HUMAN RESOURCE DEVELOPMENT OF HISPANIC STUDENTS IN A LARGE HISPANIC-MAJORITY COMMUNITY COLLEGE IN SOUTH TEXAS: STUDENT ENTRY CHARACTERISTICS AS PREDICTORS OF SUCCESSFUL COURSE COMPLETION AND RETENTION IN FACE-TO-FACE AND DISTANCE EDUCATION

A Dissertation

by

BRENDA S. COLE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2007

Major Subject: Educational Human Resource Development

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Approved by:

Chair of Committee,	Susan A. Lynham
Committee Members,	Bryan Cole
	Toby Marshall Egan
	Michael Longnecker
Head of Department,	Jim Scheurich

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ABSTRACT

Human Resource Development of Hispanic Students in a Large Hispanic-Majority Community College in South Texas: Student Entry Characteristics as Predictors of Successful Course Completion and Retention in Face-to-Face and Distance Education. (August 2007)

Brenda S. Cole, B.A., Indiana Wesleyan University;

M.Ed., Texas A&M University-Kingsville

Chair of Advisory Committee: Dr. Susan Lynham

Hispanic student success within community colleges is critical to our future national economy and as such, was pertinent to this Human Resource Development (HRD) research. In this ex-post-facto study, the researcher examined the student entry characteristics of 2,523 Hispanic entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempted History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College. The following student entry characteristics of the Hispanic students in the study population were examined for their impact on successful course completion and retention: age, country of elementary education, custody of minors, disabilities, English as a second language, gender, high school diploma type, high school GPA, hours of employment, income level indicators, intent to continue employment, intent to transfer, intended length of enrollment, marital status, number of credit hours, parents'

education, participation in workforce programs in high school, reason for attending, recent migrant work, resident status, and veteran status.

The resulting profile of Hispanic distance education student characteristics was found to be similar to common characteristics noted in the literature for other distance education non-Hispanic populations. Furthermore, the researcher identified significant student entry characteristics for predicting the risk of failing to successfully complete courses or to re-enroll. Finally, the researcher provided suggestions for further research regarding Hispanic student performance and success in higher education as a responsibility of the work of Hispanic human resource development within community colleges. This study provides empirical findings related to the student entry characteristics construct found in current theoretical models of retention in commuter institutions of higher education. The researcher recommends expanding this research to other elements of theoretical models of student departure such as the external environment and the internal campus environment. Doing this will support the further refinement and development of the theory and confirm its applicability to local institutional populations.

DEDICATION

To my mother, who I love dearly, and to my father, who went to heaven before I finished; to my family, friends, and colleagues who have faithfully encouraged me to complete this journey; to my Valley Cohort family who encouraged me when I thought I could not go on; and especially to my Friend, my Lord, and my Savior Jesus Christ, God's only Son, who loves me and daily gives me strength to do all things needful for living and for serving others, and so very much more, I humbly dedicate this study.

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I would like to thank Dr. Gail Dantzker for encouraging me to pursue my doctorate. If it had not been for her, I am certain I would never have begun this journey. It is my greatest desire to follow her example in encouraging others to pursue higher and deeper levels of education and lifelong learning in order to enrich their lives and to maximize their contributions to the world and people around them. Thanks also to my staff who have been understanding and supportive of this process!

I would also like to thank President Dr. Shirley A. Reed and Vice President Jose Cruz, both of South Texas College, for providing a practical domain and a certain amount of freedom and support to apply newly learned concepts related to the profession of human resource development, i.e., research, strategic planning, organizational development, collaboration, and teamwork. It has been a privilege to be able to immediately apply new knowledge to my work.

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CHAPTER I

INTRODUCTION

Overview of the Study

Community colleges are caught in the middle of a dilemma. On the one hand, the colleges are tasked with being open-door institutions where selectivity for higher levels of college readiness of incoming students is unthinkable. On the other hand, they are being held accountable to their stakeholders for producing quality graduates, both for the workforce of their communities and for transfer to universities. Community colleges have placed emphasis on expanding access, individual mobility, inclusion of all social classes, increased federal funding for occupational education, diversity of students, and providing for community needs (Cohen & Brawer, 1991). Community colleges are now being held accountable by their governing agencies and other stakeholders to improve their performance in course completion and retention among other measures like graduation and transfer rates (Southern Association of Colleges and Schools [SACS], 2004; Texas Higher Education Coordinating Board [THECB], 2006).

While trying to maintain the balance between access and success, many community colleges have utilized new technologies to make higher education accessible to underserved populations. One of these methods is distance education via the Internet. The American Council on Education (2003) sponsored a report that identified the institutional motivations for expanding enrollments in distance or distributed education

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The style and format of this study follow that of *Advances in Developing Human Resources*.

and warned college and university leaders of pitfalls that they might encounter: “The prime institutional motivations driving distributed education are: expanding access, easing enrollment capacity constraints, catalyzing institutional transformation, and generating revenue” (p. 1). The report was intended “to provide presidents, provosts, and other senior decision makers with a sense of the landscape of technologically mediated education and the means to make wise strategic choices” (American Council on Education, 2003, p. iii).

Choosing to utilize distance education to increase access to higher education has been popular in most community colleges including those with large Hispanic populations. However, whether or not distance education is an effective instructional modality, especially as it compares to the traditional face-to-face or classroom method is still open for debate. The findings in the literature are conflicting at best and very little research on the success of distance education has been conducted among Hispanic populations. There is little to no evidence to demonstrate whether Hispanics are or are not utilizing this means to higher education at the same rates as other ethnic groups, nor whether the Hispanics who are participating are as successful in distance education as they are in the classroom. Research related to Hispanic students in distance education is therefore currently minimal and, thus, much needed. It is the purpose of this study to begin to address this need.

The urgency and need for a timely and critical link between human resource development (HRD) and higher education was emphasized by Bailey, Jenkins, and Leinbach (2005) who identified growing levels of national concern regarding the need

for increasing access to higher education for all Americans and for improving the quality of student outcomes specifically in community colleges. Not only do nearly 40% of first-time in college students enroll in community colleges (Bailey, Jenkins et al., 2005), but among these students, the proportions that are Hispanics and other minority students are typically greater than their proportion within the general population (Bailey et al., 2004; Bailey, Calcagno, Jenkins, Kienzl & Leinbach, 2005; Boswell, 2004; Hagedorn, Maxwell, Chen, Cypers, & Moon, 2002; Haro, 2004; O'Brien, Shedd & Merisotis, 2001). HRD literature has much to offer educational institutions regarding their needed performance improvement as measured by student outcomes.

A current event that increased national levels of concern regarding success in higher education and upward mobility specifically of American Hispanics is the large demographic shift in this population (Boswell, 2004; Haro, 2004; Kochhar & Tafoya, 2005; Laden, 2001; U.S. Census Bureau, 2004). Haro (2004) described his concern about population projections warning that "a relentless swelling tide of Latino [Hispanic] students is approaching higher education in America" (p. 206). His research indicated that social and cultural conditions make it difficult for Hispanic students to gain access to and succeed in high-ranking colleges and universities. He found that Hispanic students beginning in community colleges are often deterred from pursuing higher levels of education and professional degrees. Haro (2004) agreed that while the demand for higher education by Hispanics was increasing, "the programs and the machinery to accomplish a successful transition and matriculation through the baccalaureate process and on to graduate work remain static and largely unsuited for this population" (p. 206).

Haro (2004) further stated that those Hispanics who have accomplished this task have been rare exceptions to the norm. Researchers concur that Hispanics are under-represented in higher education enrollment and degree attainment and are over-represented in community colleges. Therefore, the improvement of Hispanic student success in these institutions of higher learning is imperative (Bailey, Calcagno et al., 2005; Boswell, 2004; Hagedorn et al., 2002; Haro, 2004; Knapp et al., 2005; O'Brien et al., 2001; Pascarella & Terenzini, 1991; U.S. Department of Education, 2003).

Whether or not the practice of higher education, meaning post-secondary education, can be viewed as HRD is a matter of opinion according to the literature. On the one hand, Sleezer and Sleezer (1997) suggested that HRD "is the study and practice of human interactions in organizations" and defined the scope of the term "organizations" to a very limited one for HRD practice by stating that "it occurs within one or more business, industry, military, or public-sector organizations but does not include educational institutions" (p. 185).

On the other hand, Torraco (2005) wrote in a recent editorial in the Human Resource Development Review that "HRD is exploring the use of organization development in higher education as it experiences an era of limited growth and strategic reorientation" (p. 251). He clearly supported the idea that HRD can no longer remain uninvolved in the realm of higher education when he wrote, "As facilitators of change, HRD now has system-wide responsibility for facilitating strategic change and large-scale projects that cut across organizations and into the community" (p. 251).

This view of HRD occurring within higher education was also supported by the McLean and McLean (2001) definition of HRD as

> any process or activity that, either initially or over the long term, has the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or, ultimately, the whole of humanity. (p. 4)

Increasing levels of support for a broader context for HRD that were hinted at in this definition are now becoming more common in recent HRD literature. New definitions with an emphasis on community and national human resource development (NHRD) have been offered describing expanding levels of community and national impact because of HRD work (Byrd & Demps, 2006; Lynham & Cunningham, 2004; McLean, 2004). These definitions include similar elements to those Cohen and Brawer (1991) found in historical mission statements of community colleges in America, i.e., work-force education, vocational-technical programs, for community benefit, and upward mobility of individuals of all classes.

In the remaining sections of this chapter, the author provides an overview of this research intent, which is divided into nine parts: (a) an introductory and synthesized background of relevant literature to a specific-stated problem and a theoretical framework from which to address the problem; (b) the specific purpose of this study; (c) the research questions guiding the study; (d) specific operational definitions to clarify certain terminology used in the study narrative; (e) a list of assumptions the researcher made regarding data utilized to conduct the study; (f) identifiable limitations of the study; (g) some ethical considerations surrounding the study; (h) the significance of the

study and its applicability to human resource development; and finally, (i) an overview of the contents of this dissertation.

The Problem and Problem Statement

Introduction to the Problem

Educational attainment by Hispanics is critical to the economic well-being of south Texas, the State of Texas, and the United States due to, among other reasons, the tremendous growth in population of this ethnic group (Bailey, Calcagno et al., 2005; Haro, 2004). Community colleges in south Texas enroll high percentages of Hispanic students (Bailey, Calcagno et al., 2005; Hagedorn et al., 2002; Haro, 2004). Therefore, community colleges are important sources and agents of HRD for their communities (Birnbaum, 1988; Cohen & Brawer, 1991; McLean & McLean, 2001). However, Hispanic student success rates in higher education (i.e., retention in college and bachelor's degree attainment) are below the national average for all ethnicities. Furthermore, Hispanic-serving community colleges are trying to increase access to higher education through the use of distance education technology; yet, little research has been done among Hispanic students in distance education courses to confirm that such technology is successful.

Among other ethnic populations, course completion and retention rates of students taking distance education are being compared to traditional face-to-face rates with inconsistent findings. Howell, Laws, and Lindsay (2004) indicated the need for further research on this topic referring to existing studies comparing the completion rates between students utilizing the two different instructional modes as being like comparing

apples and oranges. Howell et al. (2004) concluded, "Critics of distance education frequently assert that completion rates are lower in distance education courses than in traditional [face-to-face] courses. Such criticism comes despite sparse and inconclusive research on completion rates for distance and traditional [face-to-face] education courses" (p. 1). Therefore, since South Texas College is a Hispanic-majority institution and is experiencing rapid enrollment growth of Hispanics in distance education as well as face-to-face courses, it was a particularly well suited setting for research needed to determine the appropriateness and success of this mode of instruction (distance education) for Hispanic students.

Problem Statement

Given the above introduction to the problem, the problem this study is intended to address could therefore be briefly stated as follows: South Texas College, its students, and its community taxpayers invest tuition, fees, and tax dollars in distance education in an effort to provide access to higher education for Hispanic adults for the purpose of increasing individual upward social mobility and, thereby, a better quality of life for the whole community. However, access to higher education without success (retention and completion) is meaningless. It is not evident in the literature what might hinder or contribute to Hispanic student success (retention and completion), whether Hispanics enroll in distance courses, or whether or not there are differences in Hispanic student success dependent on the mode of instruction (distance learning or face-to-face). Therefore, research is needed to better understand which Hispanic students are utilizing distance education and to identify student entry characteristics related to their success.

Theoretical Framework

With this study, the researcher sought to fill a critical gap present in the literature related to Hispanic student retention and course completion comparisons between face-to-face and distance students in Hispanic-majority community colleges. The Braxton, Hirschy, and McClendon (2004) theory of student departure in commuter colleges and universities framed and informed the study. Since South Texas College is not only an associate-dominate four-year community college that is also a commuter institution, this theoretical framework was more appropriate than Tinto's (1993) retention model, which was a better fit for residential institutions. The focus of the study centered on the impact of Hispanic student entry characteristics on the student's course completion and retention. The Braxton et al. (2004) researchers found that each student entering college carries with him a developed or experienced set of student entry characteristics (i.e., gender, age, ethnicity, socio-economic status, high school GPA, etc.) that once identified, may be able to predict the risk that the student may not stay enrolled either within the course (completion) or semester-to-semester (retention). A continuation of this discussion of the theoretical framework and its relevance to the current study is provided in Chapter II and Chapter III.

Once enrolled, the student begins to make other choices based on his or her educational goal that may impact the likelihood of success, i.e., mode of instruction, course selection. Three groups of students were studied based on the student's selected mode of instruction for all the courses for which the student registered during the study period: (a) face-to-face, meaning the student selected all the courses in the typical

classroom where the teacher is face-to-face with the students, (b) distance learning, meaning the student selected all Internet courses where the teacher and students were separated or were not face-to-face, or (c) both face-to-face and distance learning courses, meaning the student enrolled in mixed modes of instruction with some courses being taught face-to-face and some being taught over the Internet. Once the student groups were identified, the student entry characteristics or demographics for each group were analyzed and described. Although in relationship to the current research on distance learning, studying student entry characteristics appears to be taking a step backwards since the research has progressed beyond this point (or was abandoned due to inconsistent findings). It is important to add Hispanic studies to the literature to include or distinguish this population in regards to their use of and success in distance education courses since colleges and Hispanic students are heavily invested in this instructional mode and Hispanic student educational attainment is so critical.

This study was designed to examine the student entry characteristics for Hispanic students and to determine whether any of them might be considered predictors of high risk for failing to complete courses or failing to re-enroll or to be retained the following term. Historical data from the institutional student records system and historical student survey data were obtained and analyzed for comparison to similar findings in the literature. Logistic regression was used to identify predictors of Hispanic student success among the independent variables for the three groups.

Purpose of the Study

The purpose of the study was two fold: (a) to identify student entry characteristics of Hispanic-entering freshmen at South Texas College and (b) to determine the predictive validity of these characteristics on successful course completion and retention as a function of course modality (i.e., face-to-face, distance education, or both). More broadly, the purpose of this study was to address the problem regarding the use of and investment in distance education in addition to historical face-to-face classrooms as a strategy to provide expanded access to higher education for Hispanic students at South Texas College. This investment and effort to provide expanded avenues to upward social mobility and improved quality of life for these south Texas residents without supporting research to demonstrate the effectiveness of such an investment could be a waste of taxpayer and student tuition dollars. This study was designed to discover what might hinder or contribute to Hispanic student success (retention and completion), whether or not Hispanics enroll in distance courses, or whether or not there are differences in Hispanic student success dependent on the mode of instruction (distance learning or face-to-face).

The researcher sought to better understand which Hispanic students are utilizing distance education and to try to identify student entry characteristics related to their success. The researcher examined the description, relationships, and predictive validity of Hispanic student entry characteristics on successful course completion and on retention from one semester to the next. The study population included Hispanic students at the point of entry into South Texas College and in the first course selections in order

to determine whether entry characteristics could predict the completion of the courses. The course selections included high enrollment courses such as any college student wishing to complete a degree would typically need as part of their core curriculum and that were offered via face-to-face and the Internet. Therefore, the selected population for the study was all Hispanic-entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempted History (reading), English Composition (writing), or College Algebra (Math) for the first time in either face-to-face or distance education courses at South Texas College.

These students unknowingly or otherwise self-selected into three mutually exclusive groups based on the students' chosen mode of instruction for their course load during the semester in which they were enrolled in the selected course (History, English, or algebra). The students chose to take their load, via (a) face-to-face only, (b) distance education only, or (c) both face-to-face and distance education. The researcher sought to retrospectively identify the extent to which student entry characteristics of the three groups of Hispanic students were able to predict successful course completion or semester to semester retention.

Conducting the study was an opportunity to investigate characteristics known about South Texas College Hispanic students that potentially held some predictive value related to the likelihood for the students to succeed. Table 1 lists the student entry characteristics that were available for Hispanic-entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempted History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at

South Texas College. The data collection instruments and rationale for selecting these variables are discussed in Chapter III – Methodology.

Table 1. Available Student Entry Characteristics for South Texas College Entering Freshman

Student Entry Characteristics (Independent Variables)
Age
country of elementary education
custody of minors
Disabilities
English as a second language
Gender
high school diploma type
high school GPA
hours of employment
income level indicators
intent to continue employment
intent to transfer
intended length of enrollment
marital status
number of credit hours
parents education
participation in workforce programs in high school
reason for attending
recent migrant work
resident status
veteran status

Note. Above variable data are collected by South Texas College Admissions Office on the Student Application for Admissions Form and/or the Student Supplemental Information Form for admissions, registration, and reporting purposes (see Appendix A).

Research Questions

In order to accomplish the purpose of the study, the researcher formulated and attempted to answer four specific questions that informed the study design. They were:

1. What are the Hispanic student entry characteristics of entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempt History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College?
2. Are there differences between the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College? And if so, what are these differences?
3. To what extent can successful course completion of the Hispanic students' first attempt at History, English Composition, or College Algebra taken via face-to-face or distance education be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?
4. To what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?

Operational Definitions

For the purpose of clarifying terminology used in this study, the following definitions are provided:

Community college – Phillippe and Patton (2000) define community college as "public, community-based colleges who serve local needs;" "distinct educational institutions, loosely linked to other community colleges by the shared goals of access and service . . . . open admissions and the tradition of charging low tuition" (p. 6).

Course completion rate – Course completion rate is the percentage of students who did not drop the course prior to the 12th class day and received a grade at the end of the term. Grades include A, B, C, D, F, I, or W.

Distance education – Distance education is also known as distance learning: institution-based, formal education where the learning group is separated geographically, and where interactive telecommunications systems are used to connect learners, resources, and instructors (Simonson, Smaldino, Albright, & Zvacek, 2000).

Face-to-face – Traditional face-to-face (or classroom) teaching is based on interpersonal communication between teacher and student (Holmberg, 1995).

Hispanic – The U.S. Census Bureau (2000) defines Hispanic as:

> People who identify with the terms 'Hispanic' or 'Latino' are those who classify themselves in one of the specific Hispanic or Latino categories . . . 'Mexican,' 'Puerto Rican,' or 'Cuban.' It also includes people who indicate that they are 'other Spanish, Hispanic, or Latino.' Origin can be considered as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as 'Spanish,' 'Hispanic,' or 'Latino' may be of any race. (p. 10)

Human Resource Development (HRD) – McLean and McLean (2001) define human resource development as "any process or activity that, either initially or over the long term, has the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or, ultimately, the whole of humanity" (p. 4).

Retention – The percentage of students enrolled in one semester who re-enroll in the subsequent semester is known as semester-to-semester retention. In this study only Fall and Spring semesters were included in analysis of retention.

South Texas College – On the South Texas College website under *About South Texas College*, the college is described as

> a comprehensive college offering the Bachelor of Applied Technology, and associate degrees and certificates in 90 degree and certificate program options. Academic courses are transferable to colleges and universities and the curriculum includes distance education, weekend courses and a newly added mini-mester. (South Texas College, n.d., para. 1 & 2)

Successful course completion – Successful course completion is the percentage of students who did not drop the course prior to the 12th class day and received a grade of A, B, or C, at the end of the term.

Texas Higher Education Coordinating Board (THECB) – The THECB was created by the Texas Legislature in 1965 to "provide leadership and coordination for the Texas higher education system to achieve excellence for the college education of Texas students" (THECB, n.d.).

Assumptions

Conducting the study using existing data from the Office of Institutional Research and Effectiveness at South Texas College required the researcher to accept some basic assumptions about the quality of the data. These included:

1. The respondents surveyed in the historical survey datasets understood the survey instruments and had the ability to self-report and responded objectively and honestly.
2. The individuals who turned in the historical surveys were the individuals who completed the surveys.
3. Interpretation of the data collected accurately reflected that which was intended.
4. The student record data were accurately collected and reflected the factual data intended.

The above assumptions were necessary in that the researcher had to rely on an external party for the accuracy of the above-mentioned datasets. It was reasonable to make these assumptions related to the student record data collection as the Office of Institutional Research and Effectiveness was the official research office for the College and had a history of regularly collecting, analyzing, and reporting official data for the College to both internal and external agencies. Other specific data assumptions were made in carrying out the data analyses. These assumptions about the data are discussed thoroughly in Chapter IV.

Limitations

The limitations to this study were not fully realized until the study was completed. However, prior to conducting the study, certain limitations were identified as noted in this section. Although this study was conducted in one of the few American colleges where the Hispanic population exceeded 90% of the total student population, the study may provide some insight into student entry characteristics related to Hispanic student success wherever they are enrolled. While the results of this study may not be generalizable to all Hispanic populations in other colleges, they do provide stimulus for further studies within those populations. Limitations identified were as follows:

1. The study was limited to information acquired from the literature review and available South Texas College historical student data.
2. The study was limited to entering freshmen who began their college journey at South Texas College anytime between Fall 2000 and Fall 2005 and who made their first attempt at a freshman level core curriculum course in History (reading), English Composition (writing), or College Algebra (Math).
3. Findings from this study cannot be generalized to any college other than South Texas College.

In summary, the problem statement expressing the need for and the purpose of this study has been described. Research questions have been stated as well as the basic assumptions and limitations of the study. In the next section, ethical considerations are discussed.

Ethical Considerations

The data used in this study were pre-existing and accessible to the researcher who was the Director of the Office of Institutional Research & Effectiveness of South Texas College. The researcher sought and obtained qualification for exemption from IRB review at both the institution of study and Texas A&M University. All staff, including the Director, of the Office of Institutional Research & Effectiveness at South Texas College are obligated to uphold the Code of Ethics of the National Association of Institutional Research and are committed to protecting the rights of privacy and the safety of human subjects. This study was reported in the aggregate and, therefore, no student identifiable data were reported.

The significance of the study and its potential contribution to the current literature are important to note. These are discussed in the following section along with the study's applicability to the field of HRD.

Significance of the Study and Its Applicability to HRD

In this section, the researcher reviewed the need for the study and described the contribution that the study attempted to add to the current knowledge base related to Hispanic students taking distance education courses. The argument was made in terms of the anticipated usefulness of the study to educational administrators and faculty and to both critics and proponents of distance education as a valid means of college instruction for Hispanic students.

Due to the tremendous population growth of the Hispanic population, the future economic well-being of Texas and the entire United States depends on Hispanic

educational attainment (Bailey, Calcagno et al., 2005; Haro, 2004). Hispanic student success rates in higher education are often below the national average for all ethnicities, i.e., 2002-2003 national percent of bachelor's degrees awarded to Hispanics (7%), Whites (70%), and Blacks (9%) (Bailey, Calcagno et al., 2005). High percentages of Hispanic students in south Texas are enrolled in community colleges (Bailey, Calcagno et al., 2005; Hagedorn et al., 2002; Haro, 2004). Therefore, community colleges are a critical agent for developing human resources in their communities (Birnbaum, 1988; Cohen & Brawer, 1991; Kintzer & Bryant, 1998; Lee & Young, 2003; McLean & McLean, 2001).

Although Hispanic-serving community colleges are increasing access to higher education through the use of distance education technology, little research to support the effectiveness of such an endeavor has been done among Hispanic students in distance education. Even among other populations, comparisons of course completion and retention rates in distance education and face-to-face classrooms have inconsistent findings and criticisms of distance education based on "sparse and inconclusive research" (Howell et al., 2004, p. 1) that urge us to conduct further studies. The findings in the literature are conflicting at best and point to very little research on the success of distance education having been conducted among large Hispanic populations in higher education and much less in community colleges. There is little to no evidence to demonstrate that Hispanics are utilizing this means to higher education at the same rates as other ethnic groups, nor that the Hispanics who are participating are as successful in distance education as they are in the traditional classroom. South Texas College, a

Hispanic-majority institution experiencing rapid enrollment growth of Hispanics in distance education courses, was therefore fertile ground for research needed to determine the appropriateness and success of this mode of instruction (distance education) for Hispanic students and in so doing to begin to address this paucity in related research.

The critical link between HRD and higher education allowed this HRD research to include performance improvement of higher education institutions as an important outcome of HRD practice. Hispanic student success within community colleges is critical to our future national economy and as such was pertinent to this HRD research. This study has provided a profile of Hispanic distance education student characteristics such as was common in the literature for other populations. Furthermore, the study retrospectively identified student entry characteristics that predicted successful course completion and Fall-to-Fall retention of students taking courses in the different modalities. And finally, this study provided information useful for improving performance as measured by Hispanic student course completion and retention, key performance indicators of the work of a community college toward community level human resource development (Lynham & Cunningham, 2006).

Contents of the Dissertation

This dissertation is divided into five major units or chapters. In Chapter I, the researcher describes an overview of the study, the problem and problem statement, the theoretical framework, the purpose of the study, the research questions, operational definitions, assumptions, limitations, ethical considerations, the significance of the study and its applicability to HRD, and the contents of the dissertation. In Chapter II, the

researcher provides a structural framework for the study that establishes the boundaries and organization of the review of existing literature related to the problem. The reviewed literature is discussed in the chapter and is followed by a summary of findings from this review. The research questions and their theoretical context, the appropriateness of the selected methodology, the population for the study, data collection and analysis, and the procedures utilized in conducting the study are discussed in Chapter III. In Chapter IV, the researcher provides a discussion of the analysis and findings for each research question and an overview of the findings. Finally, Chapter V contains the researcher's summary and discussion of findings; implications and recommendations for educational administrators, for researchers, and for HRD professionals; implications for further theory refinement and development; and finally, some closing remarks.

CHAPTER II

REVIEW OF THE LITERATURE

The Structural Framework for the Study

A review of the literature related to the problem addressed by this current study provides both the researcher and the reader with a basic understanding of the background and current status of several relevant topics. The framework of boundaries for limiting the scope and depth of the review and for organizing and ordering these topics is represented in Figure 1. The figure lists the scope of topics and the depth of the review within a topic and provides the order and organization of the literature included in this chapter. The topics also are indicative of the supporting constructs for conducting the study and advancing the body of knowledge related to HRD, community colleges, and Hispanic student success in higher education. The researcher utilized the figure as a funnel to narrow and synthesize the literature into a focused and manageable area of study regarding Hispanic student success in face-to-face and distance learning or Internet community college courses. This chapter also includes some discussion of similar methodological studies that provided a frame of reference for selecting the most appropriate methodology for conducting the study. The review provides a necessary literary background and basis for evaluating the contribution of this study to the advancement of the related knowledge base.

Key topics in the literature required examination in order to provide the context for the development of this study. Topics reviewed and discussed in this chapter include economic and human resource development issues related to changing demographics,

more specifically, human resource development within community colleges, Hispanic enrollment and performance in college, Hispanic educational attainment concerns, and measures of performance related to educational attainment in face-to-face and Internet courses.

	Topics of Literature Review	Sub-Topics of Literature Review
↓	**Key Ethnicity – Hispanic**	**Population Growth Rate**
		Educational Attainment Rate
↓	**Economic Need for Human Resource Development of Hispanics**	**National (USA)**
		State (Texas)
		Regional (South Texas)
↓	**Hispanic Access to Higher Education: Community Colleges**	**Face-to-Face**
		Distance Learning (Internet)
	Hispanic Student Success in Community Colleges	**Successful Course Completion**
		Retention (Re-enrollment)

Figure 1. Framework for Literature Review.

Two critical factors that have stimulated strong concern among people who are interested in the economic development and competitiveness of the United States of America, the State of Texas, and even more specifically south Texas, are the rapid rate of growth of the Hispanic population combined with their low levels of educational attainment. Current literature from the fields of two of these groups of interested folks,

namely HRD professionals and educational administrators, supports the idea that there is a relationship between human resource development (HRD) and community colleges. A historical look at the philosophy, boundaries, and goals of each was examined by the researcher. The shared or overlapping area of responsibility between the two entities was identified in order to support the argument for the inclusion of performance improvement of community colleges within the realm of responsibility of community-level human resource development (Lynham & Cunningham, 2006). The review indicated that a major area of shared concern for both community colleges and HRD is the contribution to the local economy by providing, as defined by McLean and McLean (2001):

> process[es] or activit[ies] that, either initially or over the long term, [have] the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or, ultimately, the whole of humanity. (p. 4)

Understanding this critical link between HRD and community colleges provides an avenue for expanding HRD research regarding learning and performance to arenas such as community colleges and the student populations within them. Community colleges have played a historical role to provide the open door of access to higher education to minority and low-income students. More specifically, within the community college student population, Hispanics have been identified as one of the lowest-performing ethnic student populations in the nation, and therefore, Hispanic students were selected as the population for this study.

Also, two other shared responsibilities between HRD and Educational Administration are learning and performance improvement. Typical areas of

performance measured by community colleges were examined in the literature with specific interest in the current national benchmarks for Hispanic student populations within those community colleges. The disparity between increasing Hispanic enrollment and deteriorating levels of performance are discussed. This study sought to fill a critical gap present in the literature related to retention and course completion comparisons by studying differences between two instructional modes or types of presentation (face-to-face and distance education) among Hispanic students.

In order to study student retention, which implies successful course completion, Bean and Metzner (1985) explain that researchers and theory builders have typically used Tinto's (1975), Spady's (1970), or Pascarella's (1980) models of student departure, which "relied heavily on socialization or similar social processes . . . to explain" retention (p. 489). Braxton et al. (2004) developed a modified version of Tinto's model of student departure that in their opinion was more applicable and empirically supported for commuter institutions. Braxton et al. reviewed studies to empirically analyze the major constructs or propositions associated with Tinto's theory and found that studies in commuter institutions showed a stronger empirical relationship between retention, student entry characteristics, and academic integration. They believed that Tinto's theory did not sufficiently recognize the significance of these constructs for commuter institutions. Braxton et al.'s theory of student departure explains that student entry characteristics directly influence a student's choice to re-enroll from semester to semester (retention). In this current study, the researcher defined student entry characteristics as anything known about the student at the point of entry. For example, if

one of the student entry characteristics is that the student is employed over 40 hours per week, he may be likely to drop out or to perform poorly in the coursework since he has little time to study. This definition differs slightly from the Braxton model definition of student entry characteristics in that Braxton separates finances, support, work, family, and community, into a separate set of factors called External Environment. This current study is not concerned with the separation or categorization of the factors, but rather in analyzing each factor or combinations of factors and their influence or impact on completion and or retention. This current study is an applied test of this small section of the Braxton et al.'s (2004) theory of student departure: student entry characteristics as predictors of (successful course completion and) retention in a commuter college, specifically South Texas College. As such, the findings should be analyzed in reference to the Braxton theory where applicable for further refinement and development of that theory (Lynham, 2002).

The researcher of the current study addressed the lowest level of educational attainment (course completion) and re-enrollment in the next semester (retention) disaggregated by two types of instruction: face-to-face (traditional classroom) and distance education (student and faculty physically separated). Braxton et al. (2004) noted gaps in retention studies among Hispanic and other ethnic populations. Likewise, gaps in the literature related to the Hispanic population enrolled in distance education courses are identified emphasizing the need for this study. The study design centered on Hispanic student entry characteristics and their impact on the course completion and retention in (a) face-to-face, (b) distance learning, and (c) both face-to-face and distance

learning courses. Although in relationship to the current research on distance learning this study design appeared to be like taking a step backwards, it was important to take this step in order to add Hispanic studies to the literature and to include or exclude the Hispanic population in regards to their use of and success in distance or Internet courses.

The existing literature related to retention in distance learning courses appeared to have abandoned the investigation of differences in retention between face-to-face and distance courses due to frustrations with definitions and inconsistent findings. Instead, distance learning researchers had moved on to develop theories of learning that would help understand how learning is best maximized when utilizing the technology of distance education. However, in moving on, they have also neglected or elected not to investigate to the point of understanding Hispanic student success in distance or Internet courses. Taking the backward step to conduct this research not only was intended to inform and add to the existing research on completion and retention but also to provide information to improve practice regarding independent variables in the form of student entry characteristics that may impact performance, both of which are important to attend to.

In summary, the preceding paragraphs have provided the framework that bound the scope and depth of this literature review. The following sections will provide more details of the state of current literature related to: Impact of Hispanic Demographic Shift on the Economy, Human Resource Development of Society, The Role of the Community College and Its Relationship to HRD, Community College Demographics,

Hispanic Educational Performance, and the Impact of Teaching Modalities on Educational Performance Measures.

Impact of Hispanic Demographic Shift on the Local Economy

Increasing national concern about Hispanic and other minorities being able to access and attain higher education degrees stems partially from an economic viewpoint and concerns about the achievement of upward mobility for minorities.

> Community colleges have a critical role to play in providing access to the American dream. With the significant demographic shifts taking place in our society, it is in all of our economic and social best interests to ensure that these populist colleges succeed in their important mission. Whether these colleges serve as a bridge or a dead end will depend to a great extent on enlightened public policies. Education matters, and so does good public policy. (Boswell, 2004, p. 29)

Referring to U.S. Census 2000 data, Laden (2001) points out that the young (average age 29) Hispanic population makes up "12.5% of the U.S. population and (is) projected to rise to 22% by the year 2015. . . [and in other words] . . . will nearly double in number in less than 15 years" (p. 74). Laden states that, according to the 2000 Census data, record numbers of the soon-to-be majority minority are migrating in search of better jobs and better opportunities across the United States to large cities such as "San Antonio, Los Angeles, Houston, San Jose, New York, Dallas, San Diego, Phoenix, Chicago, San Francisco, Philadelphia, Detroit, and Miami" and also "less-populated states like Idaho, Wyoming, Nebraska, Nevada, Utah, and Iowa" (p. 74). However, Laden (2001) also found that no matter where the Hispanic population had moved, "at present most Hispanics fill a demand from certain sectors of the U.S. economy for

cheap, unskilled, and often temporary labor . . . (and) pose educational and economic challenges that will not go away in light of their current and projected numbers" (p. 74).

Haro (2004) is more concerned about population projections than the often quoted snapshot of 2000 Census figures, and his description of Census projections warns that "a relentless swelling tide of Latino [Hispanic] students is approaching higher education in America" (p. 206). His research also indicates that social and cultural conditions make it difficult for Hispanic students to gain access to and succeed in high-ranking colleges and universities. He found that Hispanic students beginning in community colleges were often deterred from pursuing higher levels of education and professional degrees. Haro (2004) agrees that while the demand for higher education by Hispanics is increasing, "the programs and the machinery to accomplish a successful transition and matriculation through the baccalaureate process and on to graduate work remain static and largely unsuited for this population" (p. 206). He further highlights that those Hispanics who have accomplished this task, have been rare exceptions to the norm.

Garcia and Figueroa (2002) present data more indicative of the impact that this demographic shift of the Hispanic population will have on educational institutions and local economies. They focused their research on the typical college age U.S. population of 18 to 24 years. Using 2000 data from the White House Initiative for Educational Excellence for Hispanic Americans, they found that 14.5% or 3.6 million of the college age population was Hispanic. In alignment with Laden (2001), Garcia and Figueroa agree that to ensure the welfare of our economy and our democracy, it behooves individuals, organizations, and communities, to form partnerships with their educational

institutions to strengthen them to ensure success in Hispanic educational attainment. They contend that the national gap in Hispanic enrollment in higher education, although narrowing slightly, is still a problem within selective colleges and universities, and specifically within the University of California (UC) where they conducted their research. Their argument is based on their research concerning the experiences of two Hispanic students who faced multiple challenges in navigating the social system of UC.

In Texas, State policymakers and educational leaders have taken action to address similar concerns. In April 2000, the Texas Higher Education Coordinating Board (THECB) conducted a study on the seriousness of the educational attainment problem in the state of Texas and its impact on the Texas economy (Benjamin, Carroll, Dewar, Lempert, & Stockly, 2000). The study served to increase awareness and concern among policymakers, and community and educational leaders throughout the State that unless serious initiatives were undertaken to dramatically increase the numbers of Hispanic students enrolling in and obtaining degrees from higher education institutions, the state would suffer a serious threat to its economy by the year 2010. Texas educational leaders concluded the following from their study (Benjamin et al., 2000):

- Participation goals generally more challenging than success goals [in other words, it will be more difficult to enroll the needed number of students than to help those enrolled to be successful]
- Substantial increases in entry rates needed to meet participation goals, particularly for underrepresented populations [in other words, Texas must

dramatically increase Hispanic enrollment in higher education to meet the participation goals]

- Job deficits likely even if participation and success goals are met [in other words, even if Texas enrolls the target number of participating students, and is able to ensure that the enrolled students are successful, a deficit in needed workers will still remain].

Texas leaders determined that four major initiatives were needed for meeting these long-term educational priorities (Benjamin et al., 2000):

- Build/Expand Two- and Four-Year Institutions in Growth Areas.
- Greatest need identified is for expanded community-college and four-year enrollment.
- Projected labor market demand suggests new institutions or expansion needed in Dallas/Fort Worth, San Antonio, Houston, Metropolitan areas to be selected along border.
- Internet-based solutions also needed.

Texas colleges and universities are struggling in their response to the THECB challenge to increase Hispanic enrollment in their institutions. As of Fall 2005, the Texas institutions of higher education have realized that it is difficult enough to increase participation rates of Hispanics and that even if they could attain the Closing the Gaps enrollment goals, access to these institutions alone is insufficient. In their 2004 study, Bailey et al. concluded that the focus of Hispanic educational attainment is shifting as it must from access to student success noting that “in the last decade, policymakers,

educators, accreditors, and scholars have increasingly turned their attention to persistence and completion among community college students" (p. 13).

Human Resource Development of Society

McLean and McLean (2001) defined HRD as "any process or activity that, either initially or over the long term, has the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or, ultimately, the whole of humanity" (p. 4). In 2001, Swanson and Holton also explained that "it is useful to recognize alternative definitions . . . international perspective . . . HRD functioning as an agent of societal and national development, not just focused on organizations" (p. 4). The recognition of alternative definitions of HRD within the HRD field, some as narrow as a small organization and some as broad as serving as change agents for the development of societies and nations, suggests a recognition that human resource development within communities is critical at multiple levels of organizational and societal development. These multiple levels of HRD are documented in the definitions themselves that are discussed in the following section.

Sleezer and Sleezer (1997) suggest that HRD "is the study and practice of human interactions in organizations" (p. 185). They use the term "organizations" in a very limited sense for HRD practice stating that "it occurs within one or more business, industry, military, or public-sector organizations but does not include educational institutions" (p. 185). On the other hand, Torraco (2005) wrote in a more recent editorial in the *Human Resource Development Review* journal that "HRD is exploring the use of

organization development in higher education as it experiences an era of limited growth and strategic reorientation" (p. 251). Torraco clearly supports the idea that HRD can no longer remain uninvolved in the realm of higher education stating, "As facilitators of change, HRD now has system-wide responsibility for facilitating strategic change and large-scale projects that cut across organizations and into the community" (p. 251). Passmore (1997) also seems to contradict the Sleezer and Sleezer notion in his description of "ways of seeing" HRD disciplinary foundations. He discusses economics as one of the important lenses for HRD research and describes the importance of careful development and allocation of scarce resources within communities and nations, one of which is human resources. Dougherty and Bakia (1999) write that

> Community colleges have long been involved in workforce preparation and economic development—in the form of the occupational education of students. But in the last two decades, community colleges have greatly broadened their economic development role to include contract training, small-business incubation and assistance, and local economic planning. (p. 3)

He also mentions that some community colleges have even become involved with their community economic development boards participating in the economic planning of their communities.

The defining of HRD and its direction for the future has been an ongoing professional debate spanning several years (Galagan, 1992; Jacobs, 1989; Kuchinke, 2003; Swanson & Holton, 2001). The need for communities and the greater society to be included in the scope or context of HRD research and practice is gaining stronger support among HRD professionals. As in the previous year, whether or not to expand the scope of HRD was a common topic of the 2004 Academy of Human Resource

Development presentations (Akdere, 2004; Hasler, Thompson, Lynham, & Paprock, 2004; Seaman, Lynham, Ruona, & Chermack, 2004; Winterton, 2004). Although many prior HRD definitions limit the scope to organizations, i.e., Chalofsky and Lincoln (1983), Jones (1981), Sleezer and Sleezer (1997), Swanson (1987) (as cited in Swanson & Holton, 2001), these definitions are being questioned in the light of an increasing demand for HRD assistance in society (Dougherty & Bakia, 1999; Lynham & Cunningham, 2006; McLean & McLean, 2001; Passmore, 1997; Torraco, 2005). There appears to be a growing understanding and consensus that HRD can no longer limit its services to organizations, but must reach out to the broader community and society.

With the recent focus on HRD involvement in societal development (Dougherty & Bakia, 1999; Lee & Young, 2003; Lynham & Cunningham, 2006; McLean & McLean, 2001; Swanson & Holton, 2001; Torraco, 2005), and in light of the fact that nearly every community college in the United States includes as part of its mission the development of its community and the provision of skilled human workers to business and industry within its community (Birnbaum, 1988; Byrd & Demps, 2006; Cohen & Brawer, 1991; Kintzer & Bryant, 1998; Lee & Young, 2003), the literature provides strong evidence of the link between HRD and the work of community colleges. Community colleges could be viewed as the community's human resource development center. In the next section, a review of the historical role of community colleges is discussed. This discussion helps to clarify the logic behind the idea that administrators at these colleges share roles and responsibilities with, and sometimes actually refer to themselves as, HRD practitioners.

The Role of the Community College and Its Relationship to HRD

From their beginning in 1910, community colleges have gone through four phases of development (Cohen & Brawer, 1991):

- 1910-1930: organized extensions of secondary school districts
- 1930-1950: separate local districts
- 1950-1970: State-level coordination
- since 1970: institutional consolidation, increased State control and funding (p. 16).

The 1947 President's Commission on Higher Education opened the door to free access to at least two years of higher education for all. Since that time, community colleges have identified specific curricular functions: academic transfer to four-year institutions, vocational – technical education, continuing education (non-credit), and remedial education (Cohen & Brawer, 1991). In the more recent history, community colleges have placed emphasis on expanding access, individual mobility, inclusion of all social classes, increased federal funding for occupational education, diversity of students, and providing for community needs (Cohen & Brawer, 1991).

Birnbaum (1988) suggests that community colleges are part of a social system, and as such, they must respond to feedback loops within the social system for self-correction. Kintzer and Bryant (1998) suggest that community colleges are especially helpful in nation development and that in the near future, the popular thing might be that these colleges provide outsourced HRD for their communities. Lee and Young (2003) also visualize community colleges as society's HRD. Therefore, HRD professionals should be concerned with the success of community colleges and furthermore, should

conduct research and provide much needed feedback and insight for community college administrators. Applying HRD research to community colleges to make improvements in learning and performance has the potential to be exponentially beneficial not only for the colleges themselves and for the students they serve, but ultimately for their communities.

Watkins and Marsick (1992) call for the expansion of the role of human resource developers to one of building learning organizations, meaning the "fostering of a long term, work-related learning capacity at the individual, group, and organizational levels" and "embedding an enhanced learning capacity" into the organization (p. 116). This call supports broadening of the scope of HRD practice, although opposed by Nadler (as cited in Watkins & Marsick) and McLagan (as cited in Watkins & Marsick), among others who would limit or narrow this field of practice. Watkins and Marsick's vision for HRD "includes—but is not limited to—training, career development, and organizational development" (p. 115) all of which are included in the work of community colleges. Community colleges must assess their performance and contribution to their communities and work to become learning organizations improving the achievement and sustainability of high quality performance for themselves and the communities they serve. Researchers have already begun looking at community college performance from a national perspective. Some of the most salient research reports on this topic are discussed in the next section.

Community College Demographics

In 2005, Bailey, Jenkins et al. published a national study of postsecondary educational enrollment patterns of Spring 1992 high school graduates:

> This report summarizes statistics on access and attainment in higher education, focusing particularly on community college students, using data from the National Education Longitudinal Study of 1988 (NELS:88), which follows a nationally representative sample of individuals who were eighth graders in the Spring of 1988. (p. 8)

The researchers found that of the study participants who went on to postsecondary education by 1994, 40% first enrolled in a community college.

Recent data from the National Center for Educational Statistics (NCES) show that 50% of all undergraduates who enrolled in Title IV higher education institutions in the United States, meaning those institutions that participated in federal financial aid programs, were enrolled in community colleges:

> Title IV schools include traditional colleges and universities, 2-year institutions, and for-profit degree- and non-degree-granting institutions (such as schools of cosmetology), among others. In addition, four of the five U.S. service academies are not Title IV eligible, but are included in the IPEDS [Integrated Postsecondary Educational Database System] universe as if they were Title IV institutions. (Knapp et al., 2005, p. 1)

In a separate longitudinal study using the NCES IPEDS database, Bailey, Jenkins et al. (2005) found that

> Community colleges are unique among postsecondary institutions in that they draw relatively representative proportions of students from all race/ethnic categories, across all quartiles, and among all students by parents' level of education. Thus, community colleges, to their credit, are most representative of a cross-section of the American population. (p. 58)

Boswell (2004) presents a slightly different perspective of community colleges by pointing out potentially underserved populations within the enrollment:

> Community colleges have long been the institution of choice for older adults returning to school, students of color, and those from less affluent family backgrounds. More than 6.5 million students attend the nearly 1,200 two-year colleges, located in all 50 states. Sixty-five percent of students from families with incomes of less than $20,000 attend community colleges, compared with only 8.6 percent of students from families with incomes of more than $100,000, according to the Education Commission of the States (ECS). (p. 24)

Most researchers agree that Hispanics, as well as other minorities, are under-represented in higher education enrollment and degree attainment and over-represented in community colleges (Bailey & Alfonso, 2005; Boswell 2004; Hagedorn et al., 2002; Haro, 2004; Knapp et al., 2005; O'Brien et al., 2001; Pascarella & Terenzini, 1991).

Hispanic Educational Performance Measures

Data submission is mandatory for all two-year and four-year public and private institutions of higher education that are receiving any federal aid and is submitted on an annual cycle to the National Center for Education Statistics (NCES, n.d.) regarding specific measures of performance for both community colleges and universities. NCES houses these data submissions and makes them publicly accessible in their IPEDS Integrated Postsecondary Education Database System (IPEDS) website, which can be linked to from the NCES website. The student performance measures IPEDS collects are disaggregated by ethnicity, among other characteristics, and include attainment of degrees and certificates, retention rates (or re-enrollment from Fall-to-Fall), and transfer rates to four-year institutions. These performance measures and an additional measure of

course completion (a performance measure reported by the State of Texas) are discussed in the next section.

Attainment of Degrees and Certificates

The attainment of a degree or certificate, which is the first performance measures discussed in this section, is often the successful culmination of a college or university program of study. (It is, however, not the only successful culmination, i.e., transfer prior to completing a degree or certificate.) Bailey and Alfonso (2005) found that although the enrollment in community colleges was diverse and representative of the general population, Hispanics and African Americans were still underrepresented in higher education overall and over represented in community colleges and specifically in certificate and vocational programs. “Despite recent gains in postsecondary enrollment and degree attainment . . . when these students do earn credentials, they are more likely to be lower awards (certificates and associate degrees rather than bachelor’s degrees)” (Bailey & Alfonso, 2005, p. 58). The researchers attribute this problem to the fact that more minority students begin their education in private vocational schools and community colleges rather than four-year institutions. Bailey and Alfonso (2005) found that especially at “community colleges minority students are overrepresented in certificate programs and occupational majors” (p. 58).

Haro (2004) suggests that if community colleges are not careful, they may inhibit Hispanic student progression to bachelors’ degrees and graduate school or professional programs. Referring to the approximately 58% of Hispanic American higher education enrollment located in community colleges, he warns that the transfer rate to four-year

institutions is low and relatively unchanging. He suggests that vocational programs that promise jobs upon graduation seduce students into lowering their educational goals in order to begin working and earning money never to return to the higher education arena.

Bailey et al. (2004) more clearly describe the low attainment rates as indicated in their national study (see Table 2). They point out that one of the weaknesses in current literature is that the horrible retention and graduation rates in community colleges has seemingly gone unnoticed and appears not to have been a priority of educational researchers. The researchers highlight the fact that many community college students never finish a degree or certificate, and they fully document the "dirty laundry" of community colleges as it pertains to attainment.

> Only 36 percent of students who enrolled in a community college as their first postsecondary enrollment in the 1995-96 school year had completed (a degree or certificate) within six years . . . 22 percent were still enrolled in college . . . 42 percent . . . had left college within six years after initial enrollment without a degree or certificate. Low-income, minority, and first-generation . . . have even lower six-year completion rates. . . Those who do complete tend to earn lower level credentials. (Bailey et al., 2004, p. 1)

In 2005, Bailey, Jenkins et al. reported what we knew at that time about student academic outcomes in community college in a report called, "What We Know: Community College Low-Income and Minority Student Outcomes" using IPEDS data and other national survey data. As shown in Table 2, although the overall number of certificates awarded decreased from 1992 (822,052) to 2003 (597,576), Hispanic students continued to receive them in greater numbers, increasing by almost 25%, from 83,403 to 103,783. Table 2 also shows that the increases in the percentages of bachelor

and associate degrees being awarded to Hispanics and African Americans were much larger than the increases for all students.

Table 2. Count, Percent, and Percent Change in USA Undergraduate Degrees Awarded by Ethnicity for Academic Years 1992-1993, 1997-1998, and 2002-2003

Degree Awarded	Academic Year				
Ethnicity	1992-1993		2002-2003		
	N	%	N	%	Percent Change
Certificates					
All	822,052	100	597,576	100	-27
Af-Am	100,839	14	100,325	17	-1
Hisp	83,403	11	103,783	17	24
Asian	24,423	3	26,283	4	8
White	408,183	56	321,657	54	-21
Other	116,523	16	45,528	8	-61
Undiff	88,681				
Associate's Degrees					
All	539,361	100	604,764	100	12
Af-Am	42,956	8	65,231	11	52
Hisp	35,862	7	63,409	10	77
Asian	16,581	3	30,492	5	84
White	404,209	76	403,339	67	0
Other	34,491	6	42,293	7	23
Undiff	5,262				
Bachelor's Degrees					
All	1,189,001	100	1,313,614	100	10
Af-Am	77,357	7	111,686	9	44
Hisp	58,229	5	95,681	7	64
Asian	50,891	4	79,634	6	56
White	937,545	79	917,739	70	-2
Other	62,058	5	108,874	8	75
Undiff	2,921				

Source. Bailey et al. (2005); IPEDS Data.
Note. Undiff=degree completers for whom race/ethnicity was not indicated; Other=American Indian/Alaska Native, Native Hawaiian or Other Pacific Islander.

One other "key finding" that the Bailey, Jenkins et al. researchers found when comparing the distribution of enrollments and attainments by ethnicity was that "despite the growth in numbers of graduates from both groups, African-Americans and Hispanic graduates were still underrepresented in proportion to their representation in the college-age population overall" (p. 17). In other words, the proportion of enrolled students who were African American or Hispanic was larger than the proportion of graduates who were African American or Hispanic.

Attaining a degree can be disaggregated into smaller steps: course completion, or completing the courses required for the degree, and retention, or re-enrolling term after term until the degree is completed. In order for a student to successfully attain a degree or certificate, the student must re-enroll from term-to-term or semester-to-semester until the student completes every required course in the degree plan for the desired degree or certificate. In the next section, a discussion of student retention rates is provided.

Student Retention Rates

The second measure of student success discussed in this section and commonly measured by both community colleges and universities is student retention, meaning re-enrollment from term-to-term or semester-to-semester. Bailey, Jenkins et al. (2005) produced an explicit summary table (see Table 3) of what they refer to as student outcomes over an eight-year period. These outcomes are basically a laundry list of all the potential outcomes a student might experience after enrolling in a course. Bailey, Jenkins et al. also documented eight-year outcomes by different types of institutions as well as by race or ethnicity. For purposes of reviewing selected outcomes for community

colleges, only the community college table has been included here. The table contains graduation, transfer, and eight-year retention rates. The data included in the table indicate that only 9.5% of Hispanic students who began in a community college transferred to a four-year institution and earned a bachelor's degree. Another 11.1% did transfer but had not completed any degree within the eight-year period. Another 9.9% were still enrolled at the community college. The most distressing data indicate that 53.3% of Hispanic students had earned no degree and were no longer enrolled in any institution, surpassed by both Blacks (59.2% no longer enrolled) and American Indians (76% no longer enrolled).

Retention rates are generally calculated by educational researchers in terms of Fall-to-Fall or Fall-to-Spring, a much shorter time period than used in the Bailey, Jenkins et al. (2005) table. It is interesting to note that the eight-year rate for "No Longer Enrolled" is very close to the average Fall-to-Fall "no longer retained" rate for community colleges, which hovers around 50%. Would the similarity in these rates suggest that a researcher could predict the percent of students who after eight years will have succeeding in earning a degree or certificate, or in transferring, or by still being enrolled, simply by knowing which students re-enrolled for their second Fall term? Pascarella and Terenzini (1991) and Tinto (1993) have both found that if students persist to the second year their likelihood of graduating increases dramatically.

Table 3. Eight-Year Highest Academic Outcome of 1992 High School Graduating Class Whose First Higher Education Enrollment Was in a Community College

	Highest Academic Percentage Outcome in Eight Years					
Race/ Ethnicity	Certificate/ Associate	Transfer (No Degree)	Bachelors	Still Enrolled (First Inst.)	No Longer Enrolled (Any Inst.)	Total
White	20.7	11.7	17.2	6.2	44.1	100.0
Black	15.9	8.0	4.0	12.9	59.2	100.0
Hispanic	16.3	11.1	9.5	9.9	53.3	100.0
Asian/PI	11.1	13.7	30.2	7.0	38.0	100.0
Native American	5.4	3.3	6.0	9.3	76.0	100.0
All	19.1	11.3	15.1	7.5	47.0	100.0

Source. Bailey, Jenkins et al. (2005).

In the pursuit of educational attainment, another option to re-enrolling at the same community college is to transfer to a four-year institution. This movement by students from one institution to another is considered a positive outcome for community college students and is tracked in IPEDS and other State and institution-level performance reports. A brief discussion of this measure follows.

Transfer to Four-Year Institutions

The third important success indicator for community colleges is for their students to transfer to four-year institutions. Table 3 summarizes national data on transfer by ethnicity of students who began their post-secondary education at a community college. Although Hispanics (11.1%) transferred at about the same rate as White students (11.7%), they did not complete bachelor degrees at the same rate: Hispanics (9.5%) and Whites (17.2%). The Hispanic bachelor degree completion rate is almost half the rate of Whites, and is a disparity that needs to be addressed.

One final student performance measure that is critical and fundamental to each of the other measures is course completion. If students do not successfully complete courses, they will not transfer, nor be able to continue their re-enrollment, nor will they attain degrees. A discussion of course completion follows next.

Course Completion Rates

Although course completion rates are not collected at the national level for IPEDS, this performance measure is of high concern among educational researchers since it is one of the first short-term indicators of success along the road to graduation. Since courses are offered through different modes (meaning face-to-face classrooms, Internet, video, correspondence, etc.), the researcher inquired of the literature as to whether there were significant differences being recognized in the literature in course completion rates based on the mode or type of presentation. It is clear from the literature that completion rate comparisons between face-to-face and Internet courses is a popular and ongoing professional debate. Course enrollment and completion issues, i.e., completion rate comparisons, enrollment in different presentation types by ethnicity, etc. relevant to the current study are discussed in the following paragraphs.

Comparisons between course completion rates in face-to-face courses and distance education courses continue to be added to the literature and to the ongoing professional debate among educational researchers as to whether one modality has higher success rates than the other. Petersons (2005), an educational entity that promotes distance education, boldly states that:

> Most students who enroll in distance education courses are over 25 years old, employed, and have previous college experience. More than half are women. As a group, distance learners are highly motivated. Their course completion rate exceeds that of students enrolled in traditional, on-campus courses. The successful distance learner is by definition a committed student. The individual must have the discipline to establish a regular study schedule each week and adhere to it without having to be reminded by an instructor or classmates to meet deadlines. (p. 1)

However, other researchers would disagree with Petersons (Brady, 2001; Moore & Kearsley, 1996, as cited in Howell et al., 2004). To begin with, there are differences in methods of calculating successful course completions among researchers. For example, Diaz (2000b) calculated successful course completion as having obtained a grade of C or better in the course, while Angiello (2002) used grades of D or better. In Texas, a grade of D or better is adequate for transferring a course among institutions (THECB, 2006). However, in order to graduate, a student must have at least a 2.00 grade point average (GPA). Therefore, the student cannot graduate with a D average (1.0). Some educational researchers, like Diaz (2000b), do not consider a D to be a successful grade.

Adding to the conflict in studies regarding successful course completion is whether or not withdraws or drops should be included in the calculations. Diaz (2002) summarized the situation by stating that although it is known that students in online courses drop or withdraw at higher rates than face-to-face courses, it may not indicate a failure of instruction. In his study, Diaz (2000b) looked at exam grades, grades of C or better, and student satisfaction and found that online students tended to be "as, or more, successful than equivalent on-campus students" (p. 99). Researchers have found that some institutions drop for non-attendance or no-show in face-to-face courses, but do not drop for not-logging-in to online courses. Howell et al. (2004) refer to the dilemma as

one of comparing apples and oranges: Critics of distance education frequently assert that completion rates are lower in distance education courses than in traditional [face-to-face] courses. Such criticism comes despite sparse and inconclusive research on completion rates for distance and traditional [face-to-face] education courses" (p. 1).

> These researchers conclude that inconsistencies in the data and in the variables that would affect these different group successes, makes comparisons of face-to-face and distance education very difficult and perhaps impossible, stating that "problems include limitations in the research design itself, differences in student demographics, and inconsistent methods of calculating and reporting completion. (Howell et al., 2004, p. 1)

Howell et al. (2004) summarize the debate and the problems quite adequately:

> Studies on distance education completion, especially those targeting online learning, are relatively few, due partly to the medium's relative newness. An article in *The Chronicle of Higher Education* in 2000 reported that no national statistics exist yet about how many students complete distance programs or courses, but anecdotal evidence and studies by individual institutions suggest that course-completion and program-retention rates are generally lower in distance education courses than in their face-to-face counterparts (Brady, 2001, p. 352). Some researchers have found that distance education completion rates are low—40 to 50% at best (Moore & Kearsley, 1996). (Moore and Kearsley's figures were given before the widespread use of online distance education.) However, "not all institutions are struggling as students and professors go online for the first time," and significant variation exists among institutions, "with some reporting course-completion rates of more than 80% and others finding that fewer than 50% of distance-education students finish their courses" (Carr, 2000). In another study by Brigham (2003), 66% of distance-learning institutions have an 80% or better completion rate for their distance education courses, and 87% of institutions have 70% or better completion. Roach (2002) observed that "individual schools and organizations are reporting that their online programs have as high or higher rates of retention as their traditional classroom offerings" (p. 23). (p. 244)

Despite such conflicts, there are stimulating findings in the research that indicate needs for further study. Jackson (2001), Associate Professor and Chair of the Department of Political Science at Indiana University of Pennsylvania, cited seven risk

factors for non-completion identified by the U.S. Department of Education that undergraduates face and suggested that despite the apparent disparities in success rates between face-to-face and distance courses, the flexibility of distance learning could be used to address at least three of these factors. Of the following risk factors, Jackson stated that distance learning might aid success in numbers **4, 5,** and **7**:

1. Delayed enrollment in college
2. Being the recipient of a GED
3. Being financially independent
4. **Having children**
5. **Being a single parent**
6. Going to college part time
7. **Working full time during college.**

In Jackson's (2001) own experience, he did not find online students to be less successful than face-to-face students based on an F grade in the course. "The experience of this author, however, would indicate that distance education students are not significantly different than in-class students, with a failure (receiving a grade of F) rate of 8-10%, usually because of a failure to complete most course assignments" (p. 4). He suggests that further empirical research needs to be conducted before making assumptions about the inadequacy of distance learning and supports his argument by detailing specific case studies of students who were helped to complete their degrees with the asynchronous flexibility offered by distance education courses. He suggests that

distance learning offers access to students who otherwise would not or could not enroll in or continue their pursuit of a higher education degree.

Angiello (2002) conducted a study of successful (D or better grade) and unsuccessful (F, I, or W grade) students enrolled in a community college Bergen County, New Jersey. The focus of her study was to identify whether or not the increasing numbers of Hispanic students enrolling in their college were being as successful as the larger White population in their student body in both face-to-face and distance learning courses. Her data indicate that Hispanics and all other races were enrolling in distance learning courses at lower rates than in face-to-face courses, while the percentage of Whites in the distance-learning group was much higher than in the face-to-face group. Hispanics made up 22% of the face-to-face population but only 14% of the distance learning population. Whites accounted for 51% of face-to-face course enrollment and 61% of the distance-learning group. Angiello (2002) was not surprised by this disparity in ethnicities utilizing distance learning since it tended to be aligned with previous research indicating that Hispanic use of technology was less than that of Whites.

Continuing her research on course completion rate comparisons between the two ethnicities and the two types of presentation, Angiello (2002) compared course grades aggregated over two Fall terms and one Spring term. She found that in face-to-face courses 72% of Hispanics completed the courses successfully (course grade of D or better), while 76% of White students achieved successful completion. The percentages of students completing successfully in distance learning courses dropped for both groups, but at a much higher rate for Hispanics. Hispanic student success in online

courses was 47%, a drop of 25% from the comparative face-to-face course, while Whites were 62% successful in the online course, a drop of only 14% from the comparative face-to-face course.

Since there is an unsettled debate regarding course completion comparisons based on type of presentation, it seems apparent that in order to continue to study course completion rates at a community college (as this current study intended to do), the researcher needed to understand what the current findings are in the research in regards to distance learning and Internet courses. Therefore, a review of recent literature related to the current study and having to do with an Internet mode of presentation is discussed next.

Impact of Type of Presentation on Educational Performance Measures

In order to present research specifically related to the need for and the purpose of the present study, the scope of the review of the literature regarding distance education is limited to those studies which included Hispanic students in distance education or comparisons of success factors between distance education or face-to-face courses. The researcher searched for specific combinations of key words, i.e., Hispanic (or Latino) and distance learning (or Internet or online courses); or Hispanic (or Latino) and college course completion, etc. Other extensive literature pertaining to distance education is available and was reviewed by the researcher, but since it is not applicable to the research questions for this study, it has been excluded. A discussion of relevant variables of interest and other findings are discussed.

In 2003, the American Council on Education produced a six-part series of research reports referred to as the EDUCAUSE Series. In this overview of distributed or distance learning, the researchers boldly refer to existing studies to support the potential quality of distributed learning citing Truman-Davis, Futch, Thompson, and Yonekura, (2000), Virginia Tech's Math Emporium (1999), and Chaffee (2001). In a list of implications for learning environments that have come about since the development of the Internet and its integration into educational environments, the authors state that "There is a growing body of evidence that, owing to the ability to create customized learning environments on the web, distributed education is *more effective* [italics added] than the classroom lecture and the traditional relationship between student and faculty member" (American Council on Education, 2003, p. 6).

Along with increasingly rapid developments in information technology, as mentioned previously an instructional debate has captured the attention of educational researchers regarding which teaching modalities are more effective. This research debate arena has largely been centered on identifying differences in student success rates and even more specifically, course completion rates, between face-to-face or traditional style courses and distance learning courses. The research appears to have gone through at least two phases, the first of which was to identify the demographics of face-to-face populations versus distance learning populations. Very few, if any, of these populations included Hispanic-entering freshmen enrolled in a community college. Among the initial variables of interest researchers found as indicated in the literature are gender, age, ethnicity, employment status, full-time status, computer ownership and knowledge, to

name just a few. The second phase appeared to have shifted to an investigation of the internal or motivational factors, i.e., locus of control, or other factors external to the student i.e., technology or teaching methods.

Phase one researchers of student demographics of distance learners appear to be in agreement on several typical characteristics that are common across higher educational institutions. Gibson (1998) states that:

> There is no evidence to indicate that distance students should be regarded as a homogenous group (Holmberg, 1995); however, many distance students do share broad demographic and situational similarities that have often provided the basis for profiles of the typical distance learner in higher education. (p. 10)

Gibson (1998) summarizes the most common demographics identified by distance learning researchers from the literature over the past 10 years citing Hezel and Dirr (1991), Dille and Mezack (1991), Pugliese (1994), Holmberg (1995), Gibson and Graff (1992), Robinson (1991) and Franks (1996). The typical distance learner of this summarization would be someone between the ages of 25-35 and older than the face-to-face student, female, possibly from a disadvantaged socio-economic group, and most likely married and working full-time. Gibson (1998) narrows these characteristics (see Table 4) to a "widely accepted view of the distance learner as one who is (1) older than the typical undergraduate, (2) female, (3) likely to be employed full time, and (4) married" (p. 13). The Gibson researchers noted that overall the studies did not include reliable data regarding ethnicity since they were not often compared to face-to-face populations, nor were the data on students with disabilities reliable since they were frequently not reported.

Table 4. Summary of Research-Based Known Demographics of Distance Education Populations Based on Findings in the Literature From 1991 to 1998

	Researcher(s)				
Demographic	Hezel & Dirr (1991)	Dille & Mezack (1991)	Gibson & Graff (1992)	Robinson (1992)	Other Cited Studies
Age	36 (median)	27 (mean)	25-45	31-46	19+, 25-35, Older than face-to-face student
Gender	61% Female	60% Female	71.5% Female	77.9% Female	60-78% Female
Marital Status				58.5% Married	51-75% Married
Full-Time Employment			75.80%	62.20%	57-90%

Source. Gibson (1998).

Diaz (2002) added a few more variables to the list. He found that:

> Demographic differences between online and traditional [face-to-face] students have been duly noted. Online students are generally older, have completed more college credit hours and more degree programs, and have a higher all-college prior GPA than their traditional [face-to-face] counterparts (Diaz, 2000a; Gibson & Graff, 1992; Thompson, 1998). (p. 1)

Referring to his 2000 dissertation study of 231 health education students, Diaz (2002) found that not only were the distance education students older but because they had lived longer they also had more academic experience than their traditional [face-to-face] counterparts. Diaz noted that these were "attributes that made the student well suited to the independent, self-directed study associated with distance education" (p. 1). His successful distance students also tended to have a "higher average GPA prior to enrollment in the online course (avg. GPA = 3.02) than unsuccessful students (avg. GPA = 2.25)" (p. 1).

Regarding a second phase of distance education research, it appears that complexities in previous research design, and perhaps frustration with the inability to convincingly document significant findings when comparing different demographic groups of students in distance education, have persuaded more recent researchers to move on and to focus more on the success of the distance learner as an individual rather then in groups based on demographic profiles. Howell et al. (2004) highlighted the fact that the existing literature in 2004 was "sparse and inconclusive research on completion rates for distance and traditional [face-to-face] education courses" (p. 243) and there has not been much to change that finding as of 2007. The researchers point out that there are many different variables that might explain the differences between the performances of traditional [face-to-face] students and distance learning students and many of these variables are not typically accounted for in existing empirical research on the topic. Howell et al. (2004) states problems in the research are due to "limitations in the research design itself, differences in student demographics, and inconsistent methods of calculating and reporting completion" (p. 243).

McLaren (2004) found that although there were differences in persistence rates between online and classroom students, performance in the course as indicated by the course grade was independent of the teaching modality. She found three reasons given by students for enrolling in an online course: (a) truly distant from the campus, (b) work schedule did not permit attendance at a campus, and (c) face-to-face student who could not get the desired face-to-face course. She rejected her persistence hypothesis, "The persistence behavior (dropped, completed, or vanished) . . . is independent of the mode

of instruction (classroom or online)," while confirming her performance hypothesis, "The performance, as measured by final letter grade . . . of students who actively complete the course is independent of the mode of instruction (classroom or online)" (p. 5).

In this performance hypothesis the researcher also encountered one of the problems addressed by Howell et al. (2004) related to accounting for online students who have no online activity but fail to drop the course thereby receiving an "F" course grade. McLaren (2004) chose to exclude those students from the grade distribution used in her performance measure. Her data reveal that in only one of the five semesters included in her study did this effect involve both online and classroom students. In all of the other four semesters, only online students fell into this category of vanishing from the course without dropping and therefore receiving an 'F' for the course. This study was relatively small with 291 students over the five terms of study, but for institutional studies of thousands of students, the differences in the way these students are included or excluded from grade distributions could greatly skew the study findings. Perhaps in face-to-face instruction, it is easier to determine class attendance and participation than in an online course where the student has greater flexibility in when he or she will work on the course.

Lindner, Dooley, and Kelsey (2002) conducted a qualitative study focusing on student and faculty interaction within the distance learning setting and in relationship to student retention. They interviewed students participating in distance learning cohort groups of at least three persons. The cohorts were intended to create more interaction

opportunities for students and faculty. Citing Kochery (1997), Lindner et al. (2002) believed that distance students feel isolated and cohorts could provide the potential for more interaction with other students and faculty. Based on findings from other studies as well (i.e., Boyle & Boice, 1998; Dorn & Papalewis, 1997, as cited in Lindner et al., 2002), these researchers were not surprised when their student participants indicated that the cohort group encouraged them to stay in the course. However, the study also indicated that students did not feel a sense of competitiveness within the group that one would expect in a typical classroom. Lindner et al. (2002) concluded that "student autonomy should be examined in future studies [since]. . . it appears that the cohort group concept, while proving to be a great comfort to students, may be inhibiting student autonomy within the program" (p. 10).

Diaz (2000a) suggests:

> Educational researchers, in order to help determine the future of distance education, should focus on student success rather than on teaching modalities. Studies that focus on comparing student characteristics, evaluating overall student success, and profiling successful (and non-successful) students might better help us attain that which we all seek: more successful students. Research questions should change from 'Which method is better?' to 'What student characteristics facilitate success within a particular modality?' and 'Can certain characteristics be altered to improve student success?' (p. 3)

Sankaran, Sankaran, and Bui (2000) researched students' need for interaction with the instructors and was surprised to find that students who may be good readers of English but not proficient in speaking the language tended to prefer distance education over the traditional classroom.

> A more compelling observation in this study is that ESL students in the Web format had an average of 4 years of residency in the U.S. as compared to 7 years in the lecture format. One would have expected that students who are recent

> immigrants would attend the lecture format in order to have more opportunities to interact with the instructor. An explanation could be that these students had better reading skills and were hesitant to be in the interactive lecture environment due to language and cultural barriers. They might have felt more comfortable to study by themselves in the Web format. This finding is contrary to the conclusion in Chizhik (1998) that ESL students prefer face-to-face interaction to seek contextual and non-verbal cues. This is an area for future research. (p. 70)

Parker (1999) conducted research at Maricopa Community College District, which at that time had an enrollment of over 100,000, 21% of which was in Distance Learning courses.

> Persistence in distance education is a complex phenomenon influenced by a multitude of variables. Gender, age, locus of control, grade-point average and mode of delivery are only a few that have appeared in recent literature (Altmann & Armbasich, 1982; Cooper, 1990; Fields and Lemay, 1989). The studies have, however, generally focused on a single variable or a limited combination of variables. Both qualitative and quantitative research is needed in order to combine a wide variety of variables to determine the extent to which the variables can predict dropout in distance education. This study will present research done using locus of control, gender, number of distance education courses completed, age, financial assistance, and number of hours employed as predictive variables for dropout from distance education courses. (p. 2)

In the Parker (1999) study:

> Ninety-four students . . . were the sample for this study. . . . the students completed two instruments: The Rotter's Internal-External Locus of Control Scale and A Student Information Sheet. A correlation and discriminant analysis . . . to identify predictors of dropout . . . determined that locus of control and source of financial assistance, and in particular self-pay, were able to predict dropout with nearly 85 percent accuracy. (p. 1)

> A correlational analysis using the independent variables and the status of completion indicated that only one variable was significantly correlated with attrition. . . . the score on the Rotter's Locus of Control Scale (Rotter, 1966). The correlation between the locus of control score and course completion was the strongest (r=.5907) of all variables combinations studied. (p. 6)

Summary of Findings From the Literature

The review of the literature within our framework of boundaries for the scope and depth of topics yielded a structure of key findings which are listed in Table 5. The framework demonstrates the relationships between the topics of review. An anlysis of the findings led to the methodology and population for the current study that was conducted at South Texas College. It included a study of human resource development of Hispanic students in a large hispanic-majority, community college in south Texas in which student entry characteristics were found to be predictors of successful course completion and retention in face-to-face and distance education modalities.

Table 5. Summary and Framework of Key Findings From the Review of the Literature

Topic of Review	Key Findings
Economic Need for Human Resource Development	• National (USA) HRD plays a key role in the development of societies. • Hispanic educational attainment is critical to the economy – nationally and in Texas. • Hispanic is the fastest growing ethnicity in the U.S. Economic need for Hispanic educational attainment with unknowns about Hispanic participation and success in Internet courses creates a situation of need for more research.
Hispanic Access to Higher Education: Comminity College	• Community colleges are the primary community arena for human resource development. • The majority of Hispanics in higher education are found in community colleges. • Community college courses are offered via at least two different types of presentations: face-to-face and Internet, with enrollment in Internet courses growing at a rapid rate.
Hipanic Student Success in Community Colleges	• Determining whether one *type of presentation*, i.e., face-to-face, is more effective than another regarding course completion is an ongoing professional debate due to inconsistent findings as reported in the literature. • Community colleges need to improve their Hispanic educational performance measures in order to improve degree and certificate attainment: retention, course completion, transfer. • Research regarding course completion by Hispanics in Internet courses is minimal and inconclusive as to participation and success rates.

In summary, these findings regarding Hispanic student performance in community colleges are not unlike those of other national reports being issued to the American public, and indicate the need for further research. More research is needed and is currently being funded by organizations such as the Lumina Foundation. Achieving the Dream (2005) is a national initiative for transformational improvements.

> Achieving the Dream is a multiyear national initiative to help more community college students succeed. The initiative is particularly concerned about student groups that traditionally have faced the most significant barriers to success, including low-income students and students of color. Achieving the Dream emphasizes the use of data to drive change and focuses on measurable outcomes, especially closing achievement gaps. (p. 2)

Achieving the Dream found and published a list of the typical community college student characteristics and barriers. Some of the typical characteristics of a community college student found in their reports were:

- 85% work in addition to taking classes
- 66% attend part-time
- 54% work full-time in addition to taking classes
- 45% of those seeking an associate degree or higher, earn an associate's or bachelor's or transfer to a four-year institution within six years
- 41% of students who earn a certificate earn a degree or transfer to a four-year institution within six years
- 41% are first generation college students (neither parent completed a degree)
- 33% are parents
- 29% have household incomes less than $20,000

- 20-30% is the difference in earnings of people who hold an associate degree as compared to those who hold only high school diploma

The Achieving the Dream (2005) data have highlighted the need for further research in community colleges and specifically among Hispanics enrolled in community colleges. The current study was designed to address the need for more knowledge on Hispanic student success in community college courses. More specifically, its purpose was to discover at what might hinder or contribute to Hispanic student success (retention and completion) at South Texas College, whether or not Hispanics enroll in distance courses in the College, or whether or not there are differences in Hispanic student success at this College dependent on the mode of instruction (distance learning or face-to-face). The researcher sought to better understand which Hispanic students at South Texas College were utilizing distance education and to try to identify student entry characteristics related to their success or lack thereof. The research questions and methodology are discussed in the following chapter.

CHAPTER III

METHODOLOGY

It is the purpose of this chapter to outline the rationale for the methodological design of this study. To this end, the chapter is structured around the following five components: (a) the research questions and the theoretical context surrounding them, (b) a brief discussion of the appropriateness of the selected methodology including discussion of Ott and Longnecker's (2001) methodology for predicting binary outcomes using logistic regression (c) a detailed description of the population for the study including the origin and nature of the data used to answer the research questions, (d) a discussion of the data collection and analysis, and (e) an overview of the statistical analysis procedures used in the study.

Research Questions and Theoretical Context

The purpose of this study was to discover what might hinder or contribute to Hispanic student success (retention and completion) at South Texas College, to confirm whether or not Hispanics enroll in distance courses at the College, and whether or not there are differences in Hispanic student success at this College dependent on the mode of instruction (distance learning or face-to-face). In the pursuit of understanding student retention in non-residential or commuter colleges, the Braxton et al. (2004) researchers found that students entering college carry with them a set of student entry characteristics that may indicate the likelihood that the students will re-enroll semester after semester (i.e., student retention). Once enrolled, the students begin to make other choices that may impact the likelihood of success, i.e., mode of instruction, course selection. This study

was designed to allow the researcher to better understand which Hispanic students at South Texas College were utilizing distance education and to try to identify and examine student entry characteristics related to their success or lack thereof and to determine whether any of them can predict course completion and Fall-to-Fall retention.

Since students do choose different modes of instruction that may be indicative of subgroups or strata within the study population, the students self-selected into three groups of Hispanic students named and defined by the researcher as: (a) Nets or students enrolled only in distance education courses, (b) Faces or students enrolled only in face-to-face courses, and (c) Mixed or students enrolled in both distance education courses and face-to-face courses. These groups are referred to as type of student and indicate the student's overall choice of instructional mode during a specific semester. The student entry characteristics of these three groups of students were identified, described, and compared in Chapter IV.

In addition to an overall choice of instructional mode, the students chose the mode or type of presentation for each selected course: face-to-face or Internet. This chosen type of presentation was also included as an independent variable that could impact the outcome of the course. In other words, some students may be more successful in one mode compared to the other, so the mode was listed as a variable for each student per course.

This study was designed to determine whether or not any of the student entry characteristics or other factors in the students' external environment might be considered predictors of high risk for failing to complete courses or failing to re-enroll or not be

retained the following term. Historical data from the institutional student records system and historical student survey data were obtained and analyzed for comparison to similar findings in the literature. Logistic regression was used to identify predictors of Hispanic student success within the institution of study among the independent variables for the three groups.

The research questions were as follows:

1. What are the Hispanic student entry characteristics of entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempt History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College?
2. Are there differences between the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College? And if so, what are these differences?
3. To what extent can successful course completion of the Hispanic students' first attempt at History, English Composition, or College Algebra taken via face-to-face or distance education be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?
4. To what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry

characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?

Appropriateness of Selected Methodology

Smith (1999) informed us of three critical assumptions or foundations for empirical or positive research that distinguish it from qualitative or interpretive research. Understanding the differences in the two research paradigms was important for designing this study. The first assumption is that of the relationship of the researcher to the subjects being studied. In empirical research, the researcher disassociates himself from the subject of study. That is, he makes every attempt to study the subjects as independent and separate from himself, to remove biases and opinions, and to view the objects of interest as realities that existed before he decided to study them. Since the current study was based on pre-existing empirical data with no student identifiers used in the examination, this critical assumption was met by the researcher.

The second foundational assumption of empirical studies is that the findings are considered to be facts that exist independent of the researcher and can be replicated by any other researcher conducting a study under the same circumstances. The facts are considered to be stand-alone realities that are independent and separate from the researcher. The data used in the current study are commonly used within the South Texas College Office of Institutional Research. It is the opinion of the current researcher that this second foundational assumption has been met since the findings of the current

study would be replicated by any other researcher conducting a study under the same circumstances.

The third critical assumption of empirical or positivistic research is the goal or aim of the study. Researchers in this arena intend to identify facts or realities that will lead to scientific laws in the social sciences, just as physical scientists have discovered in the physical realm (i.e., the law of gravity). These laws would provide the capability to predict social, or more specifically in this case, educational outcomes. That is, if a researcher finds through replicated studies that if A occurs then B occurs, then he can safely predict through statistical procedures the estimated probability that if A occurs, then B will also occur. The goal or purpose of the current study was to discover what might hinder or contribute to Hispanic student success (retention and completion) at South Texas College, to know whether or not Hispanics enroll in distance courses at the College, and whether or not there are differences in Hispanic student success at this College dependent on the mode of instruction (distance learning or face-to-face). The researcher sought to better understand which Hispanic students at South Texas College were utilizing distance education, to identify student entry characteristics related to their success or lack thereof, and to predict through statistical procedures the estimated probability that a student would successfully complete or re-enroll.

Empirical researchers use a variety of methods or approaches to research. Each of these methods assumes the critical assumptions or foundations mentioned above. The two approaches used in this study are descriptive survey research and predictive studies as indicated by these statistical experts: Gall, Gall, and Borg (2003), McMillan and

Schumacher (2001), and Ott and Longnecker (2001). Descriptive survey research is generally a type of empirical research that uses interviews or as in this case, a survey instrument to collect descriptive data about a specific population, (i.e., age, gender, ethnicity, educational attainment). In the current study, the descriptive data were pre-existing as they are continuously collected for enrollment, registration, and reporting purposes at South Texas College. An effort was made to obtain the collected data from 100% of the population being studied. Descriptive analysis procedures (i.e., frequency counts, general tendencies, means) were appropriately used to answer some of the research questions and to describe the population of study to the reader.

An ex-post-facto, or causal-comparative study, as it is often called, is common in educational research as well as any type of research that proposes risk or unethical behavior. Frequently, educators believe that it is unethical to deny services and programs to students even if for research purposes. Therefore, a common method of study is to use existing data available to the research to conduct the ex-post-facto (after the fact) or causal-comparative studies that will give indications of causation for certain phenomena. A causal-comparative study would include comparisons of two groups on some dependent variable as would be similar in an experimental design where one group receives the treatment and the other group does not. This type of research does not produce true causal outcomes but provides indications of where to begin should it be possible to design a true experimental study. In the current study, in addition to the descriptive research analyses mentioned previously, further causal-comparative analyses were conducted between the three comparative groups: those utilizing distance education

(Nets group) to those not using it (Faces group), or those using it in conjunction with face-to-face courses (Mixed group), in regards to the descriptive data.

The second empirical research approach most appropriate to the research questions in this study was prediction studies. Prediction studies are used by researchers to try to predict in advance an individual's performance in a particular activity or situation. That is, data from a particular population in a particular set of circumstances can be analyzed ahead of time to predict how an individual will perform in the future if the individual finds himself in a similar set of circumstances. For example, a researcher can predict that if certain factors are found to be true of particular students, they will most likely not be retained in a course of study. Prediction studies are based on statistical probability and with the use of strict statistical controls can maintain high levels of accuracy in the predictions (i.e., $p>.001$ = greater than 99% chance of accurate prediction). The researcher searches for certain factors among the population that will indicate success or failure in a particular situation. Generally, a dichotomous dependent variable is used for prediction (success or failure, pass or fail, enrolled or not enrolled, etc.). Logistic regression models as utilized in the current study also allowed for indications and predictions of which of the independent variables had more impact on the dependent variable than the others.

The current study was designed to use logistic regression to determine whether any of several independent variables could be considered predictors of the outcome of a dichotomous dependent variable. The Student Supplemental Information Form (Appendix A) collected with the student's application for admissions provides nearly 20

characteristics about new students in addition to those collected on the Student Application for Admission Form that may have been useful in determining the likelihood of success in these different types of instruction. The study provided the opportunity to investigate characteristics known about an entering student that held valuable information regarding the potential for the student to succeed. The student entry characteristics analyzed in this study were: intended length of enrollment, reason for attending, gender, age, intent to transfer, hours of employment, intent to continue employment, number of credit hours, participation in workforce programs in high school, veteran status, marital status, country of elementary education, resident status, English as a second language, recent migrant work, parents' education, income level indicators, custody of minors, disabilities, high school GPA, and high school diploma type. Other historical course data from the institutional student records system and these student survey data were analyzed and logistic regression was used to identify predictors of Hispanic student success among the independent variables.

In summary and in answer to the specific research questions for this study, appropriate methodologies as indicated by Gall et al. (2003), McMillan and Schumacher (2001), and Ott and Longnecker (2001) included both descriptive statistics and predictive statistical analyses. Descriptive statistics were used to identify the student entry characteristics of the groups of students being studied utilizing the chi-square procedure to conduct hypothesis tests to identify any significant differences between the characteristics of the study groups. Prediction studies were conducted that provided potentially useful information for student advisors to better guide students with a risk of

failure in a particular instructional mode and to refer the student to a specific student service that would support or strengthen the students likelihood of succeeding. More specifically, logistic regression was the empirical tool that was used and which is common in educational research to predict the potential for student success based on a variety of specific known variables that have been identified in previous research.

Ott and Longnecker (2001) provided a similar predictive example from the banking industry in which a banker could use logistic regression to identify the characteristics of customers who might potentially default on a loan. “Educational research has generated a large body of predictive knowledge about factors that predict various outcomes that have social importance (e.g., academic success, career success, criminal conduct)” (Gall et al., 2003, p. 4). These educational researchers pointed out obvious reasons for conducting this type of research from improving the selection of students who are likely to be successful in specific educational settings to creating interventions for at-risk students who have been identified as such by using the significant impacting factors identified by such research. Established principles for conducting these statistical analyses were followed as described previously, i.e., data considerations and qualifying data assumptions required for specific statistical analyses. As indicated in Table 6, to answer the first two research questions, descriptive statistics were conducted and reported. To answer Research Questions 3 and 4 the researcher conducted logistic regression procedures using variables identified in the literature as being related to college student success (see subsection: Data Collection and Analysis)

and that were available in existing institutional data, to identify any that might serve as predictors of successful course completion and retention in the subsequent term.

Table 6. Research Questions With Statistical Analyses and Rationale for Selecting Corresponding Statistical Procedure

Research Questions	Statistical Analyses	Rationale for Statistic Selection
1. What are the Hispanic student entry characteristics of entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempt History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College?	Frequency Counts	Descriptive statistical count
2. Are there differences between the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College? And if so, what are these differences?	Chi-Square Statistic	Descriptive statistical test for independence of groups and variables (characteristics) and can be used with most types of data
3. To what extent can successful course completion of the Hispanic students' first attempt at History, English Composition, or College Algebra taken via face-to-face or distance education be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?	Logistic Regression	Dichotomous dependent variable; useful for producing "predictive knowledge about factors that predict various outcomes" (Gall et al., 2003, p. 4); can be used with nominal or interval level independent variable data
4. To what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?	Logistic Regression	Dichotomous dependent variable; useful for producing "predictive knowledge about factors that predict various outcomes" (Gall et al., 2003, p. 4); can be used with nominal or interval level independent variable data

Population

According to the Braxton et al. (2004) theoretical model of student retention, students who enter or enroll in college for the first time carry with them a set of student

entry characteristics that may indicate the likelihood that the students will re-enroll semester after semester (i.e., student retention). These student entry characteristics are frequently common descriptive demographics that are collected on applications for enrollment and other student information forms at many colleges and universities. At South Texas College, these descriptive characteristics are collected using the Application for Admissions Form and a Student Supplemental Information Form (see Appendix A), and the College makes every effort to collect this information from 100% of the entering student population. As mentioned earlier, having access to this data for 100% of the population is desirable for descriptive studies. Once enrolled, the students begin to make other choices that may impact the likelihood of success, i.e., mode of instruction, course selection.

In order to align the study with the Braxton model and to control for subsequent choices students make after enrolling, it was determined that the most appropriate population for this study would include all Hispanic-entering freshmen students enrolled any time between Fall 2000 and Fall 2005 and who attempted or enrolled in one of three selected core curriculum courses for the first time: History (reading), English Composition (writing), or College Algebra (Math). These three courses were selected to represent the three foundational areas of the core curriculum that a typical American college student needs to master. Utilizing these three core courses will provide the context for the study with descriptive information that will be similar, although not identical, to contexts in other institutions. Since this is a case study of a particular population and therefore is not generalizable to other populations, it has provided

descriptive information that may be used to stimulate questions to begin to understand similar situations among other populations. The findings of this research would be similar to findings in qualitative research in that way.

The total number of Hispanic students included in the population for this study is 2,523. Although South Texas College has attempted to collect the Student Supplemental Information data from all entering students, the data elements are not required by law, and therefore, many students opt not to complete the form. Of a total of 17,482 Hispanic students meeting the first two criteria listed above, only slightly more than 14% (2523) completed the Student Supplemental Information form (see Appendix A). Historically, the form was given to the student at the time of course registration. However, a recent strategy to include the form as a perforated attachment to the Application for Admissions appears to have impacted the response rate obtained increasing it up to 39% in the 2006 Academic Year.

It was observed that many students had submitted the Student Supplemental Form multiple times over the time period included in the study: Fall 2000 through Fall 2005. However, each date of submission of the form was indicated in a time stamp included in the electronic data. In order to describe the students at the point of entry, the researcher decided to use the earliest submission of the form. It was notable that subsequent submissions frequently indicated changes in the student's purpose for attending and intended length of enrollment, and sometimes the educational level of their parents. Although it was exciting and interesting to see this progression and would provide for a great longitudinal study, it was not the purpose of the current study, and

therefore, the subsequent duplicated submissions of data were eliminated from the dataset.

In order to answer the research questions, the population was divided into three groups based on their choice of type of presentation, i.e., all face-to-face, all Internet, or mixed, for all the courses in which the student was enrolled during the first term in which they attempted the selected course, English, History, or Math. In other words, if when the student enrolled for the first time in English and the student also enrolled in other courses, an investigation was made into the student's choice of type of presentation for each course for that particular term. If the student took only traditional face-to-face courses, he was included in the Faces group. If the student took only Internet courses, he was included in the Nets group. In addition, if the student took a mixture of courses, some face-to-face and some Internet, he was included in the Mixed group. The total count in each group was: Faces – 2,241 (88.8%); Nets – 35 (1.4%); Mixed – 247 (9.8%) for a sum of 2,523 (100%) students included in the study.

Utilizing independent variables available to the researcher, the population for the study was reduced further into homogeneous groups to eliminate known differences identified in the literature between student groups in the study population. The study participants were divided into three groups based on the types of courses they had enrolled in during the semester in which they enrolled in the selected course. Descriptive names were assigned to the groups which are referred to as the type of student and are based on the following: (a) Faces: enrolled in face-to-face courses only, (b) Nets:

enrolled in distance education courses only, and (c) Mixed: enrolled in face-to-face and distance education courses.

Three types of courses were studied: English, History, and Math. Each of these courses offered sections via face-to-face and Internet, the selection of which is referred to as type of presentation. The distribution of the three groups of students in their chosen sections of these courses can be seen in Table 7. The students may have taken more than one of these courses and if so, they were counted once for each course. In other words, some students were counted more than once across the three courses, but only once in each course. For this reason, in Table 7 the total column sums to 3,634 duplicated students included in the study. Since we know that the unduplicated count of students is 2,523, this means that 1,111 are duplicate, or triplicate (since there are three different courses) counts of students who took two or three of the selected courses. Only the student's first attempt at any of the three course types is included in the study.

Table 7. Study Population Counts by Type of Course, Type of Presentation, and Type of Student

		Type of Student				
		1 Faces Type of Presentation	2 Nets Type of Presentation	3 Mixed Type of Presentation		Total Enrolled
		0 Face-to-Face	1 Internet	0 Face-to-Face	1 Internet	Students
Type of Course	0 English	1510	21	98	69	1698
	1 History	1005	21	74	63	1163
	2 Math	664	15	78	16	773
Total		3179	57	250	148	3634

Note. During the semester in which the student first attempted the Type of Course (English, History, or Math) the student's selection of modality or Type of Presentation for all their courses that semester determined whether the student was coded as Faces (all courses face-to-face), Nets (all courses Internet), or Mixed (during same semester student was taking both face-to-face courses AND Internet courses).

Data Collection and Analysis

The data used in this study had already been collected (ex post facto) by the Office of Institutional Research & Effectiveness of South Texas College. Both historical student record data and data from the Student Supplemental Information Form were analyzed in this study (see Appendix A). The survey instruments used to collect this data had been revised and refined over the past 10 years to provide for consistency and comprehensiveness of data required for use in federal and state reports. The data have been utilized by the Office of Institutional Research for a multitude of studies and have been found to be fairly consistent, although as with most self-reported data, it sometimes tends to be different than system data. For example, students may indicate a *perceived* grade point average (GPA) that is different than their actual GPA.

Student identifying information was not necessary to the study after matching the Student Supplemental Information Form data to Application for Admissions Form and/or system data and was not included in any of the analyses. All the data were protected according to the principles of human subject research and individual rights of privacy. The data are reported in aggregate only and, therefore, do not reveal the identity of any student.

Previous findings related to student retention and course completion in higher education, although not specific to Hispanics, indicated a number of variables or characteristics that were related to students choosing to pursue their coursework via the Internet. Student entry characteristics identified in the literature related to course completion and retention in distance education courses as well as traditional face-to-face

courses were identified as important factors to this study and, therefore, were retrieved from the student record and survey data for the study population. The criteria for selecting the variables were the seven risk factors identified by the U.S. Department of Education that were related to non-completion in college, not necessarily of distance education courses (Jackson, 2001):

1. Delayed enrollment in college
2. Being the recipient of a GED
3. Being financially independent
4. Having children
5. Being a single parent
6. Going to college part time
7. Working full time during college.

Other variables were identified based on current research indicating that gender, age, ethnicity, computer ownership and knowledge, number of college hours completed, number of distance education courses completed, financial assistance, and GPA are related to success or predictors of dropout in distance education courses (Diaz, 2000a; Gibson & Graff, 1992; Parker, 1999). South Texas College had collected each of these variables on the Application for Admission Form and an additional Student Supplemental Information Form (see Appendix A), so the researcher was able to include these data in the analyses. Table 8 indicates each of the variables included in the study. It indicates what type of variable each one is whether, dependent, independent, and explanatory variables as well as an indication of the type of data for each variable

whether nominal, ordinal, or interval data. The two dependent variables for the study have an indicator there that they are both dichotomous variables that are required for the logistic regression procedures.

Table 8. Descriptions of Dependent, Explanatory, and Independent Variables: Name, Type, and Measure

Variable Name	Type	Measure
completion	Dependent	Nominal Dichotomous
retention	Dependent	Nominal Dichotomous
type of course (calculated)	Explanatory	Nominal
type of presentation (calculated)	Explanatory	Nominal
type of student (calculated)	Explanatory	Nominal
age	Independent	Scale
country of elementary education	Independent	Nominal
custody of minors	Independent	Ordinal
disabilities	Independent	Nominal
English as a second language	Independent	Nominal
gender	Independent	Nominal
high school diploma type*	Independent	Ordinal
high school GPA	Independent	Scale
hours of employment	Independent	Ordinal
income level indicators	Independent	Nominal
intent to continue employment	Independent	Nominal
intent to transfer	Independent	Nominal
intended length of enrollment	Independent	Ordinal
marital status	Independent	Nominal
number of credit hours	Independent	Ordinal
parents education	Independent	Ordinal
participation in workforce programs in high school	Independent	Nominal
reason for attending	Independent	Nominal
recent migrant work	Independent	Nominal
resident status	Independent	Nominal
veteran status	Independent	Nominal

Note. Explanatory variables were calculated based on student choices and were labeled: Type of Student, Type of Course and Type of Presentation.
*High school diploma types include the GED (general education development), and the common diploma types found in Texas public schools: minimum/regular (not for college preparation), recommended (college preparation), advanced/distinguished.

Procedures

To complete this methodology chapter, the researcher provided an overview of the statistical analysis procedures she used to conduct this study. The researcher utilized

descriptive statistics procedures (i.e., frequencies, means, percentages) to present a profile based on related independent variables found in the literature for three groups of Hispanic students: (a) students taking only traditional face-to-face courses, (b) students taking only distance education courses, and (c) students taking both. In addition, further analyses using chi-square and analysis of variance procedures were utilized to compare groups regarding specific descriptive demographics or course choices. These descriptive methods were used to answer Research Questions 1 and 2. For Research Questions 3 and 4, logistic regression procedures were used to identify independent variables or combinations of independent variables that were predictors of course completion or retention of students in the three groups. Analyses and interpretations of the data for these procedures followed the principles outlined in *Research in Education: A Conceptual Introduction* (McMillan & Schumacher, 2001) and *An Introduction to Statistical Methods and Data Analysis* (Ott & Longnecker, 2001) and are discussed further in Chapter IV. Results of the study are reported in Chapters IV and V using charts and graphs as well as a narrative report.

CHAPTER IV

ANALYSES OF DATA

Research Questions

Given the purpose of the current study, namely, to address the problem regarding the use of and investment in distance education (an expansion of historical access to higher education via face-to-face classrooms) as a strategy to provide expanded access to higher education for Hispanic students at South Texas College, and also, to discover what might hinder or contribute to Hispanic student success (retention and completion), to know whether or not Hispanics enroll in distance courses, or whether or not there are differences in Hispanic student success dependent on the mode of instruction (distance learning or face-to-face), the researcher attempted to answer the following research questions in this study:

1. What are the Hispanic student entry characteristics of entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempt History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College?
2. Are there differences between the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College? And if so, what are these differences?
3. To what extent can successful course completion of the Hispanic students' first attempt at History, English Composition, or College Algebra taken via

face-to-face or distance education be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?

4. To what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?

Descriptive statistics were utilized to answer Research Questions 1 and 2 including chi-square analyses to indicate significant differences in student entry characteristics between groups within the study population. Having dichotomous dependent variables in Research Questions 3 and 4, these questions were analyzed using logistic regression with the dichotomous variables being successful course completion and retention. Independent variables or student entry characteristics analyzed in the study included some continuous and some categorical variables. The iterative process utilized to determine how well the values of the independent variables predicted the outcome of one of the dependent variables was the maximum likelihood estimation. The determination of odds ratios indicated the odds of the independent variable values belonging to one or the other of the dichotomous values of the dependent variables.

Descriptive Statistics

The first research question asks for a description of student entry characteristics of students who take face-to-face courses and those who take Internet courses. These two categories of students are slightly different than the type of student groups or categories, since both Faces and Mixed take face-to-face courses and both Nets and Mixed take Internet courses. Frequency counts for the student entry characteristics split into the two categories indicate some differences in the two groups in the following variables:

- English as a Second Language – Students who indicated that English was their second language were less likely to enroll in Internet courses.
- Gender – Females were more likely to enroll in Internet courses than were males.
- Hours of Employment – Internet students were more likely to be working more hours.
- Intent to Transfer – More Internet students intended to transfer than face-to-face students (primarily from the Mixed group rather than the Nets).
- Length of Intended Enrollment – Internet students did not intend to be enrolled as long as the face-to-face students.
- Marital Status – Internet students were more likely to be married.
- Number of Credit Hours – Internet students were taking fewer hours than face-to-face students.

- Recent Migrant Work – Fewer Internet students had experienced recent migrant work.

The second research question refers more to the type of student groups and can be stated briefly as, "Are there any significant differences in student entry characteristics between the three type of student groups (Faces, Nets, Mixed)?" The data for each of the student entry characteristics were tabulated first to create a profile or description of the characteristics for each type of student group. Second, the researcher identified statistically significant differences between the groups using hypothesis testing cross-tabulation procedures (Research Question 2). In other words, each student entry characteristic was compared or tested across the three type-of-student groups to see if there was any real or statistical difference between the groups for that particular characteristic.

In this statistical procedure, the null hypothesis being tested for each student entry characteristic is H_o:P_F=P_N=P_M, where P_F, F_N, and P_M are the proportions of each type of student with that particular characteristic. In other words, the researcher tested for zero or null difference. If no difference was found, then the null hypothesis was accepted as true; but if a statistically significant difference was found, the researcher rejected the null hypothesis as false and indicated the difference as statistically significant. A specific example of this test result can be observed in Table 9. It is the cross-tabulation table created using SPSS statistical analysis software for one of the student entry characteristics called intended length of enrollment in which the students were asked how long they intended to stay enrolled. Of the total of 2,523 unduplicated

students in the study, 111 students did not indicate their intended length of enrollment. Therefore, the total number of students in this table is 2,412. Part of the information in the table tells us what the expected count would be in any particular cell if there were no differences in intended length of enrollment between the types of students or in other words, every type of student has the same intended length of enrollment.

Table 9. Cross-Tabulation Table for Student Entry Characteristic: Intended Length of Enrollment by Type of Student (Group)

			Type of Student (Group)			Total
			1 Faces	2 Nets	3 Mixed	
Intended length of enrollment (0 or 1) and Corresponding Statistics	0 One Year or Less	Count	660.0	16.0	83.0	759.0
		Expected Count	674.7	10.1	74.3	759.0
		% within Type of Student	30.8	50.0	35.2	31.5
	1 Two Years or More	Count	1484	16.0	153.0	1653.0
		Expected Count	1469.3	21.9	161.7	1653.0
		% within Type of Student	69.2	50.0	64.8	68.5
Total		Count	2144.0	32.0	236.0	2412.0
		Expected Count	2144.0	32.0	236.0	2412.0
		% within Type of Student	100.0	100.0	100.0	100.0

The most common statistical test used with cross-tabulation tables to identify real or significant differences is Pearson's Chi Square. This test can be used with any kind of data, i.e., nominal, ordinal, interval, or scale. Using the chi-square test, we can say with a specific probability of Type I error (the researcher determines that the null hypothesis is false and rejects it when it is actually true and should not be rejected) that any actual or observed differences in the data are significant or real differences, or they are simply due

to chance and therefore not statistically significant. In this particular table, it might appear that the actual counts are not that far off from the expected counts for each cell so one might anticipate that there are no real differences and that any actual observed differences are simply due to chance. However, the chi-square test statistic shown in Table 10 has a p-value of 0.029 ($p<.05$), which indicates that there is significant evidence that the intended length of enrollment is truly different based on the type of student and that the null hypothesis (null = zero or no difference) should be rejected. That is, the allocation of students into the two intended length of enrollment categories is not the same for the three groups of type of student. In this table, the null hypothesis being tested is H_o:P_F=P_N=P_M, where P_F, F_N, and P_M are the proportions of each type of student whose intended length of enrollment was '0' or one year or less.

The cross-tabulation Table 9 bases the expected count in each cell on the distribution of the total counts in the rows and columns of the table. Looking at the total column, we see that 31.5% of total students intended to be enrolled for one year or less compared to 50.0% of the Nets type of student. The percentages listed for the other two types of students (30.8% and 35.2%, respectively) are much more similar to the total percentage. Based on this information in the table, it seems logical to assume that the significant difference indicated by the Pearson Chi-Square test indicates that the percent of Nets who intend to be enrolled for one year or less is larger than the percents of the other two groups. This finding suggests that the Nets may not intend to stay enrolled as long as Faces and/or Mixed students.

Table 10. Chi-Square Test for Cross-Tabulation of Intended Length of Enrollment by Type of Student (Group)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.061[a]	2	.029
N of Valid Cases	2412		

[a] 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.07.

The Hispanic student entry characteristics of those who chose to take all of their credit courses their first semester at South Texas College via (a) face-to-face, [Faces], (b) distance education, namely [Nets], or (c) both face-to-face and distance education, namely [Mixed], are profiled or described in Table 11. In the table, the current level of education characteristic requires some explanation. From examinations of student record data, it is evident that of the 193 students who indicated that they had attained an associate degree or higher, less than 20 had actually graduated with the degree. The question on the Student Supplemental Information Form asks, "What is the highest level of education attained by you (your mother, your father)?" These students who marked that they had attained an associate's degree or higher were actually only enrolled in an associate degree program, but most had not actually graduated. It is the researcher's belief that the students misunderstood the intent of the question and meant to say that they had attained the indicated level by being enrolled at that level of program. The implications of this understanding of the data will be discussed later in the chapter.

Cross-tabulation tables and chi-square tests were run for each of the student entry characteristics. The results of these tests are also indicated in Table 11, flagging the differences between the Hispanic student entry characteristics of those who chose to take

all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College. Thus, the table indicates the answers to Research Question 2 describing the student entry characteristics for each of the three type of student groups including indications of significant differences at $p<.05$ and some at $p<.01$. In answer to the second research question, the research demonstrated that at a Type I error rate of .01 to .05 (1-5% chance of error in deciding there is a difference when actually there is none), that several student entry characteristics were significantly different between the three type of student groups. The Nets were more likely than the Faces or Mixed groups to be older, have a GED or Regular/Minimum high school diploma, be married, be working more hours (20% working 30+ hours compared to 10% of the Faces group – over 80% of all groups were only working occasionally or not at all), not intend to reduce those hours, be less likely to transfer or to stay enrolled more than a year, and be more likely to be enrolled in fewer than 9 hours.

Table 11. Significant and Non-Significant Differences in Student Entry Characteristics of Entering Freshmen Enrolled Anytime Between Fall 2000 and Fall 2005 Who Attempted History, English Composition, or College Algebra for the First Time in Either Face-to-Face or Distance Education Courses at South Texas College by Type of Student (Faces, Nets, Mixed)

Student Entry Characteristic	Type of Student (Group)			Statistical Significance (p-value)
	Faces	Nets	Mixed	
average age – group mean	23	27	24	.000*
country of elementary education – % USA	95	75	94	.051
current level of education – % < associate***	92	86	91	.520
custody of minors – % yes	31	13	41	.108
disabilities – % yes	7	9	8	.894
English as a second language – % yes	3	3	1	.443
gender – % female	60	69	67	.079
high school diploma type – % Recommended/Advanced	66	36	54	.022*
high school GPA – group mean	82	82	82	.776
hours of employment – % 30 + hours	9.3	20	15	.003**
income level – % public assistance eligible	35	19	40	.096
income level – % federal grant eligible (Pell, WIA, JPTA)	58	45	63	.111
intent to continue employment – % same or more hours	73	100	82	.032*
intent to transfer – % yes	21	20	29	.012*
Intended length of enrollment – % 2+ years	69	50	65	.029*
marital status – % married	21	52	30	.000**
number of credit hours – % <9 for Fall or Spring	26	60	20	.000**

Table 11 (continued)

Student Entry Characteristic	Type of Student (Group)			Statistical Significance (p-value)
	Faces	Nets	Mixed	
parents education – % neither parent high school diploma	38	45	37	.679
participation in workforce programs in high school –% yes	31	38	28	.775
reason for attending – % to graduate or transfer	90	90	92	.565
recent migrant work (for self or family member within last two years) – % yes	11	9	5	.023*
resident status – % non-resident alien	3	0	2	.895
veteran status – % yes	13	20	9	.478

*p <.05 indicates 95% probability that differences are not simply random chance.
**p <.01 indicates 99% probability that differences are not simply random chance.
***current level of education – see page 96 for discussion of data concerns.

Logistic Regression

Research Questions 3 and 4 required a little more complex analysis, namely, logistic regression. Both of these questions were similar in that they sought to determine whether the student entry characteristics could be used to predict the outcome of either of two dichotomous dependent variables: Research Question 3 asks to what extent successful course completion of the Hispanic students first attempt at History, English Composition, or College Algebra taken via face-to-face or distance education can be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College.

Successful course completion, meaning the student completed the course with a C or better grade, is the dependent variable being predicted in this analysis. Likewise, Research Question 4 asks to what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College. Retention from one term to the next, meaning the student re-enrolled in the subsequent semester or term, is the second dependent variable being predicted in this study. Both of these two research questions were investigated using logistic regression since according to Garson (2006) and Ott and Longnecker (2001), it is best suited for using a mixture of types of independent variables, i.e., categorical, ordinal, to predict the outcome of a dichotomous dependent variable (i.e., yes or no, pass or fail, etc.). Using the logistic regression analysis, the researcher developed a model that was able to predict the outcome of the dependent variables (successful course completion and retention) based on known independent variables (student entry characteristics). The models can also demonstrate which independent variables can be used as predictors of successful course completion or retention with some indication of their differing levels of importance to the model, as well as how much of the variance in the outcomes can be explained by one or more of the independent variables.

Prior to conducting the logistic regression analyses on our data, the researcher first checked the data assumptions that needed to be met in order to produce reliable results. Specific decisions made by the researcher as a result of checking the data

assumptions are addressed here. First, logistic regression results are more easily interpreted if the dependent variable data are coded in a meaningful way. For the dichotomous dependent variables, meaningful coding would mean that the classification of interest should be coded as a "1" and the other response as a "0." If this coding is not done, it makes interpretation of the analysis results more difficult than need be. The data in this study include two dichotomous dependent variables: completion and retention. The researcher had originally coded completing and being retained as the classification of interest thereby coding that classification a "1." However, if information from this study is applied to a college situation, an advisor would want to identify the risk of failing to complete or failing to be retained as the classification of interest so that the advisor could warn students of the risks and suggest support services that might increase the likelihood of completing a course or re-enrolling the next term successfully. Therefore, the researcher recoded the dependent variables with non-completion and not-retained equal to 1.

Secondly, logistic regression also assumes that the cases included in the study are unduplicated and independent, or in other words, students or subjects are not duplicated or counted more than once in the study and the different students or subjects are not related in any way. Garson (2006) warns that allowing multiple subject observations will most likely have serious effects on the analysis results. Because the data in this study included duplication of subjects if they attempted more than one of the course types, the logistic regression analyses were run separately for each course using the SPSS split file/ compare groups function. In other words, because some of the students took both

English and Math, or English and History, or any other combination of the three courses, a single student could account for 1, 2, or 3 cases depending on the number of these courses the student took during the study period. By splitting the analyses by course, each student had only one observation in the dataset thereby meeting the assumption.

A third data assumption that the researcher addressed was in regards to missing data for some of the independent variables. In his overview of logistic regression, Garson (2006) warns that when using list-wise deletion of unused variables in the logistic regression model, cases with missing data in any of the independent variables will be completely excluded from the analyses. Therefore, the researcher ran an initial logistic regression including all the independent variables and quickly realized as shown in the output Table 12 that only 262 of 3634 cases were included in the analysis. Reducing the calculations to such a few cases would almost certainly alter the findings.

Table 12. Initial Logistic Regression Case Processing Summary Table Indicating Number of Cases Included in Analysis or Excluded due to Missing Data

Selected Cases	N	Percent
Included in Analysis	262	7.2
Excluded due to Missing Data	3372	92.8
Total	3634	100.0

Furthermore, the number of cases included in the analyses using the split file function by course as shown in Table 13, diminished the group size even further as one might assume. Therefore, the researcher identified the independent variables that had high percentages of the missing data and then eliminated these independent variables from the study. A discussion of the excluded variables follows.

Table 13. Logistic Regression Case Processing Summary Table Indicating Number of Cases Included in Analysis or Excluded due to Missing Data Split by Type of Course

Type of Course	Selected Cases	N	Percent
English	Included in Analysis	114	6.7
	Excluded due to Missing Data	1584	93.3
	Total	1698	100.0
History	Included in Analysis	97	8.3
	Excluded due to Missing Data	1066	91.7
	Total	1163	100.0
Math	Included in Analysis	51	6.6
	Excluded due to Missing Data	722	93.4
	Total	773	100.0

In Table 14, the author listed the independent variables, or student entry characteristics, that were excluded due to missing data. Nearly 1300 cases were randomly missing the data for these independent variables. Although one of these independent variables had been found earlier to be significantly different among the three groups of students (Intent to Continue Employment), the others were the same for all groups. Therefore, in order to increase the potential for reaching a solution to this logistic regression analysis and thereby building a successful and meaningful model for predicting course completion or retention by maximizing the number of cases used in the logistic regression calculations, these six independent variables were excluded from the logistic regression analysis: (a) country of elementary education, (b) custody of minors, (c) intent to continue employment, (d) participation in workforce programs in high school, (e) resident status, and (f) veteran status.

Table 14. Independent Variables Excluded From the Logistic Regression Analyses due to Missing Data

Type of Course			Country of Elementary	Custody of Minors	Intent to Continue Employment	Participation in Workforce Programs in High School	Resident Status	Veteran Status
English	N	Valid	386	383	343	369	368	433
		Missing	1312	1315	1355	1329	1330	1265
History	N	Valid	305	300	264	292	296	336
		Missing	858	863	899	871	867	827
Math	N	Valid	209	204	189	201	202	230
		Missing	564	569	584	572	571	543

Some of the independent variables used in the logistic regression were ordinal or rank order data, i.e., current level of education, age group, etc., so the data were tested for significant correlations using Spearman's rho statistic. To facilitate working with the age data and to align age ranges with those used in other research studies at South Texas College, the *age* variable was recoded into age group with the following age range categories: <19, 19-22, 23-29, and 30+ and is discussed in the following section. As shown in the correlations Table 15, several of the independent variables demonstrated weak but nevertheless significant relationships. For example, the relationship between age group and high school diploma type had a correlation coefficient of -.424 with $p<.01$. This fairly strong negative relationship indicates that the older students in this study are more likely to have a lower diploma type. Recently in the State of Texas, high schools have been phasing out diploma types that were not intended to prepare students for college and sometimes referred to as the regular or minimum high school diploma. Today, with the exception of special needs situations, the lowest level of high school

diploma offered is the recommended high school diploma that was designed to prepare students for college.

Table 15. Significant Correlation Coefficients Between Student Entry Characteristics (Spearman's Rho)

		Age Group	Current Level of Education	High School Diploma Type	Hours of Employment	Intended length of enrollment	Number of Credit Hours
Age Group	Correlation Coefficient	1.000	.068**	-.424**	-.045*	.075**	-.156**
	Sig. 2-tailed	.	.001	.000	.024	.000	.000
	N	2523	2264	1629	2523	2412	2523
Current Level of Education	Correlation Coefficient	.068**	1.000	.030	.063**	-.228**	-.051*
	Sig. 2-tailed	.001	.	.246	.003	.000	.014
	N	2264	2264	1465	2264	2177	2264
High School Diploma Type	Correlation Coefficient	-.424**	.030	1.000	.010	-.113**	-.013
	Sig. 2-tailed	.000	.246	.	.685	.000	.610
	N	1629	1465	1629	1629	1561	1629
Hours of Employment	Correlation Coefficient	-.045*	.063**	.010	1.000	-.078**	-.073**
	Sig. 2-tailed	.024	.003	.685		.000	.000
	N	2523	2264	1629	2523	2412	2523
Intended length of enrollment	Correlation Coefficient	.075**	-.228**	-.113**	-.078**	1.000	.104**
	Sig. 2-tailed	.000	.000	.000	.000	.	.000
	N	2412	2177	1561	2412	2412	2412
Number of Credit Hours	Correlation Coefficient	-.156**	-.051*	-.013	-.073**	.104**	1.000
	Sig. 2-tailed	.000	.014	.610	.000	.000	.
	N	2523	2264	1629	2523	2412	2523

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Another significant negative correlation (-.228) was found between intended length of enrollment (0=1 or less years, 1= 2 or more years) and current level of

education (0=less than associate degree, 1=associate degree or higher). This negative relationship would indicate that students who have already attained an associate degree or higher do not intend to stay enrolled as long as those students with less than an associate degree. However, the data for those students who indicated the attainment of an associate or higher degree level were found to be inaccurate – as less than 20 (of 196) had actually graduated with the degree as was discussed in a previous section of this report. The students were actually only enrolled in a program at that level. The question on the data collection instrument should be modified in order to eliminate any misunderstanding by students regarding the word attained meaning graduated or completed a program at that level. The relationships of all of the ordinal or interval independent variables are given in Table 15. All of the correlation coefficients are less than .800 and should not create a problem with multicollinearity in the logistic regression analyses.

After addressing issues regarding the data assumptions, the researcher proceeded to answer Research Question 3 to see whether student entry characteristics could be used to predict successful completion of a course. As mentioned previously, the logistic regressions were run separately for each course, i.e., English, History, or Math. Also, in order to make the interpretation of the results of the logistic regression more specific to the modality in which the course was taught, the researcher selected type of presentation for each logistic regression that was run. For example, the first run of the logistic regression included type of presentation=0 or face-to-face presentations only. Type of student (Faces, Nets, or Mixed) was included in the equation as an independent variable,

but was found not to be significant for any of the courses in the face-to-face presentation for impacting course completion. The logistic regressions were run for each type of presentation and the models are discussed in the following section.

Prediction Model for Failure to Successfully Complete Courses via Face-to-Face

The beginning block of this logistic regression analysis included the null values for all the student entry characteristics (independent variables) as indicated in Table 16. Previous research or even previous analyses in this current study have indicated relationships or interaction between some of these characteristics. Therefore, anticipated interactions were tested by including interaction terms, indicated by an asterisk (*) between two independent variable names, i.e., age * gender, in the logistic regression model. For example, previous research regarding gender and distance learning has shown that more females prefer distance learning than do males. Therefore, an interaction term (type of student * gender) was added to the variable list to test for the presence of this interaction within this current Hispanic student population.

These are the independent variables (and interaction terms) included in this logistic regression procedure: age group, current level of education, gender, type of student * gender, high school diploma type, economic indicators, intended length of enrollment, marital status, credit hours, parents' education, reason for attending, migrant work, age group * high school diploma type, year, type of student, disabilities, English as a second language (ESL), type of student * ESL, hours of employment, intent to transfer, age group * parents' education, current level of education * intended length of

enrollment. A p-value of .000 ($p<.01$) in the Significance (Sig.) column indicates that the null model should be rejected. (Garson, 2006) In other words, in Step 0, all the coefficients of the independent variables are held at 0, therefore, it is called the null model. If this initial test is significant ($p<.01$) as was indicated in Table 16, the next step of entering the independent variables is warranted due to rejecting the null model.

Table 16. Logistic Regression Block 1: Student Entry Characteristics (Independent Variables) in the Equation

Type of Course			B	S.E.	Wald	df	Sig.	Exp(B)
0 English	Step 0[a]	Constant	-.943	.079	140.866	1	.000	.389
1 History	Step 0[a]	Constant	-.464	.091	26.210	1	.000	.629
2 Math	Step 0[a]	Constant	-.675	.116	34.148	1	.000	.509

[a] Variable(s) entered on step 1: age group, current level of education, gender, type of student * gender, high school diploma type, economic indicators, intended length of enrollment, marital status, credit hours, parents' education, reason for attending, migrant work, age group * high school diploma type, year, type of student, disabilities, English as a second language (ESL), type of student * ESL, hours of employment, intent to transfer, age group * parents' education, current level of education * intended length of enrollment.

On this initial attempt to identify a prediction model, the process reached the maximum of 20 iterations and was not able to find a solution for English and Math. The researcher subsequently reduced the number of independent variables entered by eliminating those with no significance to any of the three course models for predicting failure to complete English, History, or Math. With this step, the researcher was then able to identify solutions or models that predict to some extent the risk that entering Hispanic freshmen at South Texas College will fail to successfully complete the student's first attempt at History, English Composition, or College Algebra taken via face-to-face, assuming, of course, that future entering Hispanic freshmen cohorts at South Texas College are similar to those enrolled between Fall 2000 and Fall 2005.

In the model summary Table 17, the Nagelkerke R Square gives some indication of the value or strength of the model for prediction or explanation purposes. For example, in the model for English, the Nagelkerke R-Square of .201, as indicated in Table 17, would suggest that the relevant or significant variables in the equation could help explain 20.1% of the outcome of the dependent variable. In other words, in this case, 20.1% of the likelihood of failure to complete the course can be explained by the significant student entry characteristics. The other 79.9% of the outcome of the dependent variable would be explained by some of the other many, many (could be thousands of) unknown variable(s) and therefore not able to be included in the equation. Of the three types of courses, the student entry characteristics were stronger indicators for Math (27%) than for English (20.1%) or History (20.8%). The numbers of iterations required to find a solution were determined when the parameter estimates changed less than .001 and are indicated in the table footnotes for each type of course.

Table 17. Nagelkerke R-Square Model Summary Indicating the Value or Strength of the Model for Prediction Purposes

Type of Course	Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
0 English	1	825.315[a]	.139	.201
1 History	1	601.256[b]	.153	.208
2 Math	1	358.954[c]	.195	.270

[a]Estimation terminated at iteration number 7 for Type of Course = 0 English.

[b]Estimation terminated at iteration number 5 for Type of Course = 1 History.

[c]Estimation terminated at iteration number 6 for Type of Course = 2 Math.

Table 18 lists the independent variables that were significant to the model for each course. For example, age group, current level of education, intended length of

enrollment, marital status, credit hours, and year are significant variables to the equation for calculating the probability that a Hispanic student in a face-to-face section of English will fail to successfully complete the course.

Table 18. Significant Student Entry Characteristics for Predicting the Likelihood of Failing to Successfully Complete English, History, or Math in a Face-to-Face Type of Presentation

Type of Course	Logistic Regression Procedure Step and Corresponding Student Entry Characteristics		B	S.E.	Wald	df	Sig.	Exp(B)
0 English	Step 1[a]	age group	-.574	.252	5.181	1	.023	.563
		Current level of education	-2.536	1.029	6.072	1	.014	.079
		intended length of enrollment	.686	.248	7.650	1	.006	1.986
		marital status(1)	.729	.287	6.470	1	.011	2.073
		credit hours	.630	.259	5.901	1	.015	1.878
		Year	.202	.064	9.826	1	.002	1.224
		Constant	-2.258	.794	8.092	1	.004	.105
1 History	Step 1[a]	age group	-.899	.303	8.776	1	.003	.407
		Current level of education	-1.481	.511	8.400	1	.004	.227
		intended length of enrollment	.975	.266	13.470	1	.000	2.651
		parents' education	.583	.219	7.084	1	.008	1.791
		migrant status(1)	-.654	.319	4.211	1	.040	.520
		high school diploma type	-.751	.246	9.301	1	.002	.472
		age group by high school diploma type	.436	.166	6.859	1	.009	1.546
		Constant	.027	.879	.001	1	.976	1.027
2 Math	Step 1[a]	Current level of education	-1.892	.646	8.568	1	.003	.151
		intended length of enrollment	.731	.342	4.579	1	.032	2.078
		reason for attending			6.518	2	.038	
		reason for attending(1)	1.071	.490	4.777	1	.029	2.918
		reason for attending(2)	.716	.330	4.699	1	.030	2.047
		migrant status(1)	-1.210	.418	8.390	1	.004	.298
		Constant	-.599	1.049	.326	1	.568	.549

[a]Variables entered on step 1: Year, age group, Current level of education, gender, income level indicators, intended length of enrollment, marital status, credit hours, parents' education, reason for attending, migrant status, high school diploma type, age group * high school diploma type , Type of student, Type of student * gender .

Combining the information from Nagelkerke (Table 17) and the significant variables in the equation (Table 18), we know that the significant independent variables for the English face-to-face course model can explain 20% (or 20.1%) of the completion outcome. To have a predictive or more specifically an explanatory logistic regression model that explains 20% of the outcome perhaps does not seem very meaningful. However, according to some of the coefficients that Astin (1997) identified in his formulas for estimating retention of students, these current models are actually quite strong. Table 18 lists the odds ratio for each independent variable under the Exp(B) column. According to Garson (2006), if this ratio is greater than one, it indicates the predicted increase in odds for every unit increase in the independent variable while holding the levels of the other independent variables constant. If the ratio is less than one, it indicates a decrease in odds. For example, in Table 18 age group for English has an odds ratio in the Exp(B) column of .563, which is less than one. This odds ratio would indicate that for every increase in the age group ranges (<19, 19-22, 23-29, and 30+), the odds of failure to complete the course can be predicted to decrease by .56 assuming every other variable remains the same. Further discussion of each of the significant variables for these three models will be discussed in the next section.

Age Group

Of these three face-to-face courses, age group was significant to the models for English and History but not for Math. As indicated in the Table 18, for the English model, age group has an odds ratio, or Exp(B) of .563. Since this statistic is less than one, it tells us that the odds of failing to successfully complete the face-to-face English

course are predicted to decrease by .563 for each unit increase in age group. The age groups used in this study were <19, 19-22, 23-29, and 30+. The odds ratio of .563 means that students in the older groups are less likely to fail their first attempt at English by .563 multiplied by the number of levels higher in age group. In other words, the 30+ age group would be 3 levels higher than the <19 age group. That means that the 30+ age group would be 1.689 or nearly two times less likely to fail to successfully complete English as the <19 year olds. For History, the odds ratio was .407 and would be interpreted the same way. Cross-tabulations of the frequency tables support this finding indicating that for both English and History, from 29-36% of the <19 year olds failed to complete compared to only 16-17% of the 30+ year old students. For the first attempt at Math, age group made no difference in successful completion.

Current Level of Education

One might think that the current level of education would be the same for all first-time-in-college students (FTIC). This thought, however, is not necessarily true since several high school students, especially in the local high schools in the South Texas College service district, take college classes before graduating from high school. These students are still considered first-time-in-college or FTIC students when they graduate from high school and enroll in college as any other FTIC would do. Several (193) out of 2,523 of these FTIC students indicated that they had already attained their associate's degree. However, as discussed previously, these data were found to be in error as most of the students were only enrolled at that level and had not actually graduated at that level. Although this independent variable is significant to all three models, its impact on

completion is small as indicated by odds ratios of .079, .227, and .151 for English, History, and Math courses, respectively. Perhaps this lack of a higher odds ratio is due to the misunderstanding by students and resulting inconsistency in the data. These regression models were re-run later to control for this variable. The odds ratios for other variables did change slightly (see Table 19).

Intended Length of Enrollment

One of the strongest significant variables in each of the three models was that of intended length of enrollment. This independent variable was dichotomous. In other words, there were two values for this variable: 0=1 year or less and 1=2 years or more. The odds ratios indicated in Table 18 are English: 1.986, History: 2.651, and Math: 2.078. Since these ratios are greater than one, they indicate increases in the odds of failing to complete with every unit increase in the level of length of enrollment. Since length of enrollment is dichotomous, these ratios would mean that students who intend to stay 2 years rather than 1 would be 2-2½ times more likely to fail the English, History, or Math course. From the data, it is obvious that those who intend to stay longer are more at risk of failing. This finding would tend to indicate that highly motivated students do not intend to stay long at the community college. Some of these students who indicated they only intended to stay a year were also students who had already earned an associate degree and/or students who were enrolled in bachelor's programs or who intended to transfer to a university. To help control for the data inconsistencies and for the few unusually high-performing Hispanic-entering freshmen, the researcher selected only students with less than an associate degree and re-ran the logistic

regression. Although all but one of the significant variables stayed the same (intended length of enrollment was no longer significant to the Math model), several of the odds ratios slightly increased or decreased (see Table 19).

Table 19. Significant Student Entry Characteristics for Predicting the Likelihood of Failing to Successfully Complete English, History, or Math in a Face-to-Face Type of Presentation for Students Indicating a Current Level of Education of Less Than Associate Degree

Type of Course	Logistic Regression Procedure Step and Corresponding Student Entry Characteristics		B	S.E.	Wald	df	Sig.	Exp(B)
0 English	Step 1[a]	age group	-.588	.253	5.410	1	.020	.555
		intended length of enrollment	.717	.250	8.190	1	.004	2.048
		marital status(1)	.705	.287	6.042	1	.014	2.025
		credit hours	.621	.260	5.710	1	.017	1.861
		Year	.199	.064	9.579	1	.002	1.220
		Constant	-2.821	.669	17.789	1	.000	.060
1 History	Step 1[a]	age group	-.929	.310	8.984	1	.003	.395
		intended length of enrollment	.922	.271	11.570	1	.001	2.514
		parents' education	.607	.224	7.358	1	.007	1.835
		migrant status(1)	-.658	.329	4.011	1	.045	.518
		high school diploma type	-.749	.249	9.095	1	.003	.473
		age group by high school diploma type	.469	.170	7.585	1	.006	1.599
		Constant	-.672	.781	.742	1	.389	.510
2 Math	Step 1[a]	marital status(1)	.790	.401	3.871	1	.049	2.203
		reason for attending			6.346	2	.042	
		reason for attending(1)	1.143	.505	5.116	1	.024	3.136
		reason for attending(2)	.689	.340	4.100	1	.043	1.992
		migrant status(1)	-1.347	.443	9.246	1	.002	.260
		Constant	-.277	.965	.082	1	.774	.758

[a]Variable(s) entered on step 1: Year, age group, gender, income level indicators, intended length of enrollment, marital status, credit hours, parents' education, reason for attending, migrant status, high school diploma type, age group * high school diploma type , Type of student * gender.

The finding regarding intended length of enrollment in which the students intending to stay longer have a higher risk of failure held true even when controlling for the intent to transfer, which would indicate a shorter length of enrollment. Is it possible that students with lower academic skill levels would tend to believe they would be enrolled longer than those with higher skills? The data collection instrument is somewhat redundant and confusing in that the reason for attending variable also includes a transfer response. In other words, a student can indicate transfer as the reason for attending. The researcher added an interaction term made up of length of enrollment and reason for attending, but it was not significant to any of the models. These conflicting and redundant responses on the Student Supplemental Information Form should be addressed to ensure the reliability of the data elements regarding intended length of enrollment and or intentions to transfer. Cross-tabulations did indicate that students attending for the reason of transfer did tend to complete History and Math courses at a higher rate ($p<.01$).

Marital Status

Marital status in this dataset was coded into a dichotomous variable with 0= Single (unmarried, separated, divorced, or widowed) and 1=Married. Married Hispanic students experience a much lower risk of failure to complete than do the single Hispanic students. Marital status was one of the strongest predictors identified in the models. Based on the findings outlined in Table 19, the single students had twice (2.025 for English and by 2.203 for Math) the risk of failing compared to their married peers. Marital status, however, was not significant to the History model.

Credit Hours

At South Texas College, students are historically and officially considered full-time if they are taking 12 or more semester credit hours. Full-time students have historically taken 12 hours in Fall, 12 hours in Spring, and usually none during the summer. In an effort to help students who are taking developmental or remedial courses and who have been struggling to successfully complete the courses, students have been encouraged to take fewer hours per semester while maintaining the same total (24) number of hours across the entire year. In other words, instead of taking 12 hours in Fall and 12 in Spring for a total of 24 per year, the students would take 9 in Fall, 9 in Spring, and 6 hours over the summer. Since the researcher was aware of this practice, the credit hour variable was coded dichotomously as 0=<9 and 1=9 or more.

This variable was significant only to the English course in the logistic regression models and indicated that those taking more than 9 hours increased their odds of failing to successfully complete the English course by 1.861 or nearly two times. Furthermore, cross-tabulation tables with chi-square tests indicated significant differences ($p>.01$) of 10-12% lower successful completion rates for those taking 9+ hours in History as well as English face-to-face courses. This predictor was not significant to the Math model.

Parents' Education

One would think that having at least one parent with a high school diploma would predict a higher probability for success, when in fact, the opposite was true here as indicated by a Fisher's Exact Test (1-sided) ($p>.05$) on a cross-tabulation of parents' education and completion. The students with neither parent having a high school

diploma were more likely to complete face-to-face courses successfully. This finding was true for all three courses: English (p=.049), History (p=.015), and Math (p=.011). However, in the logistic regression models, parents' education was significant only to the History model with an odds ratio of 1.835 meaning that students with at least one parent with a high school diploma are nearly twice as likely to fail as students with parents without the diploma. Could this counter-intuitive finding be related to the idea that parents who are illiterate in English, but live in South Texas, often look to their children to read and interpret English for them?

Year in Which Selected Course Was Taken

Although this variable is significant to the model, it is difficult to interpret. The researcher created a line graph of the percent completing the three different courses by year. It appears that the rate of failure to successfully complete courses as indicated in Figure 2 is increasing and at an accelerated rate over the past three years. From 2005-2006, the rate jumped from 31% to 41%. Since some of these students did not take the course their first year, the researcher investigated whether the pass rate was significantly different depending on how many years had passed since the student was an entering freshman. The pattern remained basically the same with failure decreasing the first 2-3 years and then rapidly increasing the last 3 years of the study period.

Reason for Attending

The reason for attending was coded in the dataset as follows: 0= job, improvement, licensure, other; 1=certificate or degree; 2=transfer. The reason for attending was only significant to the Math face-to-face model. Although it was not

significant to the logistic regression model for predicting History completion, there were significant differences in completion rates by reason for attending ($p<.05$ chi-square test). As observed previously, the students intending to transfer these two courses are least likely to fail them. In the History course, students who indicated their reason for attending was for a job, improvement, licensure, or other, had a 56% failure rate in History and 61% in Math compared to their transferring peers who had 33% in History and 28% in Math. The students who indicated they were pursuing a certificate or a degree had failure rates somewhere in between these two extremes with History at 43% and Math at 45%.

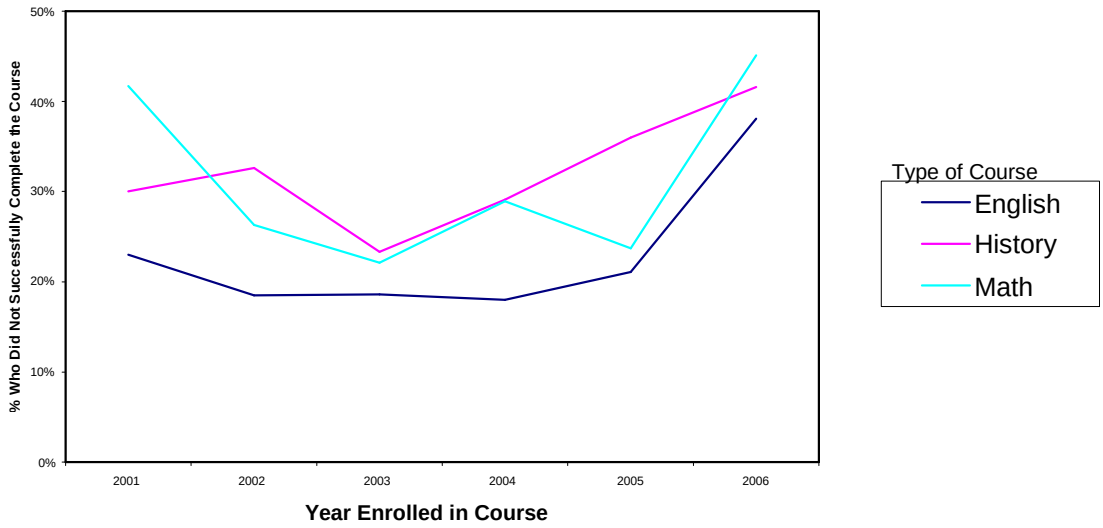

Figure 2. Percent Failing to Successfully Complete Course by Year.

Recent Migrant Work

The recent migrant work independent variable was only significant to the Math and History models. The odds ratios of .260 for Math and .518 for History indicate a weak but nevertheless a stronger risk of failure for migrant students. The cross-

tabulation for recent migrant work and completion contains some observed but not statistically significant differences of 3-9% with recent migrants failing to complete History or Math as compared to non-migrants. The number of students indicating recent migrant work is small with the largest group found in English (151).

High School Diploma Type

High school diploma types used in this study included the General Education Development (GED), and the common diploma types found in Texas public schools: minimum/regular (not for college preparation), recommended (college preparation), advanced/distinguished (gifted and advanced students). High school diploma type (see Figure 3) is somewhat counter-intuitive in that students with GEDs performed better than students with high school diplomas. The History model included high school diploma type as a significant indicator to risk of failure. Also included was the interaction term of high school diploma type and age group. The data indicate that older students have lower high school diploma types, primarily GEDs and high school minimum diplomas that were not intended to prepare students for college, which interact with the fact that the older students tend to perform better. Within a specific age group, the higher the level of diploma, the less likely the students are to fail. However, within diploma types, older students are still more likely to succeed than younger students in any of the selected face-to-face courses.

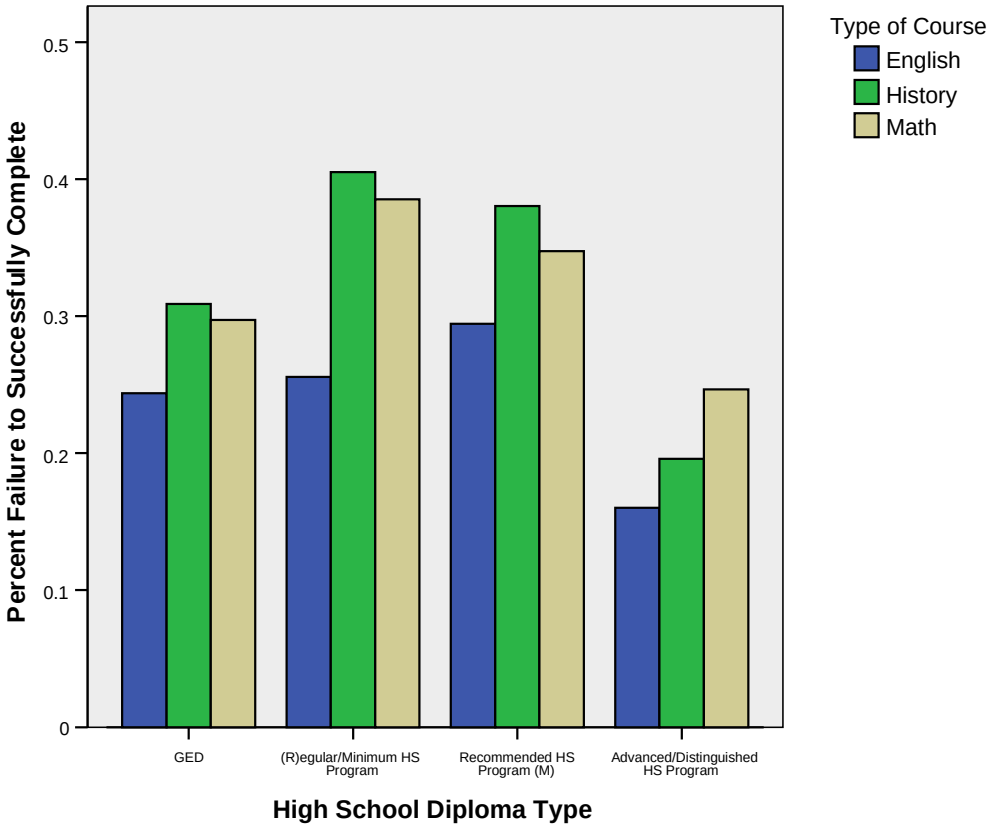

Figure 3. Percent Failing to Successfully Complete their First Attempt at Face-to-Face English, History, or Math by High School Diploma Type.

Goodness of Fit Tests

The Hosmer and Lemeshow goodness-of-fit tests in Table 20 indicate two things (Garson, 2006): that the three models are a good fit for our data as indicated by values greater than .05 in the significance column and that the significant variables are able to explain some level of the variance in outcomes.

Table 20. Hosmer and Lemeshow Goodness of Fit Tests for Logistic Regression Models for Predicting Risk of Failure to Successfully Complete English, History, and Math

Type of Course	Step	Chi-Square	df	Sig.
0 English	1	7.636	8	.470
1 History	1	7.964	8	.437
2 Math	1	2.567	8	.959

Classification Table

The classification table (Table 21) for the three models indicate the sensitivity of the models, or in other words, the ability of the model to correctly predict the 1's or the non-completers in this study. The highest accuracy rate of all the models was 48.0%. The specificity of the models, English: 73.5%, History: 67.2%, and Math: 71.9%, or the ability to correctly predict the 0's (successful completion in this case) were an improvement over the original rates of null models, 72.0%, 61.6%, and 66.3%, respectively, with the History and Math models gaining the largest improvements (5.6%).

Table 21. SPSS Classification Table[a]: Indicates Sensitivity of English, History, and Math Models to Correctly Predicting Successful Completion

				Predicted Successful Completion		
Type of Course		Observed		0 Completed	1 Did Not Complete	Percentage Correct
0 English	Step 1[a]	Successful Completion	0 Completed	533	41	92.9
			1 Did Not Complete	170	53	23.8
		Overall Percentage				73.5
1 History	Step 1[a]	Successful Completion	0 Completed	252	66	79.2
			1 Did Not Complete	103	95	48.0
		Overall Percentage				67.2
2 Math	Step 1[a]	Successful Completion	0 Completed	196	28	87.5
			1 Did Not Complete	67	47	41.2
		Overall Percentage				71.9

[a]The cut value is .500.

The models also include several significant independent variables in the final equation that impact the odds or the risk that a student is at risk of failing the course unless someone intervenes in the student's behalf. The significant variables for English that improved the null model by 1.5% were age group, intended length of enrollment, marital status, credit hours, and year. For History, the significant variables improved the model by 5.6% and were age group, intended length of enrollment, parent's education, recent migrant work, high school diploma type and the interaction between age group * high school diploma type. For Math, the significant variables improved the null model by 5.6% and were intended length of enrollment, reason for enrolling, and recent migrant work.

Prediction Model for Failure to Successfully Complete Courses via Internet

The numbers of Nets and Mixed students selecting an Internet type of presentation for their courses are much smaller than those face-to-face. For example, 94% of the student/course enrollments analyzed for this study were taken face-to-face and only 6% via the Internet. The Nets group was too small to analyze alone. Therefore, in order to avoid complications with small cell sizes, the researcher decided to develop a model for predicting the likelihood of failing to complete any course (English, History, or Math) via the Internet. In other words, type of presentation = 1 (Internet) was selected. Type of student and type of course were entered into the analysis as categorical independent variables. A total of 145 cases were included in the analysis, but the number was reduced to 134 cases since 11 of them had missing data in some of the student entry

characteristics. The null model was rejected and the new model was an adequate fit for the data. The null model had an overall percentage of 63.4% of the cases accurately predicted. Independent variables of significance added to the model were type of course, hours of employment, intent to transfer, intended length of enrollment, marital status and credit hours. These variables explained nearly 50% (Nagelkerke .491) of the variance in successful completion of these Internet courses. Completion differences by course can be seen in the cross-tabulation Table 22 by type of student.

Table 22. Cross-Tabulation Table of Successful Completion of English, History, and Math Courses Taught via Internet by Type of Student (Nets or Mixed)

					Successful Completion		Total
					0 Completed	1 Did Not Complete	
Type of Student	2 Nets	Type of Course	0 English	Count	15	6	21
				Row %	71.4	28.6	100.0
			1 History	Count	15	6	21
				Row %	71.4	28.6	100.0
			2 Math	Count	5	10	15
				Row %	33.3	66.7	100.0
		Total		Count	35	22	57
				Row %	61.4	38.6	100.0
	3 Mixed	Type of Course	0 English	Count	37	32	69
				Row %	53.6	46.4	100.0
			1 History	Count	55	8	63
				Row %	87.3	12.7	100.0
			2 Math	Count	7	9	16
				Row %	43.8	56.3	100.0
		Total		Count	99	49	148
				Row %	66.9	33.1	100.0

Marital status and intended length of enrollment were the strongest predictors in this model. The greatest difference in completion rates between married and unmarried students taking Internet courses was in English in which the unmarried students had an overall completion rate of 45% compared to 86% for the married students. Again, intended length of enrollment was negatively correlated with successful completions in that students who do not intend to be enrolled as long have higher completion rates. The other student entry characteristics added significantly to the model influencing the dependent variable as noted by the odds ratios in Table 23 column Exp(B). Although hours of employment was significant and indicated a change in odds of .407, the observable differences were minimal. A chi-square test in a cross-tabulation table of completion by hours of employment indicated no significant differences.

Table 23. Significant Student Entry Characteristics for Predicting the Likelihood of Failing to Successfully Complete English, History, or Math in an Internet Type of Presentation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	type of course			25.349	2	.000	
	type of course(1)	-2.292	.805	8.106	1	.004	.101
	type of course(2)	-4.210	.882	22.766	1	.000	.015
	hours of employment	-.898	.439	4.182	1	.041	.407
	intent to transfer(1)	-2.207	.791	7.790	1	.005	.110
	intended length of enrollment	2.032	.658	9.529	1	.002	7.628
	marital status(1)	2.231	.646	11.914	1	.001	9.312
	credit hours	-1.128	.533	4.478	1	.034	.324
	Constant	1.559	1.059	2.168	1	.141	4.752

[a]Variable(s) entered on step 1: Type of course, hours of employment, intent to transfer, intended length of enrollment, marital status, credit hours.

Note. Only students indicating current level of education as less than associate degree were included.

Interaction between intended length of enrollment and intent to transfer was also evident in that students who intend to transfer also do not intend to be enrolled at South Texas College for long. Overall, in this set of data, these transfer-bound students are higher performers than their peers. It will be critical for advisors using this data to learn from each student to more clearly understand the reason for the intended length of enrollment. It may be necessary to revise the data collection instrument to more clearly reflect student intentions.

The final model was an improvement of 15.7% over the null model with an overall percentage of 79.1% of the cases accurately predicted as indicated in Table 24. The model was able to predict the likelihood or risk of failure to successfully complete Internet courses with a 75.5% level of accuracy.

Table 24. SPSS Classification Table[a]: Indicates Sensitivity of Logistic Regression Model to Correctly Predict Successful Completion in Internet Courses

			Predicted		
	Observed		0 Completed	1 Did Not Complete	Percentage Correct
Step 1	Successful Completion	0 Completed	69	16	81.2
		1 Did Not Complete	12	37	75.5
	Overall Percentage				79.1

[a]The cut value is .500.

Prediction Model for Faces, Nets, and Mixed Retention (Re-Enrollment in Subsequent Term)

Two different analyses were utilized to better understand which Hispanic students at South Texas College do not re-enroll and to discover how the retention rates might differ significantly among the subpopulations based on their student entry

characteristics. The following Table 25 is a summary of the retention rates, or the percentage of students in the study population who re-enrolled the subsequent term or semester after the one in which they were enrolled in the course(s) used in this study. In order to provide some level of consistency for an entry point, the researcher included only students who enrolled for the first time in a fall term and took the selected course during that very first fall term. There were a total of 722 students meeting the criteria. As indicated in the frequency counts in the retention Table 25, the overall retention rate was 54.6%, which means that 45.4 % of the students did not re-enroll in the subsequent term (Spring). It should be noted that this retention rate is that of first-time-in-college students whose first term was a Fall term between Fall 2000 and Fall 2005, and who also enrolled in an English, History, or Math course that first term. The rate does not take into consideration students not enrolled in these courses or students who transferred or graduated, which would typically indicate that they would not have returned or been retained. There was no difference in retention rates of the Faces, Nets, or Mixed.

Table 25. Fall-to-Spring Retention of Hispanic-Entering Freshmen Who Enrolled for the First Time in a Fall Term From Fall 2000 to Fall 2005 and Made Their First Attempt at English, History, or Math During That Term

		Frequency	Percent
Valid	0 Retained	394	54.6
	1 Not Retained	328	45.4
	Total	722	100.0

Using cross-tabs and chi-square tests, the researcher found that there were significant differences between students who were retained and those who were not based on their student entry characteristics. As noted in Table 26, a list of retention by student entry characteristics, six of the student entry characteristics were flagged for statistical significance at $p<.05$, and an additional characteristic was flagged for significance at $p<.01$. It should be noted here that students who graduate or transfer to another institution and therefore should not be expected to return are counted as not being retained. The strongest indicator that was significant at $p<.01$ was country of elementary education. However, there were only 10 of 115 students reporting on this item who indicated that their elementary education had been obtained in Mexico or another country rather than in the USA. Of those 10 students, 9 successfully completed the selected course, but none of the 10 was retained the following term. With the small numbers (small cell sizes) in this category, the researcher considered the data interesting but unsure of its reliability without further research. Another significant variable that we discussed earlier in regard to successful course completion was age group.

Table 26. Retention Rates by Student Entry Characteristics

Student Entry Characteristics and Subcategories		Retention: Re-enrolled Fall-Spring,			
		0 Retained		1 Not Retained	
		Count	Row %	Count	Row %
Type of Course	English	284	57.4	211	42.6
	History	193	59.4	132	40.6
	Math	79	53.7	68	46.3
Age Group*	0 <19	157	53.2	138	46.8
	1 19-22	125	50.2	124	49.8
	2 23-29	67	58.3	48	41.7
	3 30+	45	71.4	18	28.6
Gender*	0 Male	154	50.2	153	49.8
	1 Female	240	57.8	175	42.2
Marital Status*	0 Single (unmarried, separated, divorced, or widowed)	309	52.6	278	47.4
	1 Married	74	64.9	40	35.1
Number of Credit Hours*	0 <9 Hours	37	45.1	45	54.9
	1 9+ Hours	357	55.8	283	44.2
Country of Elementary Education**	0 USA	61	58.1	44	41.9
	1 Mexico/Other	0	0.0	10	100.0
Veteran*	0 No	56	50.9	54	49.1
	1 Yes	16	76.2	5	23.8

*p<.01.
**p<.05.

The data indicate that recent young high school graduates who are <19 years old and students 23+ years old are more consistent in re-enrolling. The 19-22 year olds have the lowest Fall to Spring retention rate at 48%. The 30+ year olds have the highest rate of 75%. The other significant characteristics (p<.05) were: marital status, number of credit hours, and country of elementary education. Type of course was included in the table, but since some of the students were taking more than one of the courses, the

students taking only one of the courses during their first Fall term were selected for this item to see if type of course had any impact on retention. There was no difference in retention by course. However, this analysis prompted another question and subsequent inquiry as to whether the students who were not retained had failed to successfully complete the courses they were attempting. To answer this question, the researcher checked to see if the retention rates were different based on completion rates in the selected courses and especially in Math. Table 27 shows the results of that inquiry and indicates that the retention rates are definitely higher for students who completed their courses successfully ($p<.01$): successful completers (68.2%) and non-successful completers (37.0%). Of the successful completers, students who attempted Math their first term demonstrated the lowest of the rates, but not significantly lower. However, of those who did not successfully complete their first attempts at one of these courses, Math students were retained at 37.5%, but English non-completers were retained at an even lower rate of 28.7%.

Regarding the other significant student characteristics in Table 26, first, marital status again as in the dependent variable successful course completion showed that married students tended to be retained at higher levels (64.9%) than non-married students (52.6%). Credit hours indicated that students taking 9+ credit hours were retained at a higher rate (55.9%) than those taking <9 hours (45.1%), and regardless of whether they successfully completed the selected course the trend was the same.

Table 27. First Fall-to-Spring Retention Rates for Students Enrolled in English, History, or Math Their First Fall by Successful Completion of the Course

Successful Completion	Type of Course	Retention: Re-enrolled Fall-Spring		Total
		0 Retained	1 Not Retained	
0 Completed	0 English	243	109	352
		69.0%	31.0%	100.0%
	1 History	132	60	192
		68.8%	31.3%	100.0%
	2 Math	58	33	91
		63.7%	36.3%	100.0%
	Total	433	202	635
		68.2%	31.8%	100.0%
1 Did Not Complete	0 English	41	102	143
		28.7%	71.3%	100.0%
	1 History	61	72	133
		45.9%	54.1%	100.0%
	2 Math	21	35	56
		37.5%	62.5%	100.0%
	Total	123	209	332
		37.0%	63.0%	100.0%

Logistic regression for predicting retention was used to develop a model that was able to predict and therefore explain the risk of not being retained. The null model was rejected and the new model was an adequate fit for the data. The null model had an overall percentage of 54.6% of the cases accurately predicted which is somewhat less than the completion models. Independent variables of significance added to the model were type of course, age group, credit hours, and successful completion. These variables improved the final model by 10.8% over the null model with an overall percentage of 65.4% of the cases accurately predicted. The model was able to predict and therefore explain the likelihood or risk of dropping out or not re-enrolling with a 50% level of

accuracy. About 12% of the decision of whether or not to re-enroll can be explained by these variables. Again, supported by Astin's (1997) work and keeping this explanatory measure in the context of the other many, many (could be thousands) of unknown and therefore immeasurable variables that impact a student's decision to re-enroll, these independent variables of significance are very strong predictors.

Summary

The empirical statistical procedures utilized in this study were descriptive and predictive statistical analyses. More specifically, the researcher conducted hypothesis testing using chi-square procedures to determine whether there were statistical differences in student entry characteristics between the three types of students (Faces, Nets, and Mixed) as well as between students who were retained (re-enrolled from Fall to Spring) and those who were not. The researcher also used logistic regression to determine whether any of the student entry characteristics could be used to predict the risk of failure to successfully complete a student's first attempt at English, History, or Math, or the risk of failure to re-enroll the following semester or term.

Summary/Overview of Findings relative to Research Questions

Through the current study, the researcher was better able to understand Hispanic students at South Texas College who utilized distance education as well as some of the students' characteristics related to their success or lack thereof. The findings relative to each research question are summarized in the following Table 28.

Table 28. Summary Table of Study Findings Related to Research Questions

Research Questions	Statistical Analyses	Summary of Study Findings
1. What are the Hispanic student entry characteristics of entering freshmen enrolled anytime between Fall 2000 and Fall 2005 who attempt History, English Composition, or College Algebra for the first time in either face-to-face or distance education courses at South Texas College?	Frequency Counts and Chi-Square Statistics	Percent of population who enrolled in distance or Internet courses: 11%. Percent of selected English, History, and Math 1st attempts that were taken via Internet: 6%. Hispanic students taking distance courses were more likely to have English as their first language, be female, be working more hours, more likely to transfer and thereby be enrolled for a shorter time, taking fewer hours, and have no recent migrant work experience than were their face-to-face counterparts.
2. Are there differences between the Hispanic student entry characteristics of those who choose to take all of their courses via (a) Faces - face-to-face, (b) Nets - distance education, or (c) Mixed - both face-to-face and distance education credit courses at South Texas College? And if so, what are these differences?	Frequency Counts and Chi-Square Statistics	The Nets were more likely than the Faces or Mixed groups to be older, to have a GED or Regular/Minimum high school diploma, be married, be working more hours, do not intend to reduce those hours, less likely to transfer or to stay enrolled more than a year, more likely to be enrolled in fewer than 9 hours, less likely to have had recent migrant work experience.
3. To what extent can successful course completion of the Hispanic students' first attempt at History, English Composition, or College Algebra taken via face-to-face or distance education be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?	Logistic Regression	Face-to-Face Highest accuracy rate: 48.0% Specificity (the ability to correctly predict the 0's or successful completion) of the models: English: 73.5%, History: 67.2%, and Math: 71.9%, Largest improvement over null model: 5.6% Highest percent of variance explained: 27.0% Significant variables: English - age group, intended length of enrollment, marital status, credit hours, and year; History - age group, intended length of enrollment, parent's education, recent migrant work, high school diploma type and the interaction between age group * high school diploma type ; Math - intended length of enrollment, reason for enrolling, and recent migrant work. Internet courses (combined) Highest accuracy rate: 75.5% Specificity: 79.1% Improvement over null model: 15.7% Percent of variance explained: 49.1% Significant student entry characteristics: type of course, hours of employment, intent to transfer, intended length of enrollment, marital status and credit hours

Table 28 (continued)

Research Questions	Statistical Analyses	Summary of Findings
4. To what extent can Hispanic student retention from one term to the next be predicted by any (or any combination) of the Hispanic student entry characteristics of those who choose to take all of their courses via (a) face-to-face, (b) distance education, or (c) both face-to-face and distance education credit courses at South Texas College?	Logistic Regression	Highest accuracy rate: 50% Specificity: 78.3% Improvement over null model: 10.8% Percent of variance explained: 11.2% Significant variables in the model: successful course completion, type of course, age group, and credit hours. No difference by type of student, i.e., face-to-face, etc.

Summary Discussion of Findings Relative to the Literature Review

The literature review leading up to this current study revealed several gaps in relevant research that needed to be addressed. It is the researcher's hope that the current study has begun to address some of these gaps. In Table 29, the research gaps are discussed within the framework that was used to limit the boundaries, scope, and depth of the literature review. The current research was conducted analyzing student data on 2,523 Hispanic-entering freshmen enrolled at South Texas College. The research indicates what percent of this population enrolled in courses via the Internet (11%) and that the characteristics of Hispanic students who enroll in these distance education courses are similar to those in other populations who have been analyzed in previous research.

Table 29. Research Gaps Identified in the Literature Review Framework (see Figure 1) and at Which the Research Study Was Directed

Literature Review Framework Topics	Identified Gaps in the Reviewed Literature	Gaps Addressed by Research Findings
Economic Need for Human Resource Development	Economic need for Hispanic educational attainment with unknowns about Hispanic participation and success in Internet courses creates a situation of need for more research.	South Texas College provides fertile ground for research. Hispanic students participate in increasing numbers both in face-to-face courses as well as Internet courses with highest enrollment growth in Internet courses.
Hispanic Access to Higher Education: Comminity College	Community college courses are offered via at least two different types of presentations: face-to-face and Internet, with enrollment in Internet courses growing at a rapid rate and little research to indicate whether Hispanics utilize distance education and if so, which ones, and whether it is an effective means of instruction.	Hispanic distance education student characteristics were found to be similar to common characteristics of typical distance learners as noted in the literature for other populations.
Hipanic Student Success in Community Colleges	Determining whether one type of presentation, i.e., face-to-face, is more effective than another regarding course completion is an ongoing professional debate due to inconsistent findings in the literature. Research regarding course completion by Hispanics in Internet courses is minimal and inconclusive as to participation and success rates.	This study found no statistical difference in successful course completion and retention rates between Hispanics enrolled in either distance or face-to-face courses.

Contrary to some of the findings in the literature for other populations regarding comparisons between distance courses and face-to-face courses, this study showed there was no statistical difference in successful course completion rates between Hispanics enrolled in either distance or face-to-face courses. This finding was not specifically related to one of the four research questions, but was indeed related to a question stemming from the literature review. Within the current Hispanic population of study, there was no difference in either course completion rates or retention rates (discussed previously) based on the instructional mode. See Tables 30-33 for the data and chi-

square test results showing this no difference outcome in successful course completion by instructional mode.

Table 30. Cross-Tabulation Table for Successful Course Completion by Type of Student

		Type of Student			Total
		1 Faces	2 Nets	3 Mixed	
Successful Completion	0 Completed	1698	25	194	1917
		65.6%	61.0%	65.8%	65.6%
	1 Did Not Complete	890	16	101	1007
		34.4%	39.0%	34.2%	34.4%
Total		2588	41	295	2924
		100.0%	100.0%	100.0%	100.0%

Table 31. Chi-Square Tests for Cross-Tabulation Table for Successful Course Completion by Type of Student

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.390[a]	2	.823
Continuity Correction			
Likelihood Ratio	.383	2	.826
Linear-by-Linear Association	.002	1	.965
N of Valid Cases	2924		

[a]0 cells (.0%) have expected count less than 5. The minimum expected count is 14.12.

Table 32. Cross-Tabulation Table for Successful Course Completion by Type of Presentation

			Type of Presentation		
			0 Face-to-Face	1 Internet	Total
Successful Completion	0 Completed	Count	1826	91	1917
		% within Type of Presentation	65.7%	62.8%	65.6%
	1 Did Not Complete	Count	953	54	1007
		% within Type of Presentation	34.3%	37.2%	34.4%
Total		Count	2779	145	2924
		% within Type of Presentation	100.0%	100.0%	100.0%

Table 33. Chi-Square Tests for Cross-Tabulation Table for Successful Course Completion by Type of Presentation

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.531[b]	1	.466		
Continuity Correction[a]	.408	1	.523		
Likelihood Ratio	.525	1	.469		
Fisher's Exact Test				.474	.260
Linear-by-Linear Association	.530	1	.466		
N of Valid Cases	2924				

[a]Computed only for a 2x2 table

[b]0 cells (.0%) have expected count less than 5. The minimum expected count is 49.94.

In Chapter V, the researcher discusses the implications of this research and related findings as well as concomitant recommendations for improved theory, research, and practice. The findings have implications for educational administrators, researchers, and HRD professionals. Considerations as to how (in the form of recommendations) these findings might be applied to the workplace in colleges dedicated to Hispanic student success are also proposed.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to fill some of the critical gaps present in the literature related to Hispanic higher education student course completion and retention (see Table 29) and to provide comparative rates for these dependent variables for Hispanic students in both face-to-face and Internet course presentations. Research was needed to better understand which, if any, Hispanic students were utilizing distance education and to identify student entry characteristics related to their successes and failures in attaining higher levels of education. The Braxton et al. (2004) theory of student departure in commuter colleges and universities guided the focus of the study toward the student entry characteristics and their relationship to or impact on two indicators of student success in higher education: successful course completion (completing the course with a C or better grade) and retention (re-enrolling the following term). The researcher examined the description, relationships, and predictive validity of Hispanic student entry characteristics on successful course completion and on retention from one semester to the next of entering freshmen at South Texas College from Fall 2000 to Fall 2005. In this chapter, the researcher provides (a) a summary and discussion of findings, (b) implications and recommendations for educational administrators, (c) implications and recommendations for researchers, (d) implications and recommendations for HRD professionals, (e) implications for further theory refinement and development, and (f) some closing remarks.

Summary and Discussion of Findings

Using a variety of quantitative methods to answer the specific research questions guiding this study, the researcher was able to identify a list of findings that are relevant and potentially useful not only to future entering freshmen at South Texas College, but also, to others in the field of education and human resource development who are interested in the success of Hispanic students attempting to attain some level of higher education. These findings cannot be statistically inferred or generalized to all Hispanic students in every situation since the study population, although entirely composed of Hispanic students, was from a single institution, a large Hispanic majority community college, and in that regard a case study. These findings are intended, however, to shed light upon the various subpopulations within this Hispanic majority population and, therefore, are furthermore intended to be useful to other practitioners and researchers outside of South Texas College and outside the selected set of courses who find themselves in similar situations and with similar Hispanic students. It is also the intention of the researcher to report significant findings in order to encourage deeper and ongoing investigations into these findings. The value of such investigations is supported by the well-known Pareto principle as applied by Dr. Juran in quality management research (American Society for Quality, 2001). He reminded us that of the 100% of things we do every day, there are about 20% that are critical or essential and that impact the other 80%. Continued disaggregation of the data is therefore essential to identify the 20% to which resource investments should be directed. The findings of the study are summarized and discussed by way of the following main parts: (a) findings related to

student entry characteristics (Research Questions 1 & 2), (b) findings related to successful course completion and retention (Research Questions 3 & 4), (c) and critical risk factors based on the findings related to successful course completion and retention.

Findings Related to Student Entry Characteristics

Hispanic student enrollment choices indicated 94% of courses were taken via face-to-face compared to 6% via Internet. Groups were formulated based on the students' overall choices of presentations during a single term. Eighty-nine (88.8%) percent of the students were Faces (all face-to-face), 1.4% were Nets (all Internet), and 9.8% were Mixed (both face-to-face and Internet). Findings that differed significantly between the groups follow:

1. Nets (students choosing to take all courses via Internet) were more likely to be older (average age 27) than either Mixed (students taking courses both online and face-to-face) (24), or Faces (students taking courses face-to-face only) (23).
2. Greater percentages of Nets (20%) and Mixed (15%) students were working over 30 hours per week than were Faces (9%). However, over 80% of every group were not working or were working only occasional jobs.
3. Nets (52%) and Mixed (30%) students were more likely to be married than Faces (21%) students.
4. Nets (60%) were more likely to be taking fewer than 9 credit hours per semester than were Faces (26%) and Mixed (20%) students.

Findings Related to Successful Course Completion and Retention

The findings reported in this sub-section are divided into two sub-sub-sections based on the two indicators of student success in higher education that were examined in this study: successful course completion (completing the course with a C or better grade) and retention (re-enrolling the following term). Findings related to the differences in successful course completion and retention based on the instructional modality (face-to-face or Internet) are discussed. Furthermore, student entry characteristics that were identified as significant predictors of successful course completion and/or retention are reported along with a discussion of the explanatory power of these significant student entry characteristics.

Successful Course Completion

Hispanic student course enrollment choices regarding the three selected courses (English, History, and Math) used in this study indicated that 94% of the selected course sections were face-to-face sections compared to 6% that were Internet sections. In other words, if a student wanted to enroll in an English course, the student would look at the English course sections being offered and select the desired section. Course offerings for the three courses included both face-to-face and Internet sections. Determining whether one type of presentation, i.e., face-to-face or Internet, is more effective than another regarding successful course completion is an ongoing professional debate due to inconsistent findings as was noted in the review of the literature (see Table 29). Research regarding successful course completion by Hispanics in Internet courses was minimal and inconclusive as to distance learning participation and success rates. Intending to add

findings to the literature regarding this ongoing debate and also regarding Hispanic students, the researcher presents these two important findings related to successful course completion comparisons between face-to-face and Internet courses:

1. There was no significant difference in the overall rate of successful course completion based on the type of presentation. The observed difference was minimal: 65.7% for face-to-face and 62.8% for Internet.
2. There was no significant difference in the overall rate of successful course completion based on the type of student (Faces, Nets, Mixed). The observed differences were minimal: Faces-65.6%, Nets-61.0%, and Mixed-65.8%.

These findings for the Hispanic population in this study have important implications for continued investment in the technology and skills required to provide distance education. Follow-up research needs to be added to confirm the equality of rigor in both modes of instruction.

The researcher found the following list of student entry characteristics to be predictors of success or risk in successful course completion among Hispanic-entering freshmen at South Texas College. A brief discussion of the findings for each significant student entry characteristic is listed. Also, descriptors and discussion of the explanatory power of the logistic regression models are provided.

1. *Age group* – Older Hispanic students experience a lower risk (odds ratio - .555) of failing English and History than do the younger students.
2. *Intended length of enrollment* – This indicator was relevant to the prediction models but required further information to correctly interpret its relationship

to the dependent variables. For example, Hispanic students intended to be enrolled for a shorter length of time due to their desire to take a shorter program, or due to their desire to transfer to a university. Transfer to a university was associated with successful course completion, whereas shorter program lengths were not. The question should be clarified to distinguish reasons for intended length of enrollment since transfer as a reason was found to be indicative of more successful students. This finding may be related to prior research, which indicates that more successful students tend to have higher educational goals (in this case a goal to transfer to a university).

3. *Marital status* – Married Hispanic students were twice as likely to complete English and Math as single students. Marital status was not significant to History course completion.
4. *Credit hours* – Hispanic students, who were enrolled in 9 or more credit hours during the semester in which they were attempting their first English or History course face-to-face, were more likely to fail to successfully complete their courses than were those students taking fewer than 9 credit hours. However, the opposite was true for students taking the English or History course via the Internet. These Internet students who were taking 9 or more credit hours were more likely to successfully complete the course than were the Internet students taking fewer than 9 hours. When the researcher split the Internet course data by Nets and Mixed students, the data indicate that credit hour load is not meaningful to the Nets' successful course completion. It is

meaningful, however, to Mixed students in successful completion of their Internet courses, but not for their face-to-face courses. Mixed students not only took advantage of both types of instructional modes (face-to-face and Internet), but they also were found to be very successful even when taking more than 9 credit hours during a semester. This finding seems to suggest that further inquiry is needed to understand the motivational factors and academic skill level of the Mixed student who mixes up face-to-face and Internet courses and carries a heavier load. It seems illogical that the data would indicate that taking a heavier load would help a less motivated student to be successful. Further investigation into the impact of credit hours on successful course completion will be needed to more fully explain these findings.

5. *Parents' Education* – Hispanic students whose parents (mother and/or father) do not have a high school diploma or GED experienced higher successful course completion rates than did their peers with one or more parent having a high school diploma.
6. *Intent to transfer* – Students intending to transfer (as indicated in their reason for attending South Texas College) were much less likely to fail History or Math than their non-transfer peers.
7. *High school diploma type* – Older students tend to have lower diploma types than younger students. These are primarily GEDs or minimum high school

diplomas that were not intended to prepare students for college. However, older students still manage to out perform younger students.

As was stated earlier, these student entry characteristics were found, through the development of several logistic regression models, to be predictors of the risk of failure to successfully complete English, History, and Math courses. The models were developed separately for each of three face-to-face courses: English, History, and Math. Due to the small cell sizes or numbers of students taking Internet courses, the Internet courses were combined into a single logistic regression model with type of course as one of the independent variables.

The logistic regression models developed in this study provide several pieces of useful information. The statistics reported for each model indicate which, if any, of the student entry characteristics were found to be useful in predicting whether or not a student was likely to successfully complete the course. If student entry characteristics were found to strengthen the predictive power of the model in regards to successful course completion, the statistics indicate how much the model was strengthened by adding those characteristics to it. For example, the logistic regression process first creates an initial prediction model, referred to as the null model, in which it controls for all the student entry characteristics holding them to zero and not allowing them to impact the predictive power of the model. In subsequent steps, the student entry characteristics are added to see if they can improve upon the predictive power of the model. In the following statements, the significant student entry characteristics are identified for each course, a statement as to how much the characteristics improved the null model, and

finally the total predictive or explanatory power of all of the significant student entry characteristics combined.

1. Significant variables for predicting English face-to-face course completion that improved the null model by 1.5% were age group, intended length of enrollment, marital status, and credit hours. The strongest of these were intended length of enrollment and marital status. The combined variables explained 20.1% of the variance.
2. Significant variables for predicting History face-to-face course completion that improved the null model by 5.6% were age group, intended length of enrollment, parent's education, recent migrant work, high school diploma type, and the interaction between high school diploma type and age group (an older student with a higher level of diploma was very successful in course completion). The combined variables explained 20.8% of the variance.
3. Significant variables for predicting Math face-to-face course completion that improved the null model by 5.6% were intended length of enrollment, reason for enrolling (primarily transfer), and recent migrant work (very small impact). The combined variables explained 27.0% of the variance.
4. Significant variables for predicting Internet course completion, which when added improved the null model by 15.7%, were type of course, hours of employment, intent to transfer, intended length of enrollment, marital status, and credit hours. The model was able to predict high risk of failure cases with

75.5% accuracy and an overall accuracy percentage of 79.1%. The combined variables explained 49.1% of the variance.

Of the significant student entry characteristics mentioned above, two of the strongest predictors of successful course completion, whether face-to-face or Internet, found in any of the models were intended length of enrollment and marital status. Both of these student entry characteristics were much stronger predictors of successful course completion for Internet courses than they were for the highest predictive level found in the face-to-face courses. (Remember that the face-to-face course models were run separately for English, History, and Math, whereas the Internet courses were combined due to small cell sizes.) The contrast in the sizes or values of the odds ratios for intended length of enrollment (Internet = 7.628; face-to-face = History 2.514) and marital status (Internet = 9.312; Math face-to-face = 2.203), depending on instructional mode, demonstrates that the predictive strength was greater for Internet than for face-to-face courses. For example, the risk of a single student failing to successfully complete one of the Internet courses in this study was more than 9 (9.312) times as high as the risk for the married student. Face-to-face, the course most strongly related to marital status was Math, in which the risk of failing to successfully complete the course was more than 2 (2.203) times greater for the single student than for the married student. Similarly, the students who indicated that they intended to be enrolled at South Texas College for 2 years or more (as opposed to less than 2 years) were 7.628 times more likely to fail to successfully complete the Internet course in which they were enrolled and 2.514 times more likely to fail to complete the face-to-face course (History).

The findings discussed in this sub-sub-section have implications for further research and practice, which will be discussed later in the chapter. Findings related to the second dependent variable, namely retention (or re-enrollment in the subsequent semester), are discussed in the following sub-sub-section. Retention of the different student groups (Faces, Nets, and Mixed) is discussed.

Retention

Retention as defined in this study meant that a student enrolled in one semester re-enrolled in the subsequent semester. More specifically, in this study, a student was considered to have been retained if the student was enrolled in one of the selected courses (English, History, or Math) in one of the Fall semesters from Fall 2000 to Fall 2005 and the student re-enrolled in the subsequent Spring semester. There are potentially many reasons that a student may not re-enroll the next semester. Sometimes an institution may bar a student from re-enrolling for academic or behavioral reasons. Therefore, it is important to note here that no follow-up was done to identify a student's reason for not re-enrolling in the subsequent semester. In other words, the current study did not include information about the reasons for not re-enrolling. In further replications of this research, it would be helpful to add the student's reason for not re-enrolling if such information could be collected.

The current study, however, was focused on the predictive validity of the student entry characteristics. This study was also designed to highlight differences in retention rates of the student groups (Faces, Nets, or Mixed). However, the researcher found no significant difference in the overall Fall to Spring rate of retention based on the type of

student (Faces, Nets, or Mixed). The observed differences were minimal. The researcher did find that retention patterns varied in other semesters (entered in Spring, re-enrolled in summer or Fall) and should be analyzed further in future research to determine whether retention rates of Faces, Nets, or Mixed students would be significantly different for different semesters.

Student entry characteristics found to be significantly related to retention or re-enrollment in the subsequent semester are discussed in this sub-sub-section. The list of individual student entry characteristics is followed by a discussion of the logistic regression model that was developed to identify the student entry characteristics as predictors of retention. These predictors, thereby, help explain or predict the likelihood that a student will be retained (or will re-enroll) the following semester. The researcher also added two additional independent variables to this model: type of course (since the courses had to be combined to eliminate problems with small cell sizes) and successful course completion (since successfully completing the current course may strongly impact whether or not a student decided to re-enroll). Both of these additional variables were found to be significant predictors of retention. The complete list of independent variables (student entry characteristics and the two added variables) that were found to be significant to this same model follows:

1. *Type of course* – Hispanic students attempting Math (College Algebra) during their first term were much less likely to re-enroll than were the students who attempted English or History that first term. Their retention rates were 40.0%, 56.2%, and 56.9%, respectively.

2. *Successful course completion* – The retention rates regardless of course were definitely higher for students who completed their courses successfully: 64.1% retention of successful completers compared to 34.9% retention of students who did not. Math attempters had low retention rates whether they successfully completed (46.5%) or not (32.4%), but the lowest rate (27.3%) was for first attempters at English who were not successful in that first attempt.
3. *Age group* – Hispanic students between the ages of 19-22 were less likely to re-enroll than their younger or older peers. Their retention rate (50.2%) was significantly lower than that of the <19 (53.2.5%), the 23-29 (58.3%), and the 30+ (71.4%) age groups.
4. *Gender* – Hispanic male students were less likely to re-enroll (50.2%) than their female counterparts (57.8%).
5. *Marital status* – Single (including divorced and widowed) Hispanic students were less likely to re-enroll (52.6%) than their married peers (64.9%).
6. *Credit hours* – Hispanic students taking fewer than 9 hours were retained at a lower rate (45.1%) than were their peers taking 9+ hours (55.8%).

Significant variables for predicting Hispanic student failure to be retained, or to re-enroll in the subsequent term or semester, which improved the null model by 10.8% were successful course completion, type of course, age group, and credit hours. The logistic regression model for retention was found to be able to predict the risk of not re-enrolling with 50.0% accuracy and 78.3% specificity. This model also explains 11.2% of

the variance of whether the student re-enrolled or not. Critical risk factors based on these findings related to the two dependent variables, namely, successful course completion and retention are discussed in the next sub-section.

Critical Risk Factors Based on the Findings Related to Successful Course Completion and Retention

The findings listed in the previous sub-section were intended to be useful to educational administrators, faculty, and staff for application to everyday practice or for the development of an intervention to assist students with higher risks of failing to successfully complete courses or to re-enroll in subsequent semesters. For example, if a faculty member knew the information contained in these findings about a classroom full of new students, the faculty member could make an extra effort to monitor the learning and progress of students at higher risk of failing. Furthermore, the faculty member might customize instructional methods to eliminate some of the known risks. In this sub-section, the researcher discusses some critical risk factors first in light of the findings related to Jackson's (2001) seven national risk factors, followed by a profile of risks relevant to the study population.

Overview of Findings Related to Jackson's (2001) Seven National Risk Factors Related to Non-Completion of Higher Education

During the review of the literature, the researcher noted Jackson's (2001) seven risk factors identified by the U.S. Department of Education that were related to not completing (or dropping out of) college. Although the researcher did not study graduation, which is the final step in the completion of an educational program, she did,

however, study the first two mini-steps to such completion. These two steps are the two dependent variables for the current study, namely, successful course completion and re-enrollment in the next term, or in other words, retention. It is notable that many of Jackson's risk factors apparently did not significantly impact successful course completion and retention for the Hispanic students in our study. The following list itemizes Jackson's (2001) seven risk factors with a brief description of the related findings from this current study.

1. *Delayed enrollment in college* – Older first-time Hispanic students did better than the younger ones in both face-to-face and Internet (19-22 year olds did not do as well as those who were younger than 19).
2. *Being the recipient of a GED* – Students with a GED successfully completed face-to-face courses at higher rates than did students with minimum (not college preparatory) or recommended (college preparatory) diplomas. In Internet courses, there was no difference in successful course completion by diploma type.
3. *Being financially independent* – No data were available to study this risk factor.
4. *Having children* – For students in face-to-face courses, this risk factor made no difference; however, for Internet students, those with children, performed better than those without.

5. *Being a single parent* – For this risk factor, it was found that there was no difference in successful course completion rates between single students with or without children.
6. *Going to college part time* – Face-to-face students enrolled in fewer than 9 credit hours had higher successful course completion rates than students enrolled in more than 9 credit hours; however, for Internet students there was no difference based on credit hour load.
7. *Working full time during college* – Eighty percent (80%) of all student groups studied (Faces, Nets, and Mixed – also see Tables 7 and 11) were not working. Statistically, there was no difference found in successful course completion based on working hours of students in either face-to-face or Internet courses. However, due to the small cell sizes of those working, further investigation is recommended.

Several of these findings clearly do not support the idea that Jackson's seven risk factors are applicable to the Hispanic student population in the current study, at least not for the first two semesters. In other words, neither successful course completion nor retention was found to be related to most of these risk factors. This finding provokes the following question: Is it possible, in this South Texas region underserved in access to higher education for so long, that these Hispanic students, who have pursued their educational goals in spite of having to overcome so many risks, have developed a certain capability to overcome common risk factors that are not easily overcome by other populations? These findings certainly prompt the need for further validation through

repeated, longitudinal, and mixed methods research. The researcher has identified a list of risk factors that are indeed relevant to the population in this study in the following sub-sub-section.

Risk Factors for South Texas College Entering Freshmen Related to Successful Course Completion and Retention

The findings are summarized by course and by type of presentation in Table 34. The students taking Internet courses were so few that it was difficult to find useful information due to small cell sizes. However, there were a few characteristics of students at risk that were identifiable, and these characteristics are listed in Table 34.

Table 34. Risk Factors for Non-Successful Completion of English, History, or Math Courses by Type of Presentation

	Successful Course Completion Risk Factors by Mode of Instruction	
Course	Face-to-Face	Internet*
English	younger, intending to stay 2+ years, single, taking more than 9 credit hours	single
History	younger, intending to stay 2+ years, at least one parent has high school diploma (as compared to neither parent having diploma), recent migrant work, lower diploma types (for students younger than 19)	intending to stay 2+ years
Math	intending to stay 2+ years, reason for attending is not transfer, recent migrant work	single

*Findings related to specific Internet courses were not many due to small cell sizes.

Retention risk factors, or in other words, characteristics of students who are highly unlikely to re-enroll from the Fall to the Spring semester are listed here. There was no difference in the retention by mode of instruction; therefore, the researcher has

provided a single list. Students possessing these characteristics may need some level of intervention in order to persist or re-enroll in the following semester:

- Attempting Math (College Algebra) during first semester.
- During first semester, did not successfully complete first attempt at English, History, or Math: Math-higher risk, English-highest risk.
- Enrolled in less than 9 credit hours entirely in face-to-face courses (vs. Internet).
- Age is between 19-22 years old.

The findings from this study led the researcher to identify significant differences in student entry characteristics between the sub-groups in the study population. The findings also included the identification of predictors of the likelihood of successful course completion and retention. These predictors were translated into critical risk statements to help inform educational practice. Furthermore, the findings now lead to the implications and suggestions or recommendations for further improvement of research, theory, and practice. Implications and recommendations for educational administrators, for researchers, for HRD professionals, and for development and refinement of theory follow.

Implications and Recommendations for Educational Administrators

The student entry characteristics used in this study provide a description of Hispanic students who selected an Internet type of course presentation, some solely online (as the Nets) and others who combined Internet with face-to-face courses (as the Mixed). These Hispanic students were more likely to be older, married, and a greater

percent of them were working 30+ hours per week than the face-to-face students, albeit, 80% of students in both types of courses were not working or only working occasionally. These characteristics of Hispanic distance (Internet) students are very similar to those in Gibson's (1998) "widely accepted view of the distance learner as one who is (a) older than the typical undergraduate, (b) female, (c) likely to be employed full time, and (d) married" (p. 13). The implications of finding that the Hispanic distance learner characteristics in this study are similar to those of other populations of distance learners from prior research may give educational administrators some level of comfort in applying the findings from distance education research to their Hispanic populations since the similarities in research findings indicate that the prior research may be applicable to Hispanic populations as well as those of other ethnicities. Of course, existing studies should be replicated with local populations in order to confirm these similarities at other institutions and buttress confidence in further generalization of these findings.

For both retention and successful course completion, age was a strong indicator of success. This finding suggests that educational administrators can confidently encourage older students who need to attain higher levels of education to enroll in higher education. It also could imply that younger students, and especially those in the 19-22 age-group, need to be monitored in order to be ready to intervene if the students encounter difficulties. Student services can be developed to assist these students with life issues that may become distractions or obstacles to success.

Married students were also found to be more successful in successful course completion and retention than their single peers (including divorcees and widows). This discovery was true not only in the face-to-face courses but also for Internet courses. Access to higher education via the Internet may need to be encouraged by educational administrators who are responsible for recruitment. Since only 11% of these students were enrolled in Internet courses, this target population may not be aware of the advantages of accessing higher education via the Internet. Further research would need to be done to ensure that the targeted married population had access to an online environment at home. Married Hispanic students were found to access courses via the Internet, and they tended to perform better than their single peers in those Internet courses.

Educational administrators should give close attention to Hispanic male students in higher education since these male students are not only more likely than females to fail to successfully complete their courses, but also they are less likely than their female peers to re-enroll in a subsequent semester or term. This outcome corresponds with current research regarding low educational enrollment and attainment rates of minority males in higher education. The findings in the current study provide support for the need for interventions targeted toward this subpopulation of Hispanics.

Using the current data available from South Texas College, it was difficult to adequately discern a student's intent to transfer to a university. The idea of transfer was touched on in three variables: (a) reason for attending, (b) intended length of enrollment, and (c) intent to transfer, but the responses were inconsistent between the three. A

student's intent to transfer tended to indicate a higher level of motivation and ability, but it was difficult to ascertain and to control for that intent. This confusion in data interpretation would imply the need for educational administrators to work collaboratively with researchers in the refinement of the data collection instruments to ensure the reliability of collected information, not only for reporting purposes but also for research.

Sometimes educational administrators find it challenging to require faculty and staff to maintain high expectations of students when the student body is made up primarily of underserved or academically under-prepared students. Perhaps this study will provide impetus for educational administrators to review their own data supporting or contradicting common beliefs about their students. For example, one might assume that the level of expectations for students entering higher education with a GED should be lower than for students with a recommended or college preparatory high school diploma. The findings in this study provided evidence to the contrary indicating that the GED students performed just as well or better than those with high school diplomas.

Another similar counterintuitive finding was the success rates of students whose parents did not have high school diplomas. It seems logical to think that these students would not be as successful as students whose parents do have high school diplomas. However, the findings here indicated that the students who had neither parent with a high school diploma successfully completed courses at higher rates than their peers who had at least one parent with a high school diploma. Educational administrators might do well to review frequently the beliefs of faculty and staff about the students they serve in

order to dispel any myths that are detrimental to student success. It is difficult to expect students to hold high expectations for themselves if faculty, staff, and administrators do not truly hold high expectations for the students. Some recommendations for educational administrators are proposed as follows:

- Commit to understanding students through collaboration with institutional researchers. The resulting findings will inform efforts to improve student success in course completion and retention for students.
- Do not assume that findings from existing research are applicable to all student populations. Replicate studies with local student populations, thereby increasing the likelihood that findings-based interventions will be effective.
- Value statistically significant findings as indicators of where one should invest diagnostic and intervention resources. Doing so will allow one to identify and address the critical factors affecting student success outcomes. Remember the common Pareto principle (the 80-20 rule).
- Identify and target educationally underserved groups by looking for potential students with the characteristics shown to contribute to success via the Internet, i.e., older, married, needing to work full-time, and GED. The identified group can become an audience to educate regarding the benefits of accessing higher education via the Internet.
- Provide support and structure for students who are 19-22 years of age who may be confronting difficult or distracting life circumstances. Pro-active

intervention may help improve the successful course completion and retention rates of this age group.

- Encourage high expectations of all students regardless of educational backgrounds, age, high school diploma, or parent's education. Doing so in turn helps students to maintain high expectations for themselves.
- Develop degree plans for Internet part-time students, thereby, allowing the student to plan for the long-term completion of a program even though it is part-time. Support these students with online services.
- Request marketing research regarding the need for online programs to be conducted in Spanish. In our global society where students may come from around the world or from our backyard, if the need is there, develop the programs.
- Provide language assistance for online students who do not have English as their first language. This assistance will allow ESL students to feel more comfortable in attempting courses in English online.
- Find ways to make Internet courses more attractive to Hispanic males, thereby, opening another avenue for access to higher education.
- Develop Internet program for migrants – Internet goes with you wherever you are! Such a program will allow migrant students to stay current with their studies even though they may have to leave the regional areas.
- Find ways to get early wins for students – watch for students with difficulties in English or Math – these students are at risk for dropping out.

Although the above research findings inform implications and recommendations for educational administrators, they also do the same for researchers. The discussion of how they do so follows.

Implications and Recommendations for Researchers

Several implications for researchers were found by the researcher during the conduct of the study. Data collection within an institution oftentimes is for record keeping or for reporting purposes rather than for research purposes. It is important for researchers, more specifically institutional researchers within educational institutions, to be involved in the design of data collection instruments. Involving researchers in this process will help to ensure that data are collected for record keeping and reporting as well as for use in research.

Another implication for researchers is the need for mixed methods of research. Quantitative or empirical research can identify significant independent variables or significant differences in dependent variables, but oftentimes qualitative research is needed to understand the whys behind the significance. Qualitative inquiry makes for deeper understanding of the issues raised by quantitative research. Clearly, empirical and quantitative study is insufficient to develop a deep understanding of an issue, if used without being informed by qualitative study. Recommendations for further research related to Hispanic students in higher education abound. The analyses and results from this study have stimulated much thought for continued research on this topic. The researcher recommends the following:

- Community colleges should review their data collection instruments to make explicit issues such as intent to transfer. Conflicting variables such as intended length of enrollment at the initial institution make the interpretation of results confusing and difficult.
- Data collection instruments regarding student entry characteristics should be viewed as essential to the understanding of the student population and, thereby, essential to student success. Completion of these instruments by all students should be mandated or strongly encouraged for registration or enrollment in courses thereby providing for robust research.
- The finding that there was no difference in completion rates based on type of presentation is in contradiction to some previous research that indicated that students in Internet courses do not successfully complete at the same rate as their peers in face-to-face courses. This current study should be replicated in future years to verify whether this finding of "no difference" remains true for Hispanic students and other populations. Additionally, course rigor comparisons between face-to-face and online courses must be investigated and documented for equivalency in order to support these findings.
- Further research should be conducted regarding the finding that Hispanic students whose parents have less than a high school diploma are more likely to complete English and History. Add motivational or attitudinal items to the data and qualitative research that would help explain some of the whys behind the findings.

- Student performance measures or academic outcomes should be analyzed in relationship to student entry characteristics to find indicators or key elements for targeting specific student populations. These indicators inform the development of effective, innovative, and research-based interventions.
- Identify risk factors related to subpopulations within your institution and collaborate with other administrators to minimize these risks. Keep digging and disaggregating to find the critical factors to success. Such detailed inquiry assists decision-makers in determining where to invest resources.
- Verify existing research for empirical evidence of compatibility with your local population before promoting its use, thereby eliminating wasted time and effort on interventions that are not applicable to your population.
- Develop methods for collecting more data regarding other influences on completion and retention. Follow up with students who do not return to discover their reasons to provide a better understanding of retention rates for your population.
- Expand the current study to other elements of the Braxton et al. model – external environment, internal campus environment. Doing this will support the further refinement and development of the theory and confirm its applicability to your population and/or institution.
- Encourage questions from other administrators regarding needs of students or issues related to successes or improvements, thereby providing the seed for further investigations for student success.

- Frequently review successful course completion and retention rates by type of student and type of presentation. Add longitudinal elements to identify whether students improve in these performance measures over time and with more completions in their record.
- Monitor changes in student entry characteristics and their impact on academic outcomes or successes. Any new variables would need to be added to the retention and successful course completion prediction models.
- Prepare and publish profiles of students based on their entry characteristics and course-taking patterns. These profiles will allow faculty, staff, and students to know and understand the student population within the institution.

Implications and Recommendations for HRD Professionals

This study has added to the current knowledge base related to Hispanic students taking distance education courses. The study has documented the idea that distance education is a valid means of higher education for Hispanic students. Over the last five years, the number of Hispanic students enrolled in Internet courses at South Texas College has increased from less than 1,000 to nearly 4,000 per semester. The findings from this study should be considered by HRD professionals who are interested in the economic and social development of their communities and nations. The findings regarding student entry characteristics of students who are likely to be more successful with Internet courses, i.e., older, married, working, intending to continue at a four-year university, etc., can be utilized to develop offerings to meet the unique needs of these students.

As a source for developing human resources in their communities (Birnbaum, 1988; Cohen & Brawer, 1991; Kintzer & Bryant, 1998; Lee & Young, 2003; McLean & McLean, 2001), premiere community colleges like South Texas College that provide access to higher education for thousands of underserved populations are critically needed throughout the nation and world (Byrd & Demps, 2006). High percentages of Hispanic students in South Texas are enrolled in community colleges (Bailey, Calcagno et al. 2005; Hagedorn et al., 2002; Haro, 2004). It is essential that HRD professionals who are the experts of learning and performance contribute to the continued improvement of such in community colleges. HRD professionals can contribute their knowledge of research and theory regarding learning and performance to the application of this knowledge in practices within community colleges aimed at helping to meet the educational and, thereby, economic needs of their communities. Hispanic student success rates in higher education are often below the national average for all ethnicities, i.e., 2002-2003 national percent of bachelor's degrees awarded to Hispanics (7%), Whites (70%), and Blacks (9%) (Bailey, Calcagno et al., 2005). This low Hispanic educational attainment rate combined with high Hispanic population growth impacts regional economies and, therefore, should be of critical interest to HRD professionals.

Distance education technology and its effectiveness toward student learning could be improved through further HRD research and theory development. Improvements would in turn allow greater numbers of Hispanic students to succeed in higher education through an Internet presentation of the coursework. The findings from the current study add to the research evidence that Hispanic students, similar to other

ethnic populations, do indeed utilize this avenue to higher education and will continue to do so in increasing numbers. The Hispanic students in the current study were found to be as successful in distance education as they were in the traditional classroom. The researcher recommends that in order to continue making contributions to the research regarding the appropriateness and success of distance education for Hispanic students, more research studies should be conducted by HRD professionals at community colleges like South Texas College. Such a college would be experiencing rapid enrollment growth of Hispanics in both face-to-face and distance education courses, thereby providing an extensive population for research. These studies can help to address the current paucity of Hispanic research in distance education. A list of recommendations for HRD practitioners follows:

- Recognize the contribution to HRD at the community level, which is made by community colleges. Doing so will open the door to partnering on topics of mutual interest. The word community itself seems to suggest collaboration toward common goals. Multiple partners investing their resources toward addressing common HRD issues have the potential to exponentially increase results.
- Partner with community colleges and other educational institutions with majority-minority populations for empirical tests of HRD theories and practices. Such institutions provide fertile grounds with large populations for HRD research. Often, these populations are educationally and thereby economically underserved and are also under-researched.

- Collaborate with community colleges as an agent of HRD when HRD is needed at the community, society, or national level. HRD and community colleges are both responsible for the well-being and development of their communities. Partnering can promote shared strengths, resources, and successes.
- Improve performance and learning within community colleges by sharing and applying HRD knowledge within these institutions. Community colleges are all about learning and performance. They are also organizations that can be improved through HRD interventions.

Implications for Further Theory Refinement and Development

As with any ethical research, there are implications from the findings of this study for theory "refinement and development" as described by Lynham (2002). As an expert in HRD theory building, Lynham (2002) provided a description of the "logic used to build the theory" (p. 221) so that practitioners and researchers who study theories in practice or applied theory could understand how they might assist in theory development or refinement. Lynham (2002) suggested that HRD professionals (and I would add educational researchers) should "view applied theory-building research as a necessary and helpful form of scholarly inquiry in developing and expanding our understanding of and ability to explain, anticipate, and act on related phenomena, issues, and problems" (p. 224). Lynham listed five phases to her General Method of Theory-Building, the last of which is "continuous refinement and development (of the theory)" (p. 229). She

further explained that theory-building research could be summarized into two processes: "theorizing to practice and practice to theorizing" (p. 229).

As noted earlier in the discussion of the theoretical framework for this study, Braxton et al. (2004) proposed a theory of student departure that was based primarily on two specific constructs from Tinto's (1993) theory of student attrition: student entry characteristics and academic engagement. Tinto's theory was developed primarily for use within the boundaries of residential institutions and was not appropriate to non-residential institutions like community and other commuter colleges. They purposely did not include the social integration element of Tinto's theory since it was not empirically supported by findings from theory-building research conducted in commuter institutions, whereas academic engagement was strongly supported by these same studies. Braxton et al. (2004) were theory-building in the spirit of Lynham's (2002) "continuous refinement and development" (p. 229). They proposed to develop a theory that would help explain the complex phenomenon of retention in commuter colleges.

Similarly, continued refinement of Braxton et al.'s theory and other theories related to retention should be addressed in follow-up research intended specifically for this purpose. The findings from the current study of Hispanic students at South Texas College have some contribution to make in this regard. Braxton et al. noted that studies like this one among ethnicities other than White were quite minimal and that such studies could contribute to understanding retention among these different ethnicities. The same paucity of research regarding distance education among Hispanic students was also identified in the literature review. Follow-up research specifically for the purpose of

refining and developing the Braxton et al. (2004) model of student departure (or non-retention) is strongly recommended. This current study contributes to the paucity of research conducted among Hispanics in retention, distance learning, and successful course completion.

Closing Remarks

Hispanic student success within community colleges is critical to our future national economy and, as such, was pertinent to this HRD research. In accomplishment of the purpose for this study, the researcher provided a profile of Hispanic distance education student characteristics found to be similar to common characteristics of typical distance learners as noted in the literature for other populations. The data analysis revealed that Hispanic students in this study population were just as successful completing courses via face-to-face or via the Internet. Furthermore, the study identified significant student entry characteristics that predict or explain successful course completion and first Fall-to-Spring retention of students taking courses in the different instructional modes: face-to-face or Internet. This study provided a profile of both successful and at-risk Hispanic students as measured by successful course completion and retention in both face-to-face and distance modalities. Both completion and retention are critical performance indicators of the work of a community college toward providing a highly educated workforce for the region, in other words, community level human resource development (Lynham & Cunningham, 2006). And finally, this study provided support for the investment in and use of distance education to provide access to higher

education for Hispanic students as well as a profile of the significant characteristics of students who are likely to utilize distance education successfully.

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APPENDIX A

STUDENT SUPPLEMENTAL INFORMATION FORM

STC
South Texas College

Student Supplemental Information Form

This survey is necessary to meet the requirements of state and federal reporting. This survey will assist South Texas College in securing funding for providing services to special student populations. The confidentiality of the information you provide is protected under the Family Educational Rights and Privacy Act (FERPA). Your response to the supplemental information form is voluntary and will not affect admissions decisions in any way. You may skip any question you do not wish to answer.

You may mark your answers in either pen or pencil.

Please print your name, Social Security Number, and today's date in the boxes below. Please print clearly, and do not touch the sides of the boxes with your letters.

Example: ABC012

Full Legal Last Name: ____

Full Legal First Name: ____ Middle Initial: ____

Social Security Number: ___ - __ - ____ Today's Date (MM/DD/YY): __ / __ / __

For the questions below, fill in the whole circle. To change an answer, erase completely or cross out the wrong answer.

1. How long do you plan to attend STC?
   - O One term only
   - O One year
   - O Two years
   - O Three years
   - O Four years
   - O More than four years

2. What is your main reason for attending STC? *(Please mark only one.)*
   - O Earn a Bachelor's degree
   - O Earn an Associate degree (2 years)
   - O Earn a certificate (less than 2 years)
   - O Take classes for transfer
   - O Get a job or get a better job
   - O Improve skills needed on current job
   - O Maintain licensure
   - O Personal enrichment
   - O Unsure right now
   - O Other (Please print below):

   ____

3. If you plan to transfer to another 4-year institution, please indicate which one. *(Please mark only one.)*
   - O The University of Texas -- Pan American
   - O The University of Texas at Brownsville
   - O The University of Texas at Austin
   - O The University of Texas at San Antonio
   - O Texas A&M University (College Station)
   - O Texas A&M University -- Kingsville
   - O Texas A&M University -- Corpus Christi
   - O Texas A&M International University (Laredo)
   - O I do not know which college I will transfer to.
   - O Other (Please print below):

   ____

4. If you are employed, please indicate how many hours you are working.
   - O 0 or only occasional jobs
   - O 1 to 10
   - O 11 to 20
   - O 21 to 30
   - O 31 to 40
   - O More than 40

5. Do you intend to continue working the same number of hours while attending STC?
   - O Yes
   - O No, I plan to work less
   - O No, I plan to work more

6. How many credits hours do you plan on taking each fall and spring semester here at STC?
   - O 5 or fewer hours
   - O 6 to 8 hours
   - O 9 to 11 hours
   - O 12 to 14 hours
   - O 15 to 17 hours
   - O More than 17 hours

7. Please mark any of the following programs that you participated in while going to high school. *(Mark all that apply.)*
   - O Technical
   - O Vocational
   - O Tech Prep
   - O None of the above
   - O I am not sure

8. Are you a veteran?
   O Yes O No

9. What is your gender?
   O Male O Female

10. What is your marital status?
    - O Unmarried (single, divorced, or widowed)
    - O Married
    - O Separated
    - O Prefer not to respond

11. Please mark the country where you attended elementary school, middle school and high school. (Mark all that apply.)

Elementary School	Middle School	High School
O USA	O USA	O USA
O Mexico	O Mexico	O Mexico
O Other	O Other	O Other

12. What is your ethnic origin?
    - O White, Non-Hispanic
    - O Black, Non-Hispanic
    - O Hispanic
    - O Alaskan/American Native
    - O Asian or Pacific Islander
    - O Prefer not to respond

13. Are you a Non-resident Alien?
    O Yes O No

14. Do you have trouble speaking, reading, writing, or understanding English because it is not your first language?
    O Yes O No

15. Have you or a family member been a migrant or seasonal farm worker within the last two years?
    O Yes O No

16. What is the highest level of education attained by:

You	Your Mother	Your Father	
O	O	O	Not a high school graduate
O	O	O	G.E.D.
O	O	O	High school graduate
O	O	O	Some college but no degree
O	O	O	Certificate
O	O	O	Associate Degree
O	O	O	Bachelor's Degree
O	O	O	Higher than a Bachelor's Degree

17. Are you eligible to receive public assistance of any kind, such as Food Stamps, Temporary Aid to Needy Families (TANF), WIC, or public housing?
    O Yes O No O I Do Not Know

18. Are you eligible to participate in JTPA or WIA programs or to receive Pell, SEOG, or other grants?
    O Yes O No

19. Do you have custody of one or more minor children, or are you (or your spouse) currently pregnant?
    O Yes O No

20. Have you ever received services for any of the following? *(Please mark all that apply.)*
    - O Hearing impairment
    - O Speech impairment
    - O Visual impairment
    - O Physical impairment
    - O Learning impairment
    - O Orthopedic impairment
    - O Psychological/ Emotional impairment
    - O Substance / Drug / Alcohol Abuse
    - O Other impairment (Please print below):

    ____

Thank you for participating. Please return this form to the Office of Admissions.

Statement of equal opportunity: No person shall be excluded from participating in, denied the benefits of or be subject to discrimination under any program or activity sponsored by South Texas College on the basis of race, color, national origin, religion, sex, age, veteran status, or disability.

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Alternative format: This document is available in an alternative format upon request. Please contact (956) 872-5585 for more information.

VITA

Brenda S. Cole
South Texas College
Office of Institutional Research & Effectiveness
3201 W. Pecan, Blvd.
McAllen, Texas, 78501

EDUCATION

2007	Doctor of Philosophy, Educational Human Resource Development Texas A&M University, College Station, Texas
2000	Master of Education, Adult Education, Texas A&M University - Kingsville, Kingsville, Texas
1981	Bachelor of Arts, Religious Education, Indiana Wesleyan University (Marion College), Marion, Indiana
1979	Associate of Arts, Religion, Kentucky Mountain Bible College Vancleve, Kentucky

PROFESSIONAL EXPERIENCE

2005 – Present	Director of Institutional Research and Effectiveness, South Texas College, McAllen, Texas
2004 – 2005	Interim Director of Institutional Research and Effectiveness, South Texas College, McAllen, Texas
2001 – 2005	Senior Institutional Research Associate, South Texas College, McAllen, Texas
1999 – 2001	Institutional Effectiveness Specialist, South Texas Community College, McAllen, Texas

PROFESSIONAL AFFILIATIONS

Academy of Human Resource Development
American Association for Public Opinion Research
Association for Institutional Research
Society for College and University Planning
South Texas Consortium for Institutional Research
Southern Association for Institutional Research
Texas Association for Institutional Research

This dissertation was typed and edited by Marilyn M. Oliva at Action Ink, Inc.