (13)
- ▭ Student Clubs, Programs/Campus Life (14)
- ▭ Stress Management (15)
- ▭ Student Health Insurance (16)
- ▭ Study skills (17)
- ▭ Telecourses (18)
- ▭ Test Anxiety (19)
- ▭ Transportation (20)
- ▭ Time Management (21)
- ▭ Veterans Affairs (22)
- ▭ Volunteer Opportunities (23)
- ▭ Writing skills (24)

12. I plan to seek or currently receive financial aid to pay for college:

- ▭ Yes (1)   ▭ No (2)   ▭ Uncertain (3)

APPENDIX C

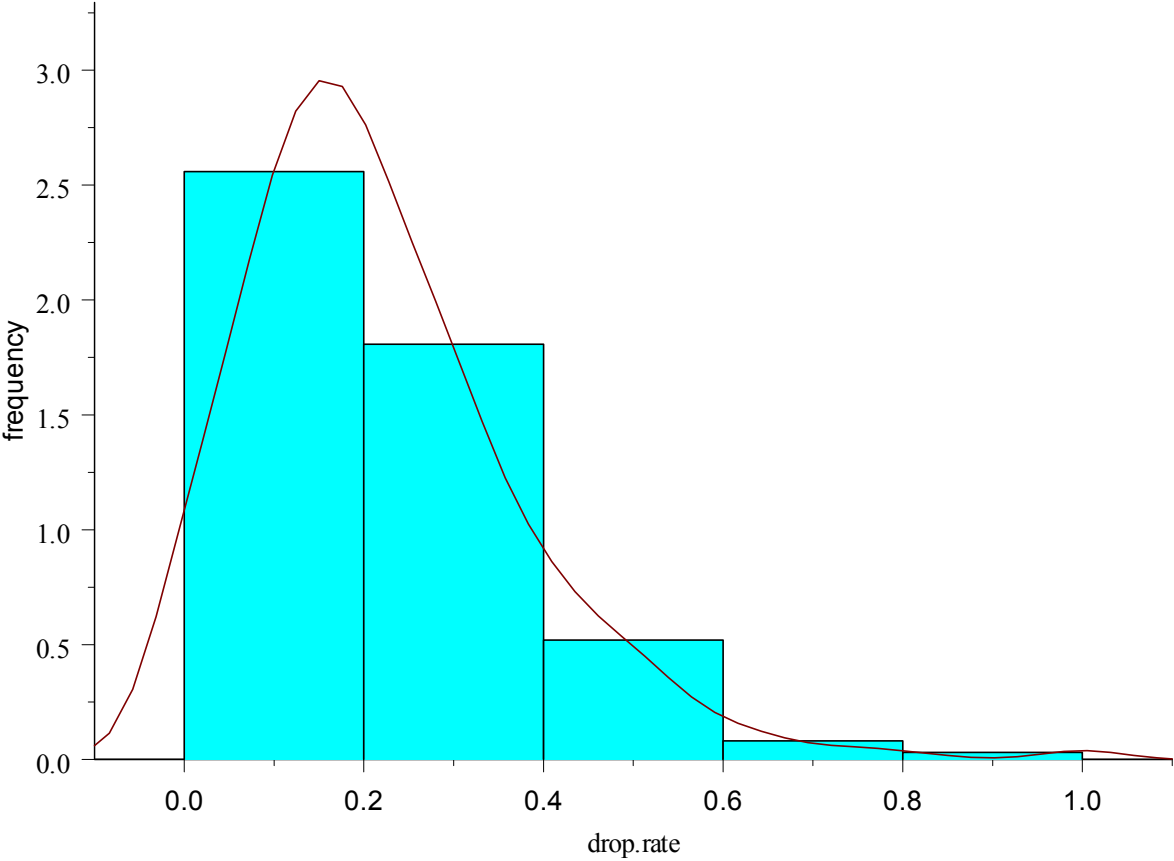Figure 1: Dropout Rate Distribution for All Methods of Instruction

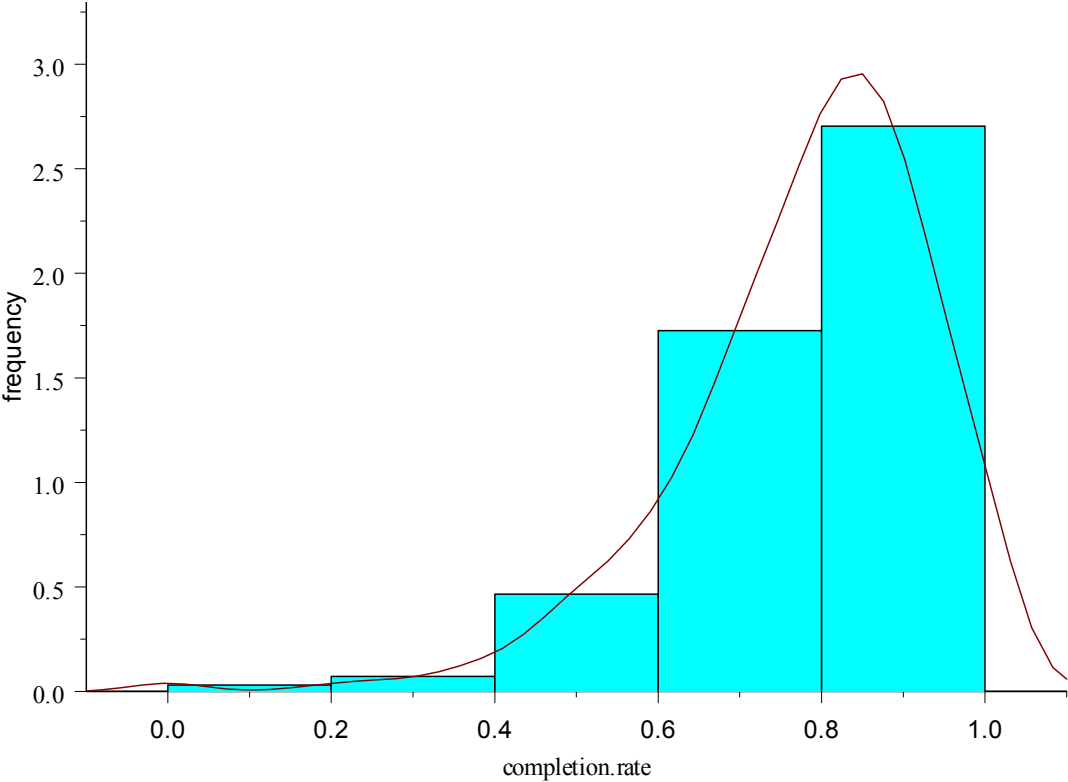Figure 2. Completion Rate Distribution for All Methods of Instruction

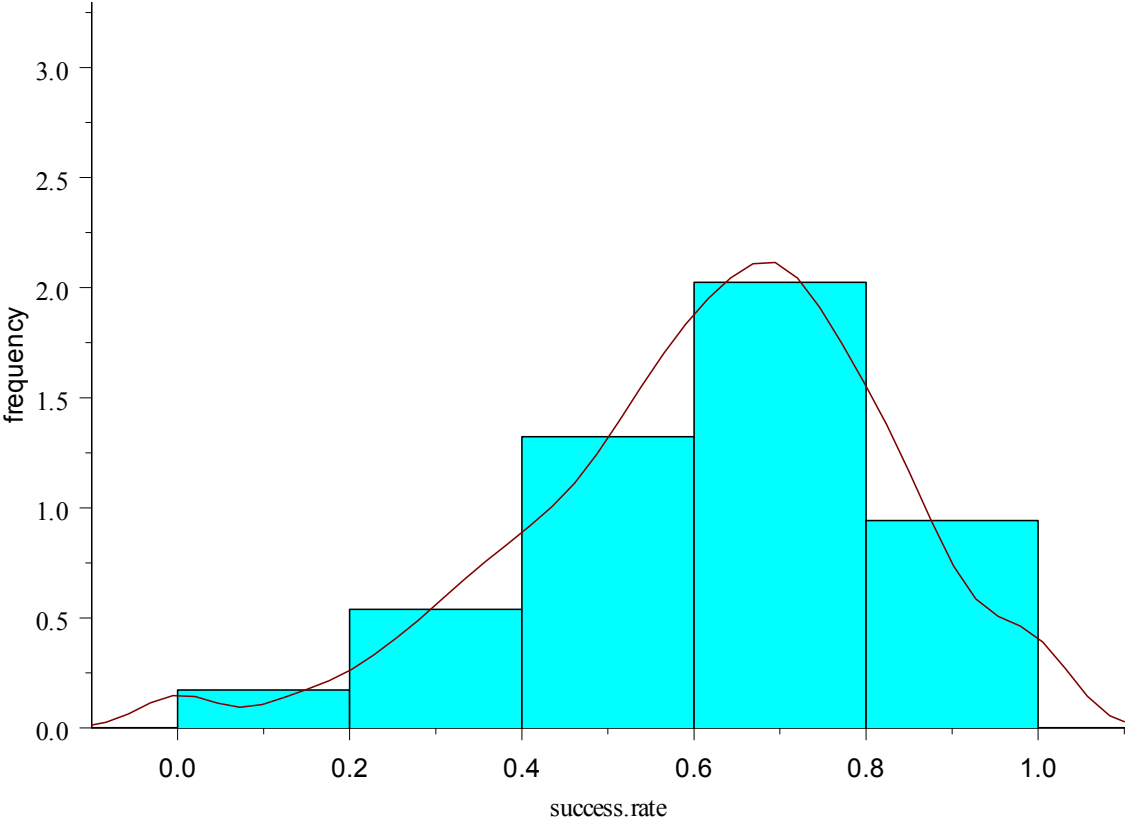Figure 3. Success Rate Distribution for All Methods of Instruction

Table A

Correlation Matrix between Grades and Student Characteristics

		Grade	GPA	Gender	Ethnicity	Employment	Family Status	Income
Grade	Pearson Correlation	1.000	-0.325 **	-0.076 **	-0.029	0.030	-0.083 *	-0.052 *
	Sig. (2-tailed)	.	0.000	0.000	0.147	0.153	0.033	0.018
GPA	Pearson Correlation	-0.325 **	1.000	0.091 **	-0.055 **	0.014	0.067	0.101 **
	Sig. (2-tailed)	0.000	.	0.000	0.008	0.538	0.101	0.000
Gender	Pearson Correlation	-0.076 **	0.091 **	1.000	-0.064 **	-0.032	-0.188 **	-0.033
	Sig. (2-tailed)	0.000	0.000	.	0.001	0.139	0.000	0.139
Ethnicity	Pearson Correlation	-0.029	-0.055 **	-0.064 **	1.000	-0.195 **	0.002	-0.128 **
	Sig. (2-tailed)	0.147	0.008	0.001	.	0.000	0.960	0.000
Employment	Pearson Correlation	0.030	0.014	-0.032	-0.195 **	1.000	-0.074	0.253 **
	Sig. (2-tailed)	0.153	0.538	0.139	0.000	.	0.058	0.000
Family Status	Pearson Correlation	-0.083 *	0.067	-0.188 **	0.002	-0.074	1.000	0.100 *
	Sig. (2-tailed)	0.033	0.101	0.000	0.960	0.058	.	0.012
Income	Pearson Correlation	-0.052 *	0.101 **	-0.033	-0.128 **	0.253 **	0.100 *	1.000
	Sig. (2-tailed)	0.018	0.000	0.139	0.000	0.000	0.012	.
Dependents	Pearson Correlation	0.010	-0.007	0.057 **	-0.015	-0.018	-0.084 *	0.141 **
	Sig. (2-tailed)	0.640	0.762	0.008	0.478	0.394	0.034	0.000
Age	Pearson Correlation	-0.118 **	0.223 **	0.060 **	-0.067 **	0.089 **	0.211 **	0.129 **
	Sig. (2-tailed)	0.000	0.000	0.002	0.001	0.000	0.000	0.000
Semester Load	Pearson Correlation	-0.002	0.007	0.022	0.015	-0.020	-0.036	-0.014
	Sig. (2-tailed)	0.904	0.741	0.276	0.438	0.337	0.356	0.539
Completed Credit Hours	Pearson Correlation	-0.127 **	0.114 **	-0.014	0.043 *	-0.027	0.058	-0.012
	Sig. (2-tailed)	0.000	0.000	0.478	0.030	0.211	0.139	0.596
Previous Distance Learning Courses	Pearson Correlation	-0.003	0.014	-0.025	-0.023	-0.005	-0.031	-0.002
	Sig. (2-tailed)	0.899	0.540	0.244	0.279	0.817	0.455	0.932

Note:**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).
Source: Colleague Database, DCCCD accessed July 2004.

Table A (cont.)

Correlation Matrix between Grades and Student Characteristics

		Dependents	Age	Semester Load	Completed Credit Hrs	Previous DL Courses
Grade	Pearson Correlation	0.010	-0.118 **	-0.002	-0.127 **	-0.003
	Sig. (2-tailed)	0.640	0.000	0.904	0.000	0.899
GPA	Pearson Correlation	-0.007	0.223 **	0.007	0.114 **	0.014
	Sig. (2-tailed)	0.762	0.000	0.741	0.000	0.540
Gender	Pearson Correlation	0.057 **	0.060 **	0.022	-0.014	-0.025
	Sig. (2-tailed)	0.008	0.002	0.276	0.478	0.244
Ethnicity	Pearson Correlation	-0.015	-0.067 **	0.015	0.043 *	-0.023
	Sig. (2-tailed)	0.478	0.001	0.438	0.030	0.279
Employment	Pearson Correlation	-0.018	0.089 **	-0.020	-0.027	-0.005
	Sig. (2-tailed)	0.394	0.000	0.337	0.211	0.817
Family Status	Pearson Correlation	-0.084	0.211 **	-0.036	0.058	-0.031
	Sig. (2-tailed)	0.034	0.000	0.356	0.139	0.455
Income	Pearson Correlation	0.141 **	0.129 **	-0.014	-0.012	-0.002
	Sig. (2-tailed)	0.000	0.000	0.539	0.596	0.932
Dependents	Pearson Correlation	1.000	0.245 **	0.012	0.011	0.009
	Sig. (2-tailed)	.	0.000	0.573	0.624	0.703
Age	Pearson Correlation	0.245 **	1.000	-0.029	0.182 **	-0.006
	Sig. (2-tailed)	0.000	.	0.142	0.000	0.777
Semester Load	Pearson Correlation	0.012	-0.029	1.000	0.059 **	-0.004
	Sig. (2-tailed)	0.573	0.142	.	0.003	0.853
Completed	Pearson Correlation	0.011	0.182 **	0.059 **	1.000	0.042
Credit Hours	Sig. (2-tailed)	0.624	0.000	0.003	.	0.053
Previous Distance	Pearson Correlation	0.009	-0.006	-0.004	0.042	1.000
Learning Courses	Sig. (2-tailed)	0.703	0.777	0.853	0.053	.

Note:**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed)
Source: Colleague Database, DCCCD accessed July 2004.

Table B

Correlation Matrix between Course Outcomes and Course Characteristics

		Email	Internet	Videos	Orientation	Review	Testing on Campus	Faculty Load	Start Date
Email	Pearson Correlation	1.000	1.000	0.423 **	-0.668 **	0.423 **	-0.668 **	-0.126 **	0.150 **
	Sig. (2-tailed)	.	.	0.000	0.000	0.000	0.000	0.000	0.000
Internet	Pearson Correlation	1.000	1.000	0.423 **	-0.668 **	0.423 **	-0.668 **	-0.126 **	0.150 **
	Sig. (2-tailed)	.	.	0.000	0.000	0.000	0.000	0.000	0.000
Videos	Pearson Correlation	0.423 **	0.423 **	1.000	0.077 *	1.000	0.077 *	-0.168 **	0.028
	Sig. (2-tailed)	0.000	0.000	.	0.010	.	0.010	0.000	0.353
Orientation	Pearson Correlation	-0.668 **	-0.668 **	0.077 *	1.000	0.077 *	1.000	0.101 **	-0.084 **
	Sig. (2-tailed)	0.000	0.000	0.010	.	0.010	.	0.001	0.005
Review	Pearson Correlation	0.423 **	0.423 **	1.000	0.077 *	1.000	0.077 *	-0.168 **	0.028
	Sig. (2-tailed)	0.000	0.000	.	0.010	.	0.010	0.000	0.353
Testing on Campus	Pearson Correlation	-0.668 **	-0.668 **	0.077 *	1.000	0.077 *	1.000	0.101 **	-0.084 **
	Sig. (2-tailed)	0.000	0.000	0.010	.	0.010	.	0.001	0.005
Faculty Load	Pearson Correlation	-0.126 **	-0.126 **	-0.168 **	0.101 **	-0.168 **	0.101 **	1.000	0.068 *
	Sig. (2-tailed)	0.000	0.000	0.000	0.001	0.000	0.001	.	0.026
Start Date	Pearson Correlation	0.150 **	0.150 **	0.028	-0.084 **	0.028	-0.084 **	0.068 *	1.000
	Sig. (2-tailed)	0.000	0.000	0.353	0.005	0.353	0.005	0.026	.
No.of Weeks	Pearson Correlation	-0.051	-0.051	0.001	0.000	0.001	0.000	-0.015	-0.618 **
	Sig. (2-tailed)	0.090	0.090	0.965	0.988	0.965	0.988	0.615	0.000
Drop Rate	Pearson Correlation	0.042	0.042	0.049	-0.036	0.049	-0.036	-0.027	-0.016
	Sig. (2-tailed)	0.160	0.160	0.102	0.234	0.102	0.234	0.371	0.599
Completion Rate	Pearson Correlation	-0.042	-0.042	-0.049	0.036	-0.049	0.036	0.027	0.016
	Sig. (2-tailed)	0.160	0.160	0.102	0.234	0.102	0.234	0.371	0.599
Success Rate	Pearson Correlation	-0.222 **	-0.222 **	-0.362 **	0.095 **	-0.362 **	0.095 **	0.214 **	0.089 **
	Sig. (2-tailed)	0.000	0.000	0.000	0.002	0.000	0.002	0.000	0.003
Method of Instruction	Pearson Correlation	0.279 **	0.279 **	0.872 **	0.445 **	0.872 **	0.445 **	-0.090 **	0.033
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.267

Note:**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).
Source: Colleague Database, DCCCD accessed July 2004.

Table B (cont.)

Correlation Matrix between Course Outcomes and Course Characteristics

		No.of Weeks	Drop Rate	Completion Rate	Success Rate	Method of Instruction
Email	Pearson Correlation	-0.051	0.042	-0.042	-0.222 **	0.279 **
	Sig. (2-tailed)	0.090	0.160	0.160	0.000	0.000
Internet	Pearson Correlation	-0.051	0.042	-0.042	-0.222 **	0.279 **
	Sig. (2-tailed)	0.090	0.160	0.160	0.000	0.000
Videos	Pearson Correlation	0.001	0.049	-0.049	-0.362 **	0.872 **
	Sig. (2-tailed)	0.965	0.102	0.102	0.000	0.000
Orientation	Pearson Correlation	0.000	-0.036	0.036	0.095 **	0.445 **
	Sig. (2-tailed)	0.988	0.234	0.234	0.002	0.000
Review	Pearson Correlation	0.001	0.049	-0.049	-0.362 **	0.872 **
	Sig. (2-tailed)	0.965	0.102	0.102	0.000	0.000
Testing on Campus	Pearson Correlation	0.000	-0.036	0.036	0.095 **	0.445 **
	Sig. (2-tailed)	0.988	0.234	0.234	0.002	0.000
Faculty Load	Pearson Correlation	-0.015	-0.027	0.027	0.214 **	-0.090 **
	Sig. (2-tailed)	0.615	0.371	0.371	0.000	0.003
Start Date	Pearson Correlation	-0.618 **	-0.016	0.016	0.089 **	0.033
	Sig. (2-tailed)	0.000	0.599	0.599	0.003	0.267
No.of Weeks	Pearson Correlation	1.000	0.024	-0.024	-0.054	-0.027
	Sig. (2-tailed)	.	0.431	0.431	0.074	0.369
Drop Rate	Pearson Correlation	0.024	1.000	-1.000	-0.082 **	0.024
	Sig. (2-tailed)	0.431	.	.	0.006	0.417
Completion Rate	Pearson Correlation	-0.024	-1.000	1.000	0.082 **	-0.024
	Sig. (2-tailed)	0.431	.	.	0.006	0.417
Success Rate	Pearson Correlation	-0.054	-0.082 **	0.082 **	1.000	-0.260 **
	Sig. (2-tailed)	0.074	0.006	0.006	.	0.000
Method of Instruction	Pearson Correlation	-0.027	0.024	-0.024	-0.260 **	1.000
	Sig. (2-tailed)	0.369	0.417	0.417	0.000	.

Note:**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 le
Source: Colleague Database, DCCCD accessed July 2004.

Table C

General Linear Model Levene's Test of Equality of Error Variances

Rate	F	df1	df2	Sig.
Drop Rate	1.299	5	168	0.267
Completion Rate	1.299	5	168	0.267
Success Rate	0.932	5	168	0.461

Source: Colleague Database, DCCCD accessed July 2004.

Table D

General Linear Model: Tests of Between – the – Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Drop Rate	0.145 a	7	0.021	0.693	0.678	0.028
	Completion Rate	0.145 a	7	0.021	0.693	0.678	0.028
	Success Rate	0.769 b	7	0.110	2.392	0.023	0.092
Intercept	Drop Rate	0.056	1	0.056	1.862	0.174	0.011
	Completion Rate	1.219	1	1.219	40.641	0.000	0.197
	Success Rate	0.411	1	0.411	8.953	0.003	0.051
Course Length	Drop Rate	0.000	1	0.000	0.001	0.971	0.000
	Completion Rate	0.000	1	0.000	0.001	0.971	0.000
	Success Rate	0.017	1	0.017	0.361	0.549	0.002
Faculty Load	Drop Rate	0.050	1	0.050	1.659	0.199	0.010
	Completion Rate	0.050	1	0.050	1.659	0.199	0.010
	Success Rate	0.036	1	0.036	0.792	0.375	0.005
Start Date	Drop Rate	0.020	1	0.020	0.683	0.410	0.004
	Completion Rate	0.020	1	0.020	0.683	0.410	0.004
	Success Rate	0.160	1	0.160	3.493	0.063	0.021
Error	Drop Rate	4.979	166	0.030			
	Completion Rate	4.979	166	0.030			
	Success Rate	7.620	166	0.046			
Total	Drop Rate	15.335	174				
	Completion Rate	105.036	174				
	Success Rate	42.569	174				
Corrected Total	Drop Rate	5.125	173				
	Completion Rate	5.125	173				
	Success Rate	8.388	173				

Note: a:R Squared = .028 (Adjusted R Squared = -.013); b: R Squared = .092 (Adjusted R Squared = .053)
Source: Colleague Database, DCCCD accessed July 2004.

APPENDIX D

PANEL OF EXPERTS

1. Dr. Cathy Morris

District Director of Institutional Research

Miami Dade College

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2. Dr. Jeffrey Seybert

Director of Research and Evaluation

Johnson County Community College

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3. Dr. David Bailey

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Ph: 903-510-2305

APPENDIX E

UNIVERSITY of NORTH TEXAS

Office of Research Services

July 8, 2004

Gabriela Borcoman
Counseling, Development and Higher Education
University of North Texas
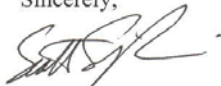
RE: Human Subjects Application No. 04-201

Dear Ms. Borcoman,

Your proposal titled "Study in Student Outcomes in Distance Learning Courses in Dallas County Community College District" has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101. **Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.**

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Compliance Administrator, ext. 3940 or Boyd Herndon, Assistant Director for Compliance, ext. 3941, if you wish to make such changes or need additional information.

Sincerely,

Scott Simpkins, Ph.D.
Chair
Institutional Review Board

SS:sb

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